Tort Law, Climate Change and Private Nuisance

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Contents

Chapter One: Introduction

On the Northwest coast of Alaska, 400 Inupiat Eskimo have lived on a six-mile barrier reef, at a place called Kivalina, since "time immemorial".[1] Massive erosion due to increased storm damage is threatening the city, and the United States Army Corps of Engineers and the United States Government Accountability Office concluded that Kivalina must be relocated – at a cost of between $95 million and $400 million.[2] In 2009, the Native Village of Kivalina brought a claim in public nuisance against large oil and energy companies, claiming compensation based upon the defendants' contributions to global warming.[3]

Although the claim was dismissed in the District Court, it reflects the growing interest in whether the common law can play a role in compensating those affected by climate change and in preventing activities which contribute to it. This paper seeks to test that claim. Specifically, this paper looks at the law of tort in New Zealand, and analyses whether individuals affected by climate change have any prospects of being granted an injunction or damages against emitters of greenhouse gases within New Zealand.

This paper begins by describing the science behind climate change and the failure of efforts to craft an international legal response to climate change. I then proceed to analyse whether or not large emitters of greenhouse gases in New Zealand could be held liable for the effects of climate change using the tort of private nuisance. I demonstrate that the tort of private nuisance is well equipped to deal with most of the problems that climate change presents. The major exception to this is that the large number of contributors to climate change makes attributing legal responsibility to any one individual incredibly difficult. I analyse how the challenges associated with concurrent causes of harm relate to the underlying function and process of tort law and ask whether tort law can adapt its form to respond to the problem of climate change. Last, I briefly explore what options other than a private nuisance suit are available to those affected by or concerned about climate change.

In conducting this analysis, I assume that climate change is a substantial problem and that the science as outlined by the Intergovernmental Panel on Climate Change (IPCC) represents an accurate description of the causes and likely effects of climate change. I assume that it is desirable to prevent these effects where possible and to compensate those who suffer harm as a result of climate change. The analytical framework I use is designed to explore creative avenues by which tort law might respond to climate change while also critically appraising

[1] Complaint for Damages, *Native Village of Kivalina v ExxonMobil Corporation* 2008 US Dist Ct Pleadings 99312; February 26 2008 at 2.
[2] At 3.
[3] *Native Village of Kivalina v ExxonMobil Corporation* 663 F Supp 2d 863 (ND Cal 2009).

those avenues. It focuses on the crucial conceptual and legal difficulties, and does not attempt a detailed analysis of the evidential and practical aspects of preparing a climate change suit.[4]

[4] Contrast, Giedrė Kaminskaitė-Salters "Climate change litigation in the UK: its feasibility and prospects" in M Faure and M Peeters (eds) *Climate Change Liability* (Edward Elgar, Cheltenham (UK), 2011) 165.

Chapter Two: An Inconvenient History

The climate is changing in response to human activity.[5] This chapter shows how, first, attempts to craft an international response to climate change have proved ineffective at reducing global emissions, and second, New Zealand's policy response to climate change is similarly ineffective. In the face of global and national inactivity, the chapter concludes by analysing the two common law approaches which could be applied to climate change – the concept of an atmospheric trust and the use of tort law. I explain why, because of difficulties with the atmospheric trust in New Zealand, tort law is the focus of this paper.

2.1 The Causes and Effects of Climate Change

Climate change is caused by the emission of greenhouse gases in to the atmosphere by human activity. The three most prominent greenhouse gases are carbon dioxide, methane and nitrous oxide.[6] These greenhouse gases act in conjunction with water vapour and ozone in the atmosphere to keep the Earth's surface 33 °C warmer than it would be without these substances.[7] Incoming solar radiation from the sun warms the Earth's surface. Some of that radiation is emitted from the Earth's surface as infrared radiation. That radiation is absorbed by greenhouse gases, warming the Earth and, because all weather on the globe is ultimately solar-driven, creating weather patterns.[8] When humans increase the concentration of greenhouse gases in the atmosphere, this increases the amount of outgoing infrared radiation which is absorbed, warming the planet and creating the associated effects on climate around the world.[9]

The scientific case that man-made activities are impacting the climate has become unequivocal. In its most recent summary of the relevant science, the IPCC concluded that:[10]

(a) "Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values"; and

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[5] IPCC, "2007: Summary for Policymakers" in S Solomon, D Qin, M Manning, Z Chen, M Marquis, K B Averyt, M Tignor and H L Miller (eds) *The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University, Cambridge, 2007) ["Physical Science Summary"].

[6] IPCC "Physical Science Summary", above n 5 at 3.

[7] Klaus Bosselmann, Jenny Fuller and Jim Salinger *Climate Change in New Zealand: Scientific and Legal Assessments* (New Zealand Centre for Environment Law, Auckland, 2002) at 12.

[8] Gareth Renowden *Hot Topic* (AUT Media, Auckland, 2007) at 28.

[9] IPCC "Physical Science Summary", above n 5, at 10.

[10] The IPCC is the international body charged with assessing the scientific, technical and socioeconomic information regarding human-induced climate change. Very high confidence represents at least a 9 out of 10 chance of being correct. IPCC "Summary for Policy Makers" in S Solomon, D Qin, M Manning, Z Chen, M Marquis, KB Averyt, M Tignor and HL Miller (eds) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, New York, 2007) at 2-3.

(b) "The understanding of anthropogenic warming and cooling influences on climate has improved since [earlier models] leading to *very high confidence* that the global average net effect of human activities since 1750 has been one of warming."

The effects of this warming are likely to be severe. In 2003, Europe experienced its warmest summer in 500 years. Three papers published in *Nature* in 2004 analysed whether these temperatures were caused by climate change.[11] Although it is currently impossible to be precise about the ultimate cause, scientists analysed how likely it was that climate change had increased the risk of the events occurring. Stott et al. concluded that human influence on the climate had more than doubled the risk of such an extreme event occurring.[12]

Weather and climate extremes have a substantial effect on New Zealand's people and economy. The estimated cost of the 1997/98 drought on New Zealand's economy was $539 million, and it is estimated that "climate shocks" made significant contributions to both the 1991-1993 recession and the 1998 recession.[13] Human-induced climate change is likely to increase the frequency of rainfall extremes and the frequency and duration of droughts in the east of New Zealand. This will impact on, inter alia, water supply for irrigation, agricultural production and hydroelectricity production, as well as increasing the risk of flooding for low-lying land and road and rail infrastructure.[14] The snow line is forecast to rise, as is the sea level.[15] Although the contribution of human-induced climate change to specific events has not been calculated, temperatures have increased by 0. 9°C over the period 1908-2006, frosts have become less frequent, South Island glaciers and snowlines have retreated, alpine snow mass has reduced, and the sea level has risen by 0.16m during the 20th century.[16] It is conceivable that events like the unusually severe flooding in the Taranaki-Manawatu region in 2004 could be associated with climate change in the same way that the European heatwave has been.[17]

Although some warming is inevitable, there is international agreement that, to avoid dangerous global warming, global average temperature should not be allowed to exceed two

[11] Simon Hales and Alistair Woodward "Potential health impacts and policy responses" in R Chapman, J Boston and M Schwass (eds) *Confronting Climate Change: Critical Issues for New Zealand* (Victoria University, Wellington, 2006) 117.Christoph Shär, Pier Vidale, Daniel Luthi, Christoph Frei, Christian Haberli, Mark Liniger and Christoph Appenzeller "The role of increasing temperature variability in European summer heatwaves" (2004) 427 *Nature* 332; Christoph Shär and Gerd Jendritzky "Hot news from summer 2003" (2004) 432 *Nature* 559; Peter Stott, D Stone and M Allen "Human contribution to the European heatwave of 2003" (2004) 432 *Nature* 610.
[12] Stott et al., above n 11.
[13] David Wratt, Brett Mullan, Gavin Kenny and Sylvia Allan "New Zealand climate change: water and adaptation" in R Chapman, J Boston and M Schwass (eds) *Confronting Climate Change: Critical Issues for New Zealand* (Victoria University, Wellington, 2006) 149.
[14] Wratt et al., above n 13.
[15] Ministry for the Environment *Climate Change Effects and Impacts Assessment: A Guidance Manual for Local Government in New Zealand* (Wellington, 2008) at 5, 14.
[16] At 5-6.
[17] Wratt et al., above n 13, at 152.

degrees Celsius above pre-industrial levels.[18] The Germany Advisory Council on Global Change estimates that if global average temperature rises by more than two degrees, agricultural production will decline, there will be a steep rise in people threatened by water scarcity, and the potential for singular, catastrophic changes in the Earth system will increase – for example a worldwide shift in ocean circulation, the melting of major ice sheets, and the sudden release of large methane reserves.[19]

2.2 The Failure of Global Climate Negotiations

Because climate change is a problem with global causes and global effects, it ought to be regulated at a global level. Without a global response, a tragedy of the commons would inevitably ensue whereby, if some countries took steps to reduce their emissions, other countries would free-ride on those actions. The rational decision would be to deplete the atmospheric resource.[20]

A global response was first attempted in 1992. 154 states and the European Community signed the United Nations Framework Convention on Climate Change ("the Convention"). The 20 years since the Convention was signed have been marked by failure and delay.

This has occurred for two reasons. First, because agreements are consensus-based, participants who are reluctant to accept obligations to reduce their emissions are able to block progress and water down any agreement which is reached.[21] Even at the time the Convention was passed, it failed to create any mandatory or ambitious rules for reducing global emissions.[22] The Kyoto Protocol apparently remedied some of these concerns by introducing mandatory greenhouse gas emissions targets for countries and an international emissions trading system.[23] However, a study in *Global Environmental Change* in 1998 forecast that full compliance with Kyoto would only reduce warming by one twentieth of a degree in 2050.[24]

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[18] *Copenhagen Accord* 2/CP.15, FCCC/CP/2009/11/Add.1 (2009) at [2]; *Cancun Agreements* 1/CP.16, FCCC/CP/2010/7/Add.1 (2010) at [2].

[19] German Advisory Council on Global Change "Climate Proetection Strategies for the 21st Century: Kyoto and beyond" (report, Berlin, 10 November 2003) at 1.

[20] Garrett Hardin "The Tragedy of the Commons" (1968) 162 Science 1243.

[21] Daniel Bodansky "The United Nations Framework Convention on Climate Change: A Commentary" (1993) 18 Yale J Int'l L 451; Jacob Werksman and Kirk Herbertson "The Aftermath of Copenhagen: Does International Law have a Role to Play in a Global Response to Climate Change?" (2010) 25 Md J Int'l L 109.

[22] Bodansky, above n 21, at 554.

[23] Rowena Cantley-Smith "Climate Change and the Copenhagen legacy: Where to from here?" (2010) 36 Monash U L Rev 278 at 289; *Kyoto Protocol to the United Nations Framework Convention on Climate Change* 2303 UNTS 148 (1998).

[24] Martin Parry, Nigel Arnell, Mike Hulme, Robert Nicholls and Matthew Livermore "Buenos Aires and Kyoto targets too little to reduce climate change impacts" (1998) 8(4) *Global Environmental Change* 285. See also Bert Bolin "The Kyoto Negotiations on Climate Change: A Science Perspective" (1998) 279(5349) *Science* 330.

Second, there is no obligation to act upon an international treaty once it has been signed. The United States refused to ratify the Kyoto Protocol because it contained no obligations on developing countries to reduce emissions.[25] Canada initially ratified the protocol but subsequently withdrew from it to avoid paying penalties for non-compliance with their obligations to reduce greenhouse gas emissions.[26]

The negotiations since Kyoto have been plagued by these same twin difficulties. In 2009 119 world leaders came together in Copenhagen for "the largest gathering of heads of state and government in the history of the UN".[27] The conference was underpinned by disagreement, especially between the developed and the developing world.[28] The result was an Accord which parties decided to "take note" of. It required developed countries to submit economy-wide emission targets for 2020, but there were no requirements concerning how ambitious those targets ought to be and countries are not legally bound by any targets they submit.[29] No post-2012 architecture was agreed upon.[30] Even in the unlikely case that all countries implement their highest ambition pledges for emissions reductions by 2020, global emissions will still be 12 per cent higher than is necessary to keep warming within two degrees of the pre-industrial global average temperature.[31]

The most recent round of negotiations took place in Durban. The Durban Platform decides that any binding international treaty will not take force until 2020, and that negotiations on it must be concluded by 2015.[32] The Kyoto Protocol is alive, but only just. A second commitment period is to begin on 1 January 2013. The text itself decides that the second commitment period will end "either on 31 December 2017 or December 2020".[33] Japan, Canada and Russia have all decided they will not participate in the next phase of the Kyoto Protocol. Outside of Europe, the only other developed countries who

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[25] Jacob Werksman & Kirk Herbertson "The Aftermath of Copenhagen: Does International Law have a Role to Play in a Global Response to Climate Change" (2010) 25 MD J Int'l L 109 at 113.
[26] *Turp v Canada (Minister of Justice)* (2012) FC 893. This was an application for judicial review of the decision to withdraw from Kyoto.
[27] UN Framework Convention on Climate Change Secretariat "Copenhagen United Nations Climate Change Conference Ends with Political Agreement to Cap Temperature Rise, Reduce Emissions and Raise Finance" (press release, 19 December 2009).
[28] Cantley-Smith, above n 23, at 292-294. Particularly difficult areas include who was responsible for global emissions, what future reduction targets and financial responsibilities industrialised states should take on, and whether to continue with the Kyoto Protocol or to abandon it and focus exclusively on building a new global regime which included developed and developing countries.
[29] Cantley-Smith, above n 23, at 299.
[30] *Outcome of the work of the Ad Hoc Working Group on Long-term cooperative Action under the Convention* 1/CP.15, FCCC/CP/2009/11/Add.1 (2009); *Copenhagen Accord* 2/CP.15, FCCC/CP/2009/11/Add.1 (2009).
[31] United Nations Environment Programme "The Emissions Gap Report: Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2° C or 1.5° C?" (report, Shutterstock, 12 November 2010).
[32] *Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action* 1/CP.17, FCCC/CP/2011/9/Add.1 (2011), art 4.
[33] *Outcome of the Work of the Ad Hoc Working Group on Further Commitments for Annex 1 Parties under the Kyoto Protocol at its sixteenth session*, 1/CMP.7, FCCC/KP/CMP/2011/10/Add.1 (2011), art 1.

could possibly participate are New Zealand and Australia.[34] The deadline for submitting their targets was 1 May 2012. New Zealand is "still considering whether to take its target" and Australia is "prepared to consider submitting information" after "following necessary domestic processes".[35]

This renders the prospects of globally coordinated action in the short-term unlikely. First, countries' obligations are watered down during the negotiating process. Second, those obligations are often not acted upon. Meanwhile, emissions keep rising. In 2011, global carbon-dioxide emissions from fossil-fuel combustion reached a record high of 31.6 gigatonnes.[36] The International Energy Agency has warned that without "stringent new action" by 2017, the current and forecast energy-related infrastructure will commit the world to more than two degrees of warming and the associated dangerous risk which that brings.[37]

2.3 New Zealand's Policy Response

New Zealand's policy response reflects the global lack of ambition outlined above. A United Nations Expert Review Team recently expressed its "great concern" about the uncertainty around New Zealand's policy response to climate change.[38] The Team found it difficult to assess the optimistic forecasts made by the New Zealand Government about future emissions reductions because the Government did not provide "information on: the assumptions and key drivers used in projections for each sector".[39]

New Zealand's major policy initiative is the emissions trading system (ETS).[40] It requires that, for every tonne of carbon dioxide equivalent that is emitted, entities must "surrender" one corresponding New Zealand Unit.[41] The central feature of such "cap-and- trade" schemes is a cap on the total amount of Units that can be allocated to entities, and as such, a cap on the total amount of emissions that may be emitted.[42]

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[34] Chee Yoke Ling "Kyoto Protocol 'second commitment period' remains uncertain" *The Third World Network* (Beijing, 16 December 2011).
[35] *Information by Parties included in Annex 1 listed in annex 1 to decision 1/CMP.7 on their quantified emission limitation or reduction objectives for the second commitment period under they Kyoto Protocol* FCCC/KP/AWG/2012/Misc.1 (2012), GE. 12-60910 (2012) at 13, 3.
[36] International Energy Agency, "Global carbon-dioxide emissions increase by 1.0Gt in 2011 to record high" (press release, 24 May 2012)
[37] International Energy Agency, "World Energy Outlook 2011 – Executive Summary" (report, Paris, November 9 2011). See also Germany Advisory Council, above n 19.
[38] Compliance Committee "Report of the in-depth review of the fifth national communication of New Zealand" CC/ERT/2011/1, FCCC/IDR.5/NZL (2011) at [158].
[39] At [7]. See also, Simon Terry "NZ's Climate Response Officially Inadequate – UN" (report, Sustainability Council, 19 April 2011).
[40] Climate Change Response Act 2002.
[41] Section 63.
[42] Tom Tietenberg "The Tradable-Permits Approach to Protecting the Commons: Lessons for Climate Change" (2003) 19(3) Oxford Review of Economic Policy 400 at 408; Judson Jaffe, Matthew Ranson and Robert Stavins

However, the Act provides for no national cap on the number of Units that may be created and allocated.[43] The only real limit on emissions is that the government must not issue more New Zealand units than the number of Kyoto Units that it holds.[44] This ties the government's obligations to its Kyoto obligations.[45] Given the inherent uncertainty facing a Second Commitment Period for the Kyoto Protocol, this is not much of a restriction. The Parliamentary Commissioner for the Environment has stated that the lack of a cap "is likely to lead to significant emissions increases over time".[46]

Most recently, the Government has proposed to weaken the ETS further. It plans to extend the "one-for-two" obligation indefinitely, whereby participants only surrender units for half the carbon they emit – the effect of this is to halve the price entities pay under the ETS.[47] There will be a cap on the price of carbon units at $25 until at least 2015[48] – which translates to a cap of $12.50 as long as the two-for-one price swap remains in place. Agricultural emissions, which make up just under half of New Zealand's net greenhouse gas emissions,[49] are to be excluded from the ETS indefinitely.[50] In recognition of the uncertain future on the international stage, the Bill amending the ETS also removes any requirement for New Zealand Units to be backed by Kyoto Units.[51]

The Garnaut Review, commissioned by the Australian Government, suggested that a carbon price of $26 was necessary for Australia to meet its modest goal of a 5% reduction in greenhouse gas emissions, relative to 2000 levels, by 2020.[52] New Zealand's carbon price is currently $3.[53] The exclusion of key sectors from the ETS and the low prices faced by entities covered by it render it an ineffective method of reducing New Zealand's emissions.[54] This is not a temporary situation: the uncapped ETS was

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"Linking Tradable Permit Systems: A Key Element of Emerging International Climate Policy Architecture" (2009) 36 Ecology LQ 789 at 791-792.

[43] Section 68, although the Minister must consider certain things in deciding whether to issue a number of New Zealand units – s 68(2).

[44] Section 86F(1).

[45] Alastair Cameron "New Zealand Emissions Trading Scheme" in A Cameron (Ed) *Climate Change Law and Policy in New Zealand* (LexisNexisNZ, Wellington, 2011) 239 at 274.

[46] Jan Wright "Submission to the Finance and Expenditure Select Committee on the Climate Change Response (Moderated Emissions Trading) Bill" (New Zealand, 13 October 2009) at 7.

[47] Climate Change Response (Emissions Trading and Other Matters) Amendment Bill 2012 (52-1), cl 28. Section 222A of the Climate Change Response Act 2002 is the current provision and it would have expired in 2012.

[48] Clause 73.

[49] Ministry for the Environment "New Zealand's Greenhouse Gas Inventory 1990-2010" (ME 1095, submitted to the United Nations Framework Convention on Climate Change, 2012) at 36-37 ["GHG Inventory"].

[50] Clause 95. See also Bills Digest: Climate Change Response (Emissions Trading and Other Matters) Amendment Bill 2012 (Digest No 1990, 20 August 2012) and Tim Groser "Government announces ETS amendments" (press release, National Party, 2 July 2012)

[51] Clause 40.

[52] Ross Garnaut *The Garnaut Review 2011* (Cambridge University, Port Melbourne (Australia), 2011) at 71.

[53] Radio New Zealand "Low carbon price 'deterring forest planting'" (2 October 2012) Radio New Zealand News <http://www.radionz.co.nz/news/national/117148/low-carbon-price-'deterring-forest-planting'>.

[54] For example, Terry, above n 39.

designed by Labour, meaning a change of Government will not guarantee a different approach.[55]

Concerned citizens would struggle to find alternatives routes by which New Zealand's emissions could be reduced. The Government resists other nation-wide responses. For example, the Government repealed the 10-year moratorium on new fossil-fuelled thermal generation plants[56] and decided not to move forward with fuel efficiency standards for cars.[57]

At the regional level, s 104E of the Resource Management Act 1991 prevents councils, when deciding an application for a discharge consent, from considering the effects of discharges of greenhouse gas emissions on climate change.[58] Indeed, even if citizens' concerns related to the effects of coal mining, an activity which is not covered by the prohibition in s 104E because applications require land use consents, not discharge consents, the Environment Court recently held that climate change should not be considered. Judge Newhook stated that "the important topic of climate change is taken firmly away from regional government, and made the subject of appropriate attention from time to time by central government by way of activity at a national level".[59] In the High Court, Whata J agreed and upheld the decision.[60]

2.4 Legal Tools

The ineffective global political response to climate change demonstrates that the stock of greenhouse gases in the atmosphere will continue to increase and that the effects of climate change will continue to manifest. People are beginning to look to the courts for solutions.[61] There are two main common law candidates: tort law and the concept of an atmospheric trust.

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[55] Clause 50, Climate Change Response (Emissions Trading) Amendment Act 2008. Sections 69 and 86 were, in substance, identical to the current ss 68 and 86F.

[56] Electricity (Renewable Preference) Repeal Act 2008, s 4 which repealed Part 6A of the Electricity Act 1992. Section 62D in Part 6A restricted new generation from plants where fossil fuels provided more than 20% of the total fuel energy input for the generators of the plant.

[57] Transport Minister Steven Joyce "Govt won't proceed with fuel economy standard" (press release, 28 August 2009).

[58] *Greenpeace New Zealand Inc v Genesis Power Ltd* [2008] NZSC 112.

[59] *Buller Coal Ltd and Solid Energy New Zealand Ltd v West Coast Ent Incorporated* [2012] NZEnvC 80, at [53]. This decision relied on provisions in the Resource Management (Energy and Climate Change) Amendment Act 2004 to read in a prohibition on considering climate change even when s 104E was not engaged. This approach is continued in the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill 2011(321-2), which forbids the Environmental Protection Authority from considering climate change when deciding applications relating to exploitation of New Zealand's Exclusive Economic Zone and continental shelf – cl 59(6)(b).

[60] *Royal Forest and Bird Protection Society of New Zealand Inc v Buller Coal Ltd* [2012] NZHC 2156 at [40].

[61] Jacqueline Peel "Climate Change Law: The Emergence of a New Legal Discipline" (2008) 32 Melb U L Rev 922, at 955-966.

(a) The Atmospheric Trust Doctrine

Mary Wood has advocated for an approach that places key natural resources in trust for the public – including present and future generations.[62] She argues that traditional environmental regulation undermines the environment by focusing on the management of competing uses. She advocates for a stricter approach, whereby "governmental management of natural resources is protective and obligatory in nature", involving "a paradigm shift from political discretion to fiduciary obligations".[63] In early common law cases, New Zealand courts have applied the public trust doctrine to rights of navigation.[64] In *Mueller v Taupiri Coal-Mines Ltd*[65] the court held that where riparian owners were claiming ownership of the riverbed, only slight evidence was needed to show that ownership of the riverbed remained with the Crown.[66] This was justified on the basis that "the Crown [was] in effect a trustee for the public of lands vested in the Crown".[67]

However, *Mueller* provides a slender foundation from which to argument that the atmospheric trust doctrine could apply in New Zealand. A presumption that the Crown retained ownership over riverbeds – which it historically had title over – is completely different to giving the Crown new property rights in the atmosphere. Even if the Crown had such ownership, the courts would have to decide that this common law right was preserved despite the comprehensive scope of the Resource Management Act 1991.[68]

Further, Wood's suggestion that injunctive remedies are appropriate[69] seems unrealistic in a New Zealand context where parliamentary sovereignty reigns supreme.[70] Even declarations of inconsistency, which are the mildest remedy that Wood contemplates, are not a tool which has been formally applied by a court in New Zealand.[71] Powerful remedies are available in actions for judicial review against the government, but there is

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[62] Mary Wood "Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift" (2009) 39 Envtl L 43 at 64-65 ["Trust – Part I"]; Mary Wood "Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part II): Instilling a Fiduciary Obligation in Governance" (2009) 39 Envtl L 91 ["Trust – Part II"].

[63] "Trust – Part I", above n 62, at 64-65.

[64] Ruby Haazen "The Viability of Public Trust Litigation in New Zealand Against Carbon Emitters" (LLB(Hons) Dissertation, University of Auckland, 2012) at 29.

[65] (1900) 20 NZLR 89 (CA).

[66] At 111; Haazen, above n 64, at 30.

[67] At 107; Haazen, above n 64, at 29.

[68] *Falkner v Gisborne District Council* [1995] 3 NZLRD 622 (HC).

[69] Wood, above n 62, at 113-114.

[70] *Berkett & Ors v Tauranga District Council* [1992] 3 NZLR 206 (HC); Constitution Act 1986, s 15(1); Supreme Court Act 2003, s 3(2).

[71] Andrew Butler "Judicial Indications of Inconsistency – A New Weapon in the Bill of Rights Armoury?" (2000) 43 NZL Rev 231; Philip Joseph "Constitutional Law" [2009] NZL Rev 519 at 528-531; *Moonen v Film and Literaturee Board of review* [2000] 2 NZLRD 9 (CA); *R v Hansen* [2007] 3 NZLR 1 (SC); *R v Poumako* [2000] 2 NZLR 695 (CA); *Belcher v Chief Executive of the Department of Corrections* [2007] NZSC 54; *McDonnell v Chief Executive of the Department of Corrections* [2009] NZCA 352; *Boscawen v Attorney-General* [2009] 2 NZLR 229 (CA).

no relevant exercise of statutory or public power being challenged.[72] The remedy would need to be against the legislature.[73] Given the caution in issuing a declaration even where there is some semblance of statutory backing from the New Zealand Bill of Rights Act 1990, it is unlikely a court would issue a declaration or any stronger remedy regarding the atmospheric trust doctrine.

(b) Tort Law

Tort law is the other possible candidate, and the one which this paper will focus on. Because it involves suits against private defendants, it avoids the difficulties mentioned above. Although it may seem like "the most novel or radical idea" in the area of climate litigation,[74] dealing with damage to persons or property produced as a result of human activity is "a concern that lies at the heart of tort law".[75] Further, there has been substantial interest in tortious liability for the emission of greenhouse gases in the United States,[76] including a growing number of cases.[77]

With the exception of a few detailed analyses,[78] writings outside of the United States have tended to give a cursory analysis of litigation in tort law. This involves mentioning the cases in the United States, outlining the problems plaintiffs would face, and concluding that the prospects of success will grow as climate impacts increase.[79] Too often this involves starting from the premise that climate change is a problem, and then laying out a suite of possible initiatives which might take place. What is needed is an

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[72] Judicature Amendment Act 1972, s 4, defined in s 3. Courts will also review exercises of power having public consequences: *Wilson v White* [2005] 1 NZLR 189 (CA) at [21].

[73] Wood "Trust – Part II", above n 62, at 109, suggesting that the public trust can override legislative acts.

[74] David Grossman "Tort-Based Climate Litigation" in WCG Burns and HM Osofsky (eds) *Adjudicating Climate Change* (Cambridge University Press, New York, 2009) 193 at 193 ["Tort Litigation"].

[75] Eduardo Peñalver "Act of God or Toxic Torts? Applying Tort Principles to the Problem of Climate Change" (1998) 38 Nat Resources J 563 at 569.

[76] Douglas Kysar "What Climate Change Can Do About Tort Law" (2010) 41 Envtl L 1; Jeremy Hessler "A Temporary Solution to Climate Change: The Federal Common Law to the Rescue" (2010-2011) 38 Hastings Const LQ 407; Joyeeta Gupta "Legal Steps Outside the Climate Convention: Litigation as a Tool to Address Climate Change" (2007) 16(1) RECIEL 76 at 80, 85; Julia Schatz "Climate Change Litigation in Canada and the USA" (2009) 16(2) RECIEL 129; David Grossman "Warming Up to a Not-So-Radical Idea: Tort-Based Climate Change Litigation" (2003) 28 Colum J Envtl L 1 ["Warming Up"].

[77] *Kivalina*, above n 3; *American Electric Power Co v Connecticut* 131 S Ct 2527 (US, 2011); *California v General Motors Corporation* No C06-05755, 2007 US Dist LEXIS 68547 (NC Cal Sept 17); *Korsinsky v Environmental Protection Agency* No 05 Civ 859, 2005 WL 2414744 (SD NY Sept 29 2005). See also *Comer v Murphy Oil* 585 F 3d 855 (5th Cir Miss, 2009), a decision which was later vacated because the disqualification of one of the judges meant that the court was held to have lacked a sufficient number of judges to decide the case: *Comer v Murphy Oil* 607 F 3d 1049, 2010 US App LEXIS 11019 (5th Cir Miss, 2010).

[78] For example, Kaminskaitė-Salter, above n 4; James Burton, Stephen Tromans QC and Martin Edwards "Climate Change: What Chance a Damages Action in Tort" (2010) 55 UKELA 22; and Shi-Ling Hsu "A Realistic Evaluation of Climate Change Litigation Through the Lens of a Hypothetical Lawsuit" (2008) 79 U Colo L Rev 701.

[79] "Overall, however, actions based in nuisance are well-suited to climate change suits and offer a potentially viable avenue of redress for plaintiffs." Joseph Smith and David Shearman *Climate Change Litigation* (Presidian Legal Publications, Adelaide, 2006) at 87. "[P]rivate law actions may be brought in negligence or nuisance against large industrial polluters." Peel, above n 61, at 956.

analysis firmly grounded in the realities of tort law to ascertain whether the optimism about the role of tort law is justified in a New Zealand context. In doing so, I hope to also offer lessons for similar jurisdictions. If the optimism is not justified, then it would be wise to use the limited time available to focus on other avenues. If such optimism is justified, then I hope that this paper will contribute to the "joint effort of lawyers in many fields" who are grappling with this challenge which "deserves the utmost attention and our very best efforts".[80]

[80] Jaap Spier "High noon: prevention of climate damage as the primary goal of liability?" M Faure and M Peeters (eds) *Climate Change Liability* (Edward Elgar, Cheltenham (UK), 2011) 47 at 51.

Chapter Three: A Classic Case of Nuisance

To test the belief that tort law can respond to climate change and to isolate where the real obstacles lie, in this chapter I apply the tort of private nuisance to a hypothetical emitter responsible for all of the effects caused by climate change. This hypothetical exercise demonstrates that the major barrier facing any climate change plaintiff relates to causation. If all human-induced greenhouse gas emissions came from one source over land, then the emitter would be liable in private nuisance.

There are three main legal avenues suggested by authors: nuisance, products liability and negligence.[81] Of these, nuisance seems the most attractive. Claims in the United States have been based on nuisance.[82] Various writers have favoured this option.[83] Unlike negligence, nuisance is a tort of strict liability where the focus is on the activity itself rather than on the manner of carrying on the activity.[84] This means nuisance is appropriate for balancing competing uses,[85] as is the case in climate change cases.

There is also a difference between private nuisance and public nuisance. The relevant strand of public nuisance for present purposes is focused on widespread private nuisances.[86] Because the relevant activity which gives rise to a nuisance is the same – it is only the scale and extent of its geographic reach which changes – private nuisance is an appropriate and simpler standpoint from which to analyse whether those affected by climate change have any prospect of succeeding in an action against emitters of greenhouse gases. This diverges from the perspective of some authors who see public nuisance as providing a much easier avenue for nuisance-based claims.[87] However, New Zealand's tort law is different from United States tort law, where public nuisance has been converted with partial success in to a catch-all tort for widespread environmental harms.[88] Cases which apply it generally to public areas relate to the

[81] Smith and Shearman, above n 79, at 80, 87 and 92; Jose Cofre, Nicholas Rock and Paul Watchman "Climate change litigation" in P Q Watchman (ed) *Climate Change: A Guide to Carbon Law and Practice* (Globe Business Publishing, London, 2008) 229 at 231-236; Grossman "Tort Litigation", above n 74.
[82] Above n 77.
[83] Burton, Tromans QC and Edwards, above n 78, at 23-24; Kaminskaitė-Salters, above n 4, at 180; Hsu, above n 78, at 733-735; Smith and Shearman, above n 79, at 80;
[84] Maria Lee "What is private nuisance?" (2003) 119(Apr) LQR 298 at 322; John Smillie "Nuisance" in Stephen Todd (Ed) *The Law of Torts in New Zealand* (Brookers, Wellington, 2009) 461 at 469.
[85] *Bank of New Zealand v Greenwood* [1984] 1 NZLR 525 at 531 (HC).
[86] *Attorney-General v Abraham and Williams Ltd* [1949] NZLR 461 at 477-478 (SC); *Attorney-General v PYA Quarries Ltd* [1957] 2 QB 169 at 190-191 (CA). See also Smillie, above n 84, at 510.
[87] Burton, Tromans QC and Edwards, above n 78, at 23-24; Kaminskaitė-Salters, above n 4, at 180; Grossman "Warming Up", above n 76, at 52. Contrast, Hsu, above n 78, at 734.
[88] Victor Schwartz, Phil Goldberg and Corey Schaecher "Why Trial Courts Have Been Quick to Cool 'Global Warming' Suits" (2009-2010) 77 Tenn L Rev 803 at 819-824.

obstruction of highways or to highway accidents and have limited applicability to the emission of greenhouse gases.[89]

3.1 A Hypothetical Super Emitter

To render the arguments less amorphous, assume for present purposes that all the effects of climate change were being caused by a "super hazardous substance" (SHS): SHS causes snow cover to reduce on contact, temperatures to rise, weather events to increase in severity and acts to expand water so that sea levels rise gradually. Assume too that one company (SHS Ltd) was located in New Zealand and was the source of all the SHS which had ever been released.

If an owner of a coastal property suffered increased erosion due to sea level rise or a ski field faced reduced ticket sales due to snow melt, then they might seek to sue SHS Ltd in private nuisance. Assuming that they had exclusive possession of the land, they would have a sufficient interest to sue for nuisance.[90] Provided that SHS emanated from land occupied or controlled by the defendant, SHS Ltd would be the appropriate party to sue.[91] Although nuisance cases often refer to the nuisance emanating from a "neighbour's land",[92] this is loose language rather than being a strict requirement. In *Blair & Sumner v Deakin*,[93] the plaintiffs were located six and seven miles respectively away from the defendant, but this was no barrier to the success of their claim.[94] Kaminskaitė-Salters is incorrect to suggest that private nuisance is confined to neighbourly wrongs and cannot be applied to climate change.[95]

The basis of nuisance liability is an unreasonable interference, but where the alleged nuisance causes material injury to property, this renders the interference unreasonable regardless of whether the activity benefits society or is otherwise reasonable in the context of the surrounding locality.[96] It is only when the harm alleged concerns the plaintiff's quiet enjoyment or affects their "nerves or senses" that other factors such as the surrounding locality must be considered in determining whether the interference is an unreasonable one.[97] Similarly, it is incorrect to conclude, as Burton, Tromans QC and Edwards do, that "nuisance

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[89] Smillie, above n 84, at 511, 513. Note also that negligence is an element where a defendant creates a danger to persons or property on navigable waters or highways: *Overseas Tankship (UK) Ltd v The Miller Steamship Co Pty Ltd (The Wagon Mound (No 2))* [1967] 1 AC 617, 639 (PC).
[90] *Hunter v Canary Wharf ltd* [1997] AC 655 (HL) at 688. This interest may be either as a freeholder, a tenant or a licensee with exclusive possession.
[91] *Sedleigh-Denfield v O'Callaghan* [1940] AC 880 at 903 (HL).
[92] At 889, 891, 895.
[93] (1887) 52 JP 327, 57 LT 522.
[94] See also *Cambridge Water Company v Eastern Counties Leather* [1994] 2 AC 264 (HL).
[95] Kaminskaitė-Salters, above n 4, at 180.
[96] *St Helen's Smelting Co v Tipping* [1865] 11 HLC 644 at 650-652; *Harbourcity Developments Ltd v Vipond Properties Ltd* HC Auckland CIV-2006-404-1400, 30 March 2007 at [51]; *Greenwood*, above n 85, at 530. See also Lee, above n 84, at 311.
[97] *St Helen's Smelting Co*, above n 96, at 650-652.

effectively elides with negligence".[98] The care taken by SHS Ltd would be irrelevant in nuisance where the focus is not on whether an activity is conducted reasonably, but whether it may be conducted at all.[99]

SHS Ltd would need to have foreseen the type of damage that resulted from SHS.[100] Although this might bar actions taken when SHS was first introduced, as soon as effects had begun to manifest, any damage would be foreseeable. Any plaintiffs who were particularly sensitive might be barred from claiming.[101] This is unlikely to be a barrier for the average business or individual. Successful nuisance claims have been made by a flower seller whose flowers were damaged by emissions of sulphur dioxide from a motor car plant[102] and by owners of damaged older buildings despite defendants alleging that the buildings were particularly vulnerable.[103]

Even if SHS Ltd had a resource consent to discharge SHS in to the atmosphere, this would not authorise the activity – the defence of statutory authority requires express parliamentary authorisation, and private rights to sue in nuisance are not extinguished by the exercise of a council's delegated planning powers.[104] Unlike the United States, where the political question doctrine has proved fatal to numerous suits,[105] New Zealand has no general doctrine that political questions are not to be adjudicated upon by the courts.[106]

Even if the plaintiff had moved to the coast or bought the ski field knowing of the hazardous effects of SHS, the defendant could not claim that the plaintiff had "come to the risk" by shifting to the location.[107] This is because private nuisance is based upon a strict conception of private property rights.[108] The existence of a prior, unreasonable use cannot diminish the rights that a plaintiff is entitled to on acquiring a property.[109] Contributory negligence does

[98] Burton, Tromans QC and Edwards "Damages Action in Tort", above n 78, at 24.
[99] *Pwllbach Colliery Co Ltd v Woodman* [1915] AC 634, 638 (HL). See also Smith and Shearman, above n 79, at 81, concluding that the unreasonableness requirement would be met "with minimal difficulty".
[100] *Cambridge Water Company*, above n 94, at 301; *The Wagon Mound (No 2)*, above n 89, at 640.
[101] *Robinson v Kilvert* (1889) 41 Ch D 88. See also the discussion in R A Buckley *The Law of Nuisance* (Butterworths, Wellington (NZ), 1996) at 12-15.
[102] *Mckinnon Industries Ltd v Walker* [1951] 3 DLR 577.
[103] *Hoare & Co v McAlpine* [1923] 1 Ch 167. See also the discussion in Buckley, above n 101, at 12-15.
[104] *Hawkes Bay Protein Ltd v Davidson* [2003] 1 NZLR 536 at [19] (HC); *Wheeler v J J Saunders Ltd* [1996] Ch 19 at 28-29 (CA); *Harbourcity v Vipond*, above n 96, at [51].
[105] *Kivalina*, above n 3, at 876-877; *Comer v Murphy Oil* 839 F Supp 2d 849 (SD Miss 2012) at 865; *California v General Motors Corp*, above n 77, at 5-6. See generally Maria Stamas "*Comer v Murphy*: The Fifth Circuit Grapples with Its Role in Hearing Climate Change Tort Claims" (2010) 37 Ecology LQ 711 at 715-718.
[106] The closest equivalent in New Zealand is the defence of statutory authority: Smillie, above n 84, at 495. See the discussion of the ETS below, chapter four, 4.1.
[107] *Bliss v Hall* (1838) Bing NC 183, 1 Arn 19. See also *St Helen's Smelting*, above n 96, where the fact that the defendants' works existed before the plaintiff bought the property was not a barrier to the plaintiff's claim for damages.
[108] Richard Epstein "Nuisance Law: Corrective Justice and its Utilitarian Constraints" (1979) 8 J Legal Stud 49 at 72-73.
[109] *Bliss v Hall*, above n 107.

not apply to claims of private nuisance given that the basis of liability in nuisance is not fault, but rather a conflict between two competing, on-going uses.[110]

A plaintiff would stand a good chance of establishing a case against this hypothetical emitter. Plaintiffs suffering damage to plants and animals on their land from the changed weather conditions could look to *St Helen's Smelting Co v Tipping*, where the plaintiff recovered damages for the diminution in the value of his land when plants on his property were damaged by gases and vapours released from the chimney of the defendant's copper smelting works.[111] Plaintiffs could also claim compensation for steps taken either to prevent further damage to the property.[112] Damage to chattels would be recoverable in the event of a flood or extreme weather event causing them damage.[113] The costs of renting substitute land would also be recoverable: in *Landon v Rutherford*, when fire damaged a man's farm, he was awarded damages for the cost of renting alternative grazing in place of the destroyed pasture.[114] Lastly, lost profits would be recoverable provided that they were consequent on physical damage – meaning that ski fields, farmers and horticulturalists would potentially be able to recover damages.[115]

An injunction would also be available to prevent a continuing wrong such as this one. It is the presumptive remedy in cases of nuisance, but plaintiffs can choose whether to apply for it.[116] Even if SHS Ltd was a crucial contributor to the local economy, this would not prevent an injunction being granted: "considerations of public interest are not sufficient to justify the continuance of a nuisance".[117] Such considerations might, however, affect the form of the relief.[118]Activities need only be restrained to the extent that they constitute a nuisance. If a reasonable level of SHS could be established, emissions below this level would still be acceptable. In *Attorney-General v Abraham and Williams, Ltd*, the defendants were restrained from using their land as a stock or cattle sale yards in "an offensive or insanitary condition so as to occasion a nuisance".[119] O'Leary CJ was careful to emphasise that in setting a standard that must be complied with, the defendants could continue their activities provided they met the standard.[120] The injunction could also be delayed to give the defendant time to comply. In

[110] Epstein, above n 108, at 70; Smillie, above n 84, at 495.
[111] Above n 96, at 642-643.
[112] *Landon v Rutherford* [1951] NZLR 975 (SC), where the plaintiff was granted £18 for the cost of work done in checking and preventing the further spread of a fire which had originated on the defendant's property.
[113] *Halsey v Esso Petroleum Co Ltd* [1961] 1 WLR 583 (QB), where the plaintiff was awarded compensation for damage to his clothing and the paintwork on his car. Note too that there was no damage caused to the plaintiffs land, so the damages for the chattels were not consequential on any damage to land.
[114] Above n 112, at 977.
[115] *Clearlite Holdings Ltd v Auckland City Corporation* [1976] 2 NZLR 729 at 743 (SC), where damage to the plaintiff's factory was assessed on the basis of lost profits.
[116] No objection was raised in *St Helen's Smelting*, above n 96, when damages alone were sought, at 642.
[117] *Attorney-General v Abraham and Williams Ltd*, above n 86; note that this was a case of public nuisance. See also the argument by counsel for Birmingham at 536 and Page-Wood VC's response at 539 in *Attorney-General v Birmingham Corporation* (1858) 4 K & J 528, and Buckley, above n 101, at 142.
[118] At 469.
[119] At 477.
[120] At 475-476.

Pride of Derby and Derbyshire Angling Association Ltd v British Celanese Ltd[121] the operation of the injunction was suspended for two years from the date of the trial.

3.2 A Hypothetical Super Emitter of Greenhouse Gases

Now imagine that, instead of emitting SHS, SHS Ltd emitted greenhouse gases. Assume that SHS Ltd was responsible for all the human greenhouse gas emissions in recent times. This would pose two additional challenges. The first challenge relates to causation. An initial issue would be that greenhouse gases already exist in the atmosphere and are released from a variety of sources – volcanic eruptions, decaying biomass, animal respiration.[122] This could be easily overcome by comparing greenhouse gas levels whenever SHS Ltd began operation with greenhouse gas levels today.

(a) Proving Causation

A plaintiff would also have to demonstrate that the event (drought, flooding) or process (prolonged snow melt over time, changing pattern of water distribution) affecting them was due to SHS Ltd's activity. Factual causation is an essential element of all tort claims, and it is commonly tested by the "but-for" test.[123] Hence, in *Barnett v Chelsea and Kensington*,[124] where the defendant had negligently sent the deceased home, and the deceased later died of arsenic poisoning, the action by the widow of the defendant was dismissed because the plaintiff had failed to establish on the balance of probabilities that the defendant's negligence caused the death of the deceased.

In theory, there is nothing preventing the general causal chain outlined above[125] from being applied to specific events in a way that satisfies the requirements of traditional but-for reasoning. Greenhouse gases are released. As a result, the earth's capacity to absorb infrared radiation is increased. In turn, temperatures increase and the climate changes, causing weather events and processes which are unique in frequency or extent relative to historical data. Harm is suffered by a plaintiff because of the deviation from normal climatic conditions.[126]

Although scientists are not yet capable of forecasting the set of atmospheric conditions which will produce a given outcome, causes can be discerned retrospectively even if events cannot

[121] [1953] Ch 149 at 155 (CA).
[122] Schwartz, Goldberg and Schaecher, above n 88, at 835
[123] *Smith v Auckland Hospital Board* [1965] NZLR 191 at 199 (CA); *Sienkiewicz v Greif (UK) Ltd* [2011] UKSC 10 at [16]; H L A Hart and A M Honore *Causation and the Law* (Oxford University, London, 1962) at 122.
[124] [1969] 1 QB 428
[125] Chapter two, at 2.1.
[126] David Grossman "Warming Up", above n 76, at 27.

be forecast prospectively.[127] All that is required is that, when a particular abnormal effect is observed, this effect is commonly associated with a broadly defined contingency (a blow is generally connected to an injury, for example), and that the general exceptions which might negative this connexion do not exist.[128] When extremes of weather occur that are unique relative to historic climate extremes, it is conceivable that this could be attributed to SHS Ltd's contribution of greenhouse gases – but-for the greenhouse gases which SHS Ltd has emitted, this event would never have occurred.[129]

For this to reasoning to be valid, the event would need to be unique and the risk of it happening naturally slim to none. In fact, the climate fluctuates for a variety of reasons.[130] This means that knowledge that an event has not occurred before might not be demonstrative evidence that it would never have occurred naturally. Many of the effects of climate change manifest as changes in the frequency or extent of certain events rather than new kinds of events altogether.[131] Thus, the fact that a unique event commonly associated with climate change occurs may not be conclusive evidence that human-induced greenhouse gas emissions are responsible.

(b) Contribution to the Risk of Harm

Thus in many instances, while it would be possible to track the general causative relationship between greenhouse gases and the events they produce, it would be difficult to prove that emissions from SHS Ltd contributed to specific instances of harm which arise. The House of Lords was confronted with this problem in *Sienkiewicz v Greif (UK) Ltd*.[132] The claimant, Mrs Costello had died of mesothelioma.[133] Mesothelioma is always caused by asbestos fibres, but it may be caused either by general background environmental exposure (like the background risk of certain weather events occurring) or by specific occupational exposure to asbestos particles (like the emission of greenhouse gases by SHS).[134] The mechanism by which asbestos causes mesothelioma is imperfectly understood, but it is clear the more fibres that are inhaled, the greater the risk of contracting mesothelioma.[135]

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[127] Hart and Honore ", above n 123, at 43, explaining why Mills was incorrect in believing that "when we identify a single event as a cause of an event we 'select' it from a set known or believed to be 'invariably and unconditionally' followed by an event of that kind."
[128] At 42-44.
[129] At 67-68.
[130] See, for example Wratt et al., above n 13, which outlines the rainfall changes due to El Niño and La Niña, the Interdecadal Pacific Oscillation and other climate shifts.
[131] IPCC "Summary for Policymakers" in M L Parry, O F Canziani, J P Paluitkof, P J van der Linden and C E Hanson (eds) *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University, Cambridge, 2007). Note the frequent reference to the "risk" and "frequency" of existing trends and events.
[132] [2011] UKSC 10.
[133] At [60].
[134] At [19].
[135] At [19].

In the court below the judge had held that Mrs Costello's exposure to asbestos while working at Grief's factory had increased the risk of her contracting mesothelioma from 24 cases per million to 28.39 cases per million.[136] The risk of Mrs Costello contracting mesothelioma but-for the defendant's actions (24 cases per million) was treated as general environmental exposure risk rather than risk created by other tortious defendants.[137] The defendant argued that, because the claimant alleged only one possibly tortious source for the exposure, the claimant had to prove that any exposure caused by the defendant was the likely cause.[138] Because actual causation would be impossible to prove, this would mean that the defendant should only be liable for damages if the exposure had more than doubled the risk of Mrs Costello contracting mesothelioma.[139] This is the statistical equivalent of but-for reasoning where the precise causal chain cannot be proved and a single agent, to the exclusion of other agents, is responsible for causing the relevant event.[140]

The House of Lords rejected that argument, and held that a defendant only needs to cause "a material increase in the risk" to which the claimant is exposed.[141] In an earlier case, *Fairchild v Glenhaven Funeral Services Ltd*,[142] the Court had applied this reasoning to a claim against multiple defendants who had all exposed claimants to asbestos. Lord Kerr explained that there is no valid distinction between the two cases:[143]

> "That adjustment [to the standard required to satisfy causation] was made precisely because, as a matter of policy, it was considered that it would be unfair to impose on a claimant a requirement of proof which in most cases, because of the limitations of scientific knowledge, was quite incapable of fulfilment".

The effects of climate change are similar. There is a background risk of certain events occurring but they become more likely when greenhouse gas levels in the atmosphere are increased. As with mesothelioma, the human contribution to greenhouse gas levels may be measured, but the route by which those contributions result in harm is impossibly complex. If the reasoning in *Sienkiewicz* were applied to this problem, then the standard should be whether the defendant "materially increased the risk" of an event occurring. Even if a court applied the stricter requirement that the defendant needed to more than double the risk of an event happening, as climate change increases in severity and more studies demonstrate the

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[136] At [19].
[137] At [118].
[138] At [128].
[139] At [128]. Lord Phillips gave a more detailed history of the doubling of the risk approach beginning at [63].
[140] Jane Stapleton "Factual Causation, Mesothelioma and Statistical Validity" (2012) 128 LQR 221 at 223.
[141] The effect was that the defendant was liable for the full amount sought by Mrs Costello's estate, at [58]. Lord Phillips recognised that this was a "draconian" consequence, but their Lordships were constrained by s 3 of the Compensation Act 2006. Although their Lordships refused to rely on the Act as a justification for imposing liability on the defendant, when it came to the amount of damages which were to be awarded, the Act makes a defendant liable for the full cost of mesothelioma even when they have been responsible for only a small proportion of a claimant's overall exposure to asbestos.
[142] [2002] UKHL 22
[143] *Sienkiewicz*, above n 132, at [200].

links between extreme events and climate change; proof of causation would not provide an insurmountable obstacle.[144]

(c) Time Limits

The second barrier that this developed hypothetical introduces relates to the issue of time limits. For any act or omission on or before 31 December 2010,[145] no action in tort may be brought against a defendant "after the expiration of 6 years from the date on which the cause of action accrued".[146] The cause of action accrues when all the elements of the offence are satisfied.[147] Because physical damage is what makes the activity an unreasonable one and hence creates the cause of action that a nuisance claim would be founded upon, the cause of action would not accrue until damage had occurred. As long as prospective plaintiffs took an action within six years of the damage occurring,[148] the Limitation Act 1950 would not bar claims based on acts or omissions before 31 December 2010.

Where those claims were based on acts or omissions committed after 31 December 2010, SHS Ltd would have a defence to any claim which was brought more than 15 years after the date of the act or omission on which the claim is based.[149] This effectively limits a defendant's liability from the moment they perform their last relevant act or omission. Whether or not this would pose an issue for plaintiffs would depend upon whether emissions of greenhouse gases were characterised as isolated instances or on-going activities. If it was the former, then SHS Ltd would only be liable for the greenhouse gases emitted in the fifteen years before a claim has been lodged.

My tentative view is that the relevant act or omission would end when the company stopped emitting greenhouse gases – the act of carrying on their business in a way which caused a nuisance to others is the relevant act and so it would be a continuing act rather than a series of discrete acts. In *Gedye v South*[150] The court had to interpret s 91 of the Building Act 1991, which states that "[c]ivil proceedings relating to building work may not be brought against any person 10 years or more after the date of the act or omission on which the proceedings are based." The claim was that Gedyes were in breach of a warranty that building work

[144] Kysar, above n 76, at 31-33.
[145] Limitation Act 2010, s 10(a) – "Every defence prescribed by this Act applies only to a claim based on an act or omission after 31 December 2010".
[146] Limitation Act 1950, s 4(1)(a).
[147] *S v G* [1995] 3 NZLR 681 at 686 (CA).
[148] Although New Zealand Courts sometimes delayed the accrual date until the date where the damage ought reasonably to have been discovered, this has been kept within narrow bounds, so occurrence is a better touchstone – *Murray v Morel & Co Ltd* [2007] NZSC 27.
[149] Limitation Act 2010, s 11(3)(b), assuming the plaintiff could meet the late knowledge date requirements in s 14. The new Limitation Act 2010 gives the defendant a defence if they prove that the date on which the claim is filed is at least six years after the date of the act or omission on which the claim is based. This six year limit is extended to fifteen years if, during the six years since the act or omission occurred, the claimant was not aware that they had suffered the loss - subs 11(2),(3) and s 14.
[150] [2010] NZCA 207.

performed in 1997 would be performed in compliance with the Building Act. If act or omission referred to the building work, then the claim, which was filed in 2008, was barred by the longstop provision in s 91. The court rejected this argument and held that the relevant date was the date that the contract was signed and the warranty was given. This shows the court placing priority on the legally significant date. In nuisance, where the wrong is a continuing one,[151] the relevant legal date would be when all emissions ceased. It would be odd if a claim was compartmentalised in to separate actions by a defendant when the law treats all those acts as part of one on-going nuisance.

3.4 A Classic Case of Nuisance

The willingness of courts to reject utilitarian social welfare-maximisation in favour of a staunch conception of property rights has led courts to uphold, again and again, the rights of individual property owners to be free from incursion from outside sources.[152] Were all carbon emissions to come from one source, then that emitter would struggle to defend a nuisance claim if a party who had suffered loss sought an injunction or damages. Time limits pose no issue at present, but they could begin to pose problems in years to come if courts adopt a narrow interpretation of the relevant act or omission.

The biggest challenge is that but-for causation would be difficult to prove and plaintiffs might have to rely upon the contribution to the risk approach which was applied in *Sienkiewicz* and *Fairchild.* Without doing a detailed analysis of this issue, and mindful of the fact that it is high time to abandon this hypothetical and confront the greatest problem facing climate change nuisance claims, it is at least conceivable that the reasons that led the House of Lords to carve out the exception to the traditional but-for analysis could apply equally well to climate change. Plaintiffs would face substantial evidential difficulties, but increased scientific knowledge, increasing effects from climate change, and a flexible approach to causation mean this problem is not insurmountable.

Of course, all this analysis falls to pieces where, back on planet Earth, there is not one emitter, but seven billion. The next chapter will investigate the challenges that this presents.

[151] Smillie, above n 84, at 477.
[152] Kysar, above n 76, at 29.

Chapter Four: Multiple Contributors

This chapter focuses on the challenge associated with multiple individuals or entities contributing to the total stock of greenhouse gases in the atmosphere. There are a variety of legal tools available, but all of them face the fundamental barrier that each defendant's contribution to climate change is de minimis. Even in aggregate, New Zealand emitters represent too small a portion of global emissions for the law's flexible response to problems of concurrent causes to apply.

4.1 Statutory Authorisation

One preliminary point arises. Does the Climate Change Response Act 2002, which sets up New Zealand's ETS, constitute statutory authority to emit greenhouse gases? The test is whether "Parliament by express direction or by necessary implication" has authorised the activity in question.[153] In *Allen v Gulf Oil Refining Ltd*, an Act authorised land acquisition, but it did not specifically authorise the operation of a refinery. The House of Lords held that it was a necessary implication that the statute also authorised operation of the refinery.[154] The Climate Change Response Act is very different. It is a regulatory scheme. Companies remain free to choose how they operate and carbon-intensive activities are not necessary to achieve Parliament's purpose.[155] If the conferring of general powers is not statutory authorisation,[156] then requiring entities to surrender units to cover their greenhouse gas emissions is certainly not statutory authorisation. "Parliament may … enact parallel systems of regulatory control; but, unless it says otherwise, the common law rights and duties remain unaffected."[157]

4.2 Suing the 0.1%

The more fundamental problem is that New Zealand's contribution to global climate change each year is only 0.1%. Additionally, because liability in nuisance is based upon "possession and control of the land from which the nuisance proceeds",[158] any defendant would have to emit greenhouse gases on-site. This rules out coal, oil and gas suppliers. Agriculture contributes a substantial amount of New Zealand's greenhouse gas emissions – 47.1 percent of New Zealand's emissions in 2010.[159] However, each farmer's individual contribution to climate change would be very small. The best defendant would be the Huntly power station –

[153] *Allen v Gulf Oil Refining Ltd* [1981] AC 1001 at 1011 (HL).
[154] At 1012-1013.
[155] Contrast, *Allen*, above n 153, at 1012.
[156] *Hunter v Canary Wharf Ltd* [1997] AC 655, 668.
[157] *Barr v Biffa Waste Services Ltd* [2012] HLR 28 (CA) at [146].
[158] *Sedleigh-Denfield v O'Callaghan*, above n 91, affirmed in *BP Oil New Zealand Ltd v Ports of Auckland Ltd* [2004] 2 NZLR 208 (HC) at [80]-[81].
[159] Ministry for the Environment "GHG Inventory", above n 49, at 36-37.

in 2009/2010 Genesis Energy's emissions from generation were 3.5 million tonnes of carbon dioxide, most of which are emitted by Huntly.[160] In 2004, emissions from Huntly would have been approximately 0.009% of global greenhouse gas emissions.[161] But climate change is not caused by yearly greenhouse gas emissions; it is caused by the accumulation of emissions in the atmosphere over time. Huntly was only completed in 1985.[162] Assuming that it has contributed a similar percentage of global emissions each year, its total contribution to the human-added greenhouse gases in the atmosphere will have been less than 0.009%.[163]

4.3 Legal Responses to Concurrent Causes of Harm

It would be tempting to dismiss this contribution as de minimis outright. However, the problem of multiple contributions to harm is not a foreign one for courts. It is worth investigating the legal tools which might be available to plaintiffs pursuing climate change suits before dismissing such suits entirely.

There are three relevant categories:

(1) Indivisible harm: a single harm results from the accumulation of contributions from various defendants.
(2) Divisible harm: a defendant's contribution to the harm is quantifiable.
(3) Multiple contributions to the risk of harm: an event occurs which is a known possible outcome of activities carried on by a number of defendants but it is impossible to prove who caused the event.

(a) Indivisible Harm

Often in nuisance cases of indivisible, cumulative harm (situation (1)), injunctions will be granted.[164] In *Thorpe v Brumfitt*,[165] Sir James LJ stated that:

> Suppose one person leaves a wheel-barrow standing on a way, that may cause no appreciable inconvenience; but, if a hundred do so, that may cause a serious inconvenience which a person entitled to the use of the way has a right to prevent; and it

[160] Genesis Energy "Greenhouse Gas Inventory" (2012) Genesis Energy Online Reports <http://genesisenergy.onlinereports.co.nz/key-themes/responsible-performance/environment/greenhouse-gas-inventory>; see also Brian Fallow "*Brian Fallow:* Tough choices on power" *The New Zealand Herald* (New Zealand, September 6 2007), online at <http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10461877>.
[161] Global emissions were 49 000 million tonnes carbon dioxide equivalent per year – IPCC "Climate Change 2007: Summary for Policy Makers" (report, Valencia, 12-17 November 2007) at 5. Huntly's emissions were approximately 4.6 million tonnes at that time: Fallow, above n 160.
[162] Genesis Energy "Huntly Power Station Plants" (2010) <http://www.genesisenergy.co.nz/genesis/generation/our-generation-sites/huntly-power-station/huntly-power-station-plants/huntly-power-station-plants.cfm>.
[163] This calculation is approximate. It is a rough figure to allow the conceptual issues to be analysed.
[164] Kysar, above n 76, at 35; Hsu, above n 78, at 749-751.
[165] (1872-1873) LR 8 Ch App 650 at 656-657.

> is no defence to any one person among the hundred to say that what he does causes of itself no damage to the complainant.

This principle was affirmed in *Pride of Derby and Derbyshire Angling Association Ltd v British Celanese Ltd*,[166] where the Angling Association was granted an injunction against three defendants who had, by putting solids into the stream, contributed to pollution which extinguished the fish life.[167] Provided that the defendants had committed a wrong as a group, it did not matter that they had not individually committed an actionable wrong.[168]

Alternately, a plaintiff may claim compensation for loss. In that case, joint and several liability is imposed upon each defendant who has made a material contribution to the harm. In *Gemmill v Fleming*,[169] the Scottish Outer House held that where the defendants had each materially contributed to the pollution of a stream, they were jointly and severally liable for the damage caused when the water became unfit for drinking by cows in a downstream farm, resulting in death and a loss of condition for those cows.[170] New Zealand authority is sparse on this matter, but it is accepted that this would be the outcome.[171]

(b) Damages – Divisible Harm

If, as in situation (2), it is possible to divide the harm according to a defendant's contribution, courts will do so.[172] In *Balfour v William Beardmore & Co*,[173] a case in the Scotish Outer House, one of the claimants, James Begg, suffered from pneumoconiosis. He had probably contracted the disease before working for the defendants.[174] However, medical evidence indicated that exposure to dust hazards while working for the

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[166] [1952] 1 All ER 1326 (Ch). Harman J's decision was upheld on appeal: *Pride of Derby* (CA), above n 121, at 153-154.
[167] See *Duke of Buccleuch v Cowan* (1866) 5 Macpherson 214 (Scot), which stated that "material contribution" was sufficient; see also Sandy Steel and David Ibbetson "More grief on uncertain causation in tort" (2011) 70(2) CLJ 451 at 453.
[168] *Pride of Derby* (Ch), above n 166, per Harman J, at 1332. See also *Blair and Sumner v Deakin*, above n 93; Hsu, above n 78, at 749-750, discussing examples where injunctions have been granted against multiple contributors to a common harm.
[169] [1908] SC 340
[170] At 349-350.
[171] *Morton v Douglas Homes Ltd* (1984) 2 NZLR 548 at 582 (HC). See also, *Deloitte Haskins & Sells v National Mutual Life Nominees* (1991) 3 NZBLC 102 (CA), per McGechan J, approving Harman J's decision in *Pride of Derby*. This decision was overturned on appeal but McGechan J's discussion of the state of the law of causation in New Zealand was not doubted (*Deloitte Haskins & Sells v National Mutual Life Nominees Ltd* [1993] AC 774 (PC)).
[172] *Holtby v Brigham & Cowan (Hull) Ltd* [2000] ICR 1086 at [23] (CA); Martin Hogg "Re-establishing orthodoxy in the realm of causation" (2007) 11(1) Edin LR 8 at 17-18; Hart and Honoré, above n 123, at 208. See also *Simpson v Attorney-General* [1959] NZLR 546 (SC), although this concerned natural contributions to the harm rather than tortious contributions to the harm.
[173] 1956 SLT 205.
[174] At 215.

defendants had aggravated his condition by between 5 and 10 per cent. [175] Lord Strachan decided that the defendants' failure to provide a respirator and failure to guard against the exposure to dust from various sources was more than a de minimis contribution[176] and held the defendants liable for 7.5% of the loss suffered by James Begg.[177]

(c) Damages – Contribution to the Risk

In situation (3), and as outlined in relation to *Sienkiewicz*,[178] courts will still impose liability despite the impossibility of proving causation.[179] In *Fairchild v Glenhaven Funeral Services Ltd*, the House of Lords was confronted with claimants who had been exposed to asbestos and as a result had contracted mesothelioma.[180] They sued their previous employers. None of those claimants could prove which defendant had caused their mesothelioma.[181] The current state of medical knowledge rendered proof of this impossible – it was not clear how mesothelioma developed; all that was known was that increased exposure to asbestos increased the risk that a person would contract mesothelioma.[182] The House of Lords held that each defendant was jointly and severally liable on the basis that they had materially contributed to the risk of the claimant contracting the disease.[183] The House of Lords later retreated from the imposition of joint and several liability in *Barker v Corus UK Ltd*,[184] where they held that each defendant was only liable according to their proportion contribution to the risk of harm.[185]

4.4 Applying the Legal Tools to Climate Change

In the case of "signature" impacts that would not have occurred without anthropogenic climate change, it might be possible to prove that an indivisible harm had been caused by human-induced climate change.[186] However, this would be difficult due to the

[175] At 215.
[176] At 215.
[177] At 216. Note that this is not a perfect example of multiple contributions because the other contributors to James Begg's condition were not before the court, meaning they could not be treated as tortfeasors.
[178] Chapter three, at 3.2(b).
[179] *Sienkiewicz*, above n 132, at [200].
[180] Above n 142.
[181] At [2].
[182] At [7].
[183] At [34], per Lord Bingham; at [42] per Lord Nicholls; at [67] per Lord Hoffman; at [108] per Lord Hutton; at [168] per Lord Rodger.
[184] [2006] UKHL 20.
[185] At [43], per Lord Hoffman; at [62], per Lord Scott, at [113], per Lord Walker, at [127] per Baroness Hale, Lord Rodger dissenting. The effect of this decision was statutorily reversed by s 3 of the Compensation Act 2006 which imposed joint and several liability for the whole of the damage caused to a victim on any defendant who is liable in tort in relation to mesothelioma contracted by that person.
[186] Kysar, above n 76, at 32.

aforementioned difficulties proving that a particular event was caused by extra greenhouse gases in the atmosphere.[187] As for divisible harm, many climate change events are closely correlated with the number of carbon molecules in the atmosphere – for example estimated sea level rise with increased greenhouse gas levels in the atmosphere.[188] Again, the evidential difficulties would be huge.[189]

As noted above,[190] the best option would be to hold defendants liable for their contribution to the risk of an event happening. Once a person had suffered harm, the claim would be that Genesis Energy (or another relevant defendant) had, by contributing less than 0.009% to the global stock of greenhouse gases, contributed to the risk of the relevant harm. For this route to succeed, the *Fairchild*/*Barker* reasoning would need to be applied to climate change. *Fairchild*, *Barker* and later *Sienkiewicz* were firmly premised on the impossibility of proving causation.[191] Climate change plaintiffs will often face the same difficulty because it will be impossible to prove how complex climatic factors play out in relation to a particular event.

One limitation of the *Fairchild* exception is that it only applies where the uncertainty arises because of a common causative agent which operates in the same way.[192] Climate change is caused by different agents – methane, carbon dioxide and nitrous oxide, among other gases. However, in *Fairchild*, Lord Rodger indicated that two particles of dust from different substances would still come within the *Fairchild* exception as long as they caused a disease "in substantially the same way".[193] Thus, because the gases all act by the same causal mechanism – increased absorption of infrared radiation – greenhouse gases probably come within the logic of *Fairchild*.[194]

Another difficulty is that, in *Accident Compensation Corporation v Ambros*,[195] the New Zealand Court of Appeal stated that "the *McGhee/Fairchild* exceptions have not been without their critics".[196] They also noted the view that the exception should be limited to industrial diseases.[197] The Court decided that whether the principle should apply in

[187] Chapter three, 3.2(b), in relation to *Sienkiewicz*.
[188] IPCC "Physical Science Summary", above n 5, at 13; Kysar, above n 76 at 32.
[189] Contrast Burton, Tromans QC and Edwards, above n 78, at 22, where the authors assume for the sake of analysis that scientists could demonstrate that absent human emissions of greenhouse gases their hypothetical damage would not have occurred.
[190] Chapter three, at 3.2(b).
[191] *Sienkiewicz*, above n 132 at [213]; *Fairchild*, above n 142 at [9].
[192] *Barker*, above n 184, at [24].
[193] At [170]. Lord Hoffman approved of this statement in *Barker*, above n 184, at [23].
[194] This insistence stems from the need to reconcile *Fairchild* with *Wilsher v Essex Area Health Authority* [1988] AC 1074 (HL), where the causative agents were very different. See Lord Hoffman's discussion in *Barker*, above n 184 at [18].
[195] [2007] NZCA 304
[196] At [35].
[197] At [36].

NZ in the context of accident compensation should wait for a case where that question arose.[198]

The caution displayed by the Court of Appeal does not mean that *Fairchild*/*Barker* cannot be applied in a New Zealand context. First, *McGhee v National Coal Board*,[199] the case upon which *Fairchild* was based, has been approved of in the New Zealand High Court.[200] Second, Glazebrook J in *Ambros* is commenting on whether or not the reasoning should be extended to medical malpractice.[201] In doing so, her Honour relies on an author who places industrial pollution and industrial disease in the category of cases to which the *McGhee/Fairchild* exception ought to apply, in contrast to medical malpractice, which the exception should not apply to.[202] For present purposes then, *Ambros* is not such a formidable authority. Lastly, *Fairchild* demonstrates the willingness of the House of Lords "to turn causation on its head in order to achieve a result consistent with justice".[203] In *Morton v Douglas Homes Ltd*, Hardie Boys J refused to allow defendants to pass the buck where multiple acts of wrongdoing had occurred, saying that this would be "an outrage to common sense as well as to justice".[204] The same sense of outrage lies at the heart of *Fairchild*[205] and *Barker*.[206]

4.5 The Law Does Not Concern Itself with Trifles

Assuming that the *Fairchild* approach to causation was adopted in a New Zealand court, or assuming that a plaintiff proved actual causation of divisible or indivisible harm, a significant problem would remain. De minimis contributions are not sufficient to found a cause of action.[207] It is not clear where this de minimis threshold lies but it is certainly well above 0.009%. In *Sienkiewicz* the House of Lords rejected the argument that an 18% increase in the risk to which Mrs Costello was exposed was de minimis.[208] Lord Phillips doubted whether it was even possible to define the level at which a contribution

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[198] At [35].
[199] *McGhee v National Coal Board* [1972] 3 All ER 1008 (HL).
[200] *Morton v Douglas Homes Ltd*, above n 171 at 582. *McGhee* and *Fairchild* were mentioned without disapproval in *Zhang v Accident Compensation Corporation* HC Auckland CIV 2005-404-007101, 27 October 2006 at [29]-[31]
[201] *Ambros*, above nAmbros, at [36].
[202] At [36]. The reason given is that in cases of industrial pollution the creator of the risk is also the beneficiary of the risk.
[203] Edwards, above nEdwards, at 26.
[204] *Morton v Douglas Homes Ltd*, above n 171, at 582.
[205] Above n 142, at [33].
[206] Above n 184, at [57].
[207] *Fairchild*, above n 142, at [42] per Lord Nicholls, "so long as it is not insignificant"; The full phrase is "de minimis non curat lex": the law does not concern itself with trifles. See Hart and Honoré, above 123, at 208.
[208] *Sienkiewicz v Greif (UK) Ltd*, above n 132, at [107]

would become de minimis. Instead, it is a question "for the judge on the facts of the particular case".[209]

Cases based upon traditional principles of causation rather than the contribution to the risk approach might offer some useful guidance. In *Balfour*, it was sufficient that the defendant had contributed to 7.5% of the damage which resulted.[210] This is a reasonably small contribution, but Lord Strachan was not purporting to do away with the distinction between de minimis contributions to harm and material contributions to harm.[211] In relation to the escape of dangerous dusts during negligent sand blasting of large objects covered by a tarpaulin, Lord Strachan held that it was so rare for pursuers to be exposed to the sand blasting that "such dust cannot reasonably be held to have materially contributed to the disease of any pursuers".[212]

In terms of indivisible harm, Lord Rodger in *Barker* suggested in obiter that a 5% contribution to indivisible harm would be sufficient to attract joint and several liability.[213] Hart and Honoré cite *Baltimore & OR Co v Sulphur Spring Independent School District* as an example of a contribution which was de minimis.[214] There, the plaintiff's school house was swept away when rain caused the water level to rise and overflow an embankment. The defendants had obstructed three culverts. The instruction that the jury should find for the plaintiff if the defendant's negligence 'in any degree' caused the loss was held a misdirection because 120 culverts would have been needed to carry off the volume of water.[215] Had the defendants taken all due care and not obstructed the culverts, this would have only reduced the severity of the flood by a small amount (2.5%).[216]

These three examples span cases of indivisible harm (*Baltimore*), contribution to the risk (*Sienkiewicz*) and divisible harm (*Balfour*). The de minimis maxim clearly applies across all three, but it may apply differently. One could imagine a court setting a higher standard for de minimis in cases of indivisible harm where defendants who had made material contribution to the harm would be jointly and severally liable. Taking them as general indicators, material contributions may be as low as 5%, but a contribution of less than 2.5% is probably de minimis. Thus, whether plaintiffs relied upon the contribution to the risk rule from *Fairchild*, or traditional principles of indivisible or

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[209] *Sienkiewicz v Greif (UK) Ltd*, above n 132, at [108]
[210] Above, n 173.
[211] At 210-211. That these two phrases are flipsides of the same coin is evident in *Bonnington Castings Ltd v Wardlaw* [1956] AC 613 at 621 (HL); *Sienkiewicz v Greif (UK) Ltd*, above n 132, per Lord Phillips at [107]-[108] and *McGhee v National Coal Board*, above n 199, at 8.
[212] At 210.
[213] Above n 184, at [85] and [90].
[214] (1880) 96 Pa 65; above n 123, at 208.
[215] Hart and Honoré, above n 123t, at 208.
[216] Assuming that all the culverts had the same capacity to carry off the water.

divisible harm, greenhouse gas emissions by Genesis Energy or any other New Zealand defendant to global greenhouse gas levels would be too low.

4.6 Aggregating Tortious Contributions

If all human greenhouse gas emissions came from one source, then it would be possible to prove causation and the damage would be anything but de minimis.[217] Hogg has suggested that where the damage in aggregate is more than de minimis, this should not prevent a plaintiff from succeeding even though each defendant's contribution to the harm is itself de minimis.[218] In the United States case of *Warren v Parkhurst*,[219] a plaintiff was granted an injunction against twenty six mill owners who discharged sewage and other foul matters in to a creek above the plaintiff's land. Even though each amount discharged was only nominal and did not constitute a nuisance on its own, the court held each of the defendants liable.[220] As Wright notes, it would be "absurd, as the court recognised, to conclude that none of the discharges contributed to the plaintiff's injury".[221]

Two difficulties arise. First, it is unclear whether this logic can apply to an analysis where causation is based upon a defendant's contribution to the risk of harm. *Barker* was a case with multiple defendants and there was no suggestion that the harm should be aggregated and then divided. The Law Lords appear to have assumed that each defendant's contribution must be material in and of itself.[222]

Even if there was proof of actual causation, or this reasoning could apply to causation based upon a defendant's contribution to the risk, a second difficulty arises. In *Warren*, all those who contributed to the harm were before the court. Pawa cites three other United States cases where joint and several liability has been imposed despite one defendant's contribution not being significant.[223] In all of these cases the other contributors were either before the court, or were treated as tortious by the court.

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[217] See chapter three, at 3.2(b).
[218] Hogg, above nHogg, at 28.
[219] 92 NYS 725 (NY Sup Ct 1904), affirmed, 93 NYS 1009 (AD 1905), affirmed, 78 NE 579 (NY 1906). *Warren* is cited in David Fischer "Insufficient Causes" (2005-2006) 94(2) KY LJ 277 at 278, 283-285, and in Richard Wright "Once More into the Bramble Bush: Duty, Causal Contribution, and the Extent of Legal Responsibility" (2001) 54 Van L Rev 1071 at 1100 ["Bramble Bush"].
[220] Hart and Honoré, above n 123 refer to *Warren* at 211 but appear to misinterpret the case as one where each defendant's contribution was "material" or "significant". The court expressly stated that the damage that each defendant caused was "merely nominal": see Wright "Bramble Bush", above n 219, at 1100.
[221] At 1100.
[222] At [17], per Lord Hoffman; at [62], per Lord Scott, using the word "significant". See also *Fairchild* itself, above n 142.
[223] Matthew Pawa "Global Warming: The Ultimate Public Nuisance" (2009) 3 ELR 10230 at 10241. The three United States cases are: *People v Gold Run Ditch & Mine Co* 4 P 1152 (Cal 1884), *Woodyear v Schaefer* 57 Md 1 (Md 1881), and *The Lockwood Co v Lawrence* 77 Me 297 (Me 1885).

This indicates that *Warren* only applies where there are multiple tortious causes of harm. This distinction matters because most of the sources of climate change would be characterised as non-tortious. 99.9% of global emissions which occur each year emanate from other jurisdictions. This is similar to *Sienkiewicz*, where Mrs Costello had been exposed to a low level of asbestos in the general atmosphere.[224] This contributed substantially to the risk that she would contract mesothelioma.[225] However, with no evidence of who this had come from or whether the release of asbestos had been tortious, it was characterised as non-tortious.[226]

The rationale for this limitation is explored below.[227] The effect is that the hypothetical example where all the tortious contributions emanate from one source is replaced by a situation where non-tortious, background circumstances would have caused the harm anyway. This pits plaintiffs against *Barnett* and the but-for test again.[228] As in Chapter 3, they might be able to rely on *Sienkiewicz* but this time, each defendant's contribution is tiny, and far below the 18% material contribution by Greif in *Sienkiewicz*. Even if a court aggregated the contributions to climate change by potentially tortious sources within New Zealand, at most this would mean that less than 0.1% of the sources of risk or harm would be tortious.[229] This would prevent a plaintiff from establishing a cause of action, and would probably be fatal to claims for both damages and an injunction: both these remedies are only given after a plaintiff has established a valid cause of action.[230]

4.7 Conclusion

Once the hypothetical in chapter three is abandoned, three kinds of diversity become apparent – type of activity, which means that emissions which do not emanate from private land would not be covered; time, which means that historic emissions might not be covered if the company responsible no longer exists; and jurisdiction, which means that emissions from offshore – the vast majority – would be characterised as non-tortious. The first two kinds of diversity alone are not fatal to the success of claims by those affected by climate change, although they do chip away at the percentage of greenhouse gases that could be characterised as tortious.

The third source of diversity – diversity across jurisdictions – is likely to be fatal. It means that each wrongdoer's contribution to climate change is not material, and hence not a contribution that they can be held liable for. A limited exception exists exist when,

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[224] *Sienkiewicz v Greif (UK) Ltd* [2009] EWCA Civ 1159 at [9] (CA).
[225] At [9].
[226] At [3], [5]. See also *Balfour*, above n 173, at 216.
[227] Chapter five, at 5.4(c)
[228] Above n 124.
[229] Even this figure is optimistic because, unless an action in negligence could succeed, emissions from the combustion of fuel would be excluded as they did not originate over land.
[230] *Redland Bricks Ltd v Morris* [1970] AC 652 at 664 (HL).

in aggregate, the contributions by wrongdoers to an event are sufficient to produce the event, even if each contribution is not material on its own. This rule does not aid those affected by climate change unless foreign sources of greenhouse gases are treated as tortious.

Chapter Five: The Function and Process of Tort Law

Having demonstrated that the small footprint of New Zealand emitters is a major obstacle to tortious liability, this chapter looks beyond existing precedent to the underlying function and process of tort law. Given the barriers identified in the existing case law, it seeks to analyse whether tort law can adapt its form to compensate those affected by climate change and deter conduct which increases emissions. A common theme is the dual difficulties identified in chapter four:

(1) Any one emitter in New Zealand is only responsible for a small percentage of the human-added stock of greenhouse gases in the atmosphere; and
(2) The other emitters around the world are likely to be characterised as a non-tortious or background cause of harm.

This chapter begins by outlining how requiring action and harm to be causally connected serves tort law's underlying principle of corrective justice and recognises the process constraints inherent in an adjudication-based legal system. I consider three routes by which the dual difficulties confronting those affected by climate change could be overcome: imposing liability based on a defendant's proportionate contribution to the risk of an event happening; joint and several liability; and an extension of the United States decision of *Sindell v Abbott Laboratories*.[231]

5.1 The Function of Private Law

Causation is a perennial feature of tort law because it upholds the principle of corrective justice. Looking at private law generally, private law's function cannot be to compensate for loss, because not all loss is recoverable. It cannot be to deter reprehensible conduct because conduct is only actionable if it causes loss to another.[232] Instead, Weinrib argues that corrective justice is the fundamental principle for all private law.[233] Implicit in this notion is the Kantian "principle of right", whereby "the free choice of the one must be capable of coexisting with the freedom of the other in accordance with a universal law".[234] This principle of right does not focus on people's internal needs and thoughts, but rather on a person's actions in the external world. This means that if a person acts inconsistently with this Kantian principle of right, they cause loss to another, with the result that "the actor now has too much and the victim too little".[235] The courts are "the institutionalised embodiment"

[231] (1980) 26 Cal 3d 588
[232] Peter Cane "Corrective Justice and Correlativity in Private Law" (1996) 16 Oxford J Legal Stud 471 at 471 ["Corrective Justice and Correlativity"]
[233] Ernest Weinrib "Corrective Justice" (1991-1992) 77 Iowa L Rev 403 ["Corrective Justice"].
[234] Ernest Weinrib *The Idea of Private Law* (Harvard University Press, Cambridge, Mass, 1995) at 104 [*Idea of Private Law*].
[235] Weinrib "Corrective Justice", above n 233, at 409.

of this principle.[236] The role of private law is to uphold corrective justice by returning the parties to their original position, prior to the wrongful act.[237]

There are certain deficiencies in Weinrib's account,[238] but it captures the basic elements of corrective justice. For example, although Wright disagrees with Weinrib's formalism,[239] his conception of corrective justice is similar. Wright uses Kantian ideals to suggest that people's social stock of instrumental goods should be protected from interactions with others which are inconsistent with their right to equal external freedom.[240]

5.2 The Process of Private Law

Before analysing how corrective justice relates to causation in tort law, one other perspective must also be considered. Rather than looking at the objectives of tort law, Henderson asked whether the processes by which liability is imposed provide a better explanation for substantive tort law doctrines.[241] Henderson argues that for tort law to guide primary behaviour the rules it imposes must be comprehensible; the facts to which those rules refer must be objectively verifiable; and they must not call for behaviour patterns which are impossible to achieve.[242]

The same requirements apply in the court room.[243] However, adjudicative processes also require some basis upon which a polycentric decision can be "depolycentrised".[244] This is because, when people planning their lives, they must weigh and balance numerous interrelated considerations. They must trade-off factors, exercise their skill and judgment, and re-evaluate the relationship between factors as they go along. Often, such decisions must be "mulled over".[245]

By contrast, adjudicative processes require individuals to be able to rely on rules. Meaningful participation requires policy trade-offs to be dealt with at the rule-making stage so that, when adjudication of issues arises, participants can present their evidence, make their arguments, and focus on how pre-made rules apply to the case at hand. Polycentric issues require, by dint

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[236] Weinrib *Idea of Private Law*, above n 234, at 106.
[237] Weinrib "Corrective Justice", above n 233, at 409.
[238] Cane "Corrective Justice and Correlativity", above n 232 at 480-481.
[239] Richard Wright "Substantive Corrective Justice" (1991-1992) 77 Iowa L Rev 625.
[240] Wright calls this "interactive justice": Richard Wright "The Grounds and Extent of Legal Responsibility" (2003) 40 San Diego L Rev 1425 at 1429-1430 ["Grounds and Extent"]. See also Richard Wright "Allocating Liability Among Multiple Responsible Causes: A Principled Defense of Joint and Several Liability for Actual Harm and Risk Exposure" (1987-1988) 21 UC Davis L Rev 1141 at 1180-1181 ["Multiple Responsible Causes"]; Richard Wright "Principled Adjudication: Tort Law and Beyond" (1998-2000) 7 Canterbury L Rev 265 at 277 ["Principled Adjudication"]; and David Rosenberg "Individual Justice and Collectivising Risk-Based Claims in Mass-Exposure Cases" (1996) 71 NYU L Rev 210 at 232.
[241] James Henderson "Process Constraints in Tort" (1981-1982) 67 Cornell L Rev 901 at 901.
[242] At 904-905.
[243] At 905-906.
[244] At 908.
[245] At 907.

of their very nature, continuous reconsideration in light of subsequent developments. Thus, effective participation in adjudicative processes is only possible if polycentric decisions are converted in to rules where the answer given to one question does not change the answer given to another.[246]

5.3 The Role of Causation

The requirement to prove causation in tort law respects these process constraints because it presents "essentially 'what happened?' questions that lend themselves to resolution through adjudication".[247] Causation is also deeply rooted in common sense, making it intuitively easy to understand.[248] Kennedy sees the but-for test as problematic because it requires an almost impossible hypothesis about what would have happened but for the defendant's action.[249] These difficulties are usually avoided without a high degree of technical know-how because when an abnormal event occurs, a condition usually exists which forms part of a broad class of conditions that are commonly associated with the causal chain in question.[250] For example, a person dies when somebody shoots them. One person pointing a gun at another and pulling the trigger is commonly associated with a bullet leaving the gun at a high speed. Along with other relevant factors (the bullet lodged in the person's head, which is commonly associated with death; the person was otherwise healthy; no other abnormal events occurred), it becomes tolerably clear that but for this action, the person would not have died.

The causation requirement also constrains the number of defendants and draws an acceptable line between distributive and corrective justice. In the vast majority of cases it limits the extent of a defendant's liability to harm they have in fact caused.[251] At times, as a matter of distributive justice, it may appear desirable to re-allocate funds to a person, but this is a polycentric decision at odds with the adjudicative process.[252] Corrective justice requires the functions of compensation and deterrence to only be activated when there is a sufficient relationship between two individuals: causation defines that relationship.[253]

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[246] At 905-911.
[247] At 919.
[248] As Hart and Honoré convincingly demonstrate, above n 123.
[249] At 921.
[250] Hart and Honoré, above n 123, at 43-44.
[251] For situations where the but for test is satisfied but the conditions are causally irrelevant, see Hart and Honoré, above n 123, at 108-116.
[252] Of course, when decisions like *Donoghue v Stevenson* [1932] AC 562 extend the extent of a duty of care to cover new classes of people, this has distributive implications, but the requirement of causation is still insisted upon, even if the effect of new cases is to expand the range of interests which corrective justice protects: Peter Cane "Distributive Justice and Tort Law" (2001) NZ L Rev 401 at 405 ["Distributive Justice"].
[253] Jules Coleman "The Practice of Corrective Justice" in D G Owen *The Philosophical Foundations of Tort Law (*Oxford Scholarship Online, March 2012) at 67; *Barker*, above n 184, where Baroness Hale sated: "The law of tort is not (generally) there to punish people for their behaviour. It is there to make them pay for the damage that they have done."

5.4 Options for Imposing Liability on Large Emitters of Greenhouse Gases in New Zealand

Given these underpinnings, imposition of liability on greenhouse gas emitters is unlikely to be successful unless it is in accordance with tort law's procedural constraints and corrective justice.[254] The following discussion unpicks the case law analysed in chapter four in light of the above discussion of tort laws underpinnings. It looks at three avenues of legal thinking which might offer a way around the current barriers to success in suits brought by those affected by climate change in New Zealand.

(a) Proportionate Liability

The first avenue would be to use the *Barker* approach to hold New Zealand emitters like Genesis Energy liable for their contributions to the risk of climate-related harm. Evidence would need to demonstrate that the relevant harm had been caused by climate change, or at least that greenhouse gases increased the risk by a material amount.[255] Notwithstanding the insistence in *Barker* that contributions be material, a court would need to accept that increasing greenhouse gas levels by 0.009% or less was a sufficient contribution to the risk of the relevant harm manifesting. If damages were sought, then when the decision was delivered, a plaintiff who suffered $5 million dollars in damages would be able to claim back a figure in the realm of $450 from Genesis Energy.[256]

This result seems to be consistent with corrective justice: Genesis Energy has acted wrongfully and should have to compensate for the extent of the wrong it has caused. If an injunction is sought, the position is the same: Genesis Energy should be restrained from interfering with a person's rights. In *Fairchild*[257] and *McGhee*,[258] defendants who had made a material contribution to the risk would face joint and several liability. But if a defendant is being held liable for their proportionate contribution to the risk of injury,[259] then there is no distinction between a 10% contribution to the risk and a 0.009% contribution to the risk: "Chances are infinitely divisible and different people can be separately responsible to a greater or lesser degree for the chances of an event happening."[260] Note too that exactly the same analysis could be applied to a divisible harm where actual causation had been proved

[254] Grossman "Warming Up", above n 76, at 5.
[255] *Barker*, above n 184, at [59].
[256] This calculation is incredibly rough, but assumes Genesis Energy's net contribution to global emissions to be 0.009% of the total contribution. A further discount might be applied to account for the background chance that the harm could have been caused by natural variability.
[257] Above n 142, per Lord Bingham at [34].
[258] Above n 199, per Lord Simon at 8, Lord Wilberforce at 6, Lord Reid at 5, Lord Salmon at 12, Lord Kilbrandon, at 9.
[259] *Barker*, above n 184, at [35].
[260] At [35], per Lord Hoffman.

and the extent of the effects correlates with the extent of a person's contribution to greenhouse gases in the atmosphere.

The objection to all this is that it is difficult to see why the law ought to intervene when such a minor transgression of rights has occurred. From a plaintiff's perspective, the costs of litigation and the meagre compensation which would await them at the end of a successful trial mean that such a claim would be largely pointless. More fundamentally, imposing liability may be inconsistent with strict liability in nuisance: the reason why an activity is prima facie unreasonable is because it has caused physical damage. If the physical damage caused is incredibly minor – a tiny bit less snow, or slightly higher tides undermining a few feet of soil – then the defendant has not created a nuisance at all. Alternately, if the harm claimed for is the defendant's contribution to the risk of harm, then it is questionable whether this is physical harm. The result is that the activity would not be deemed unreasonable merely because of the nature of the harm caused. This would not be fatal, but it would require a balancing activity which would tend to make the defendant's activity a reasonable one given the pervasiveness of carbon-emitting activities in a community.[261]

Given those difficulties, an alternative would be to return to looking at the harm as a whole – in aggregate it certainly is more than de minimis – and seek to impose joint and several liability on all of those who contribute to the harm. There are two routes.

(b) Joint and Several Liability – Non-Tortious, Background Factors

The first route accepts that the other sources of human-added greenhouse gases will be characterised as background, non-tortious contributions to climate change. In this case, liability would only be appropriate where a person's contribution to an event made the difference between that event happening and not happening. The Necessary Element in a Set of Sufficient Conditions test states that an event is causative if it is a necessary condition in a set of conditions jointly sufficient to produce an outcome.[262] This means that small contributions will only be causative if, but for that small contribution, the event would not have manifested.[263] In the climate change context, this issue could arise either because there was sufficient proof that human-added greenhouse gases had caused an indivisible harm, or if a court accepted that joint and several liability should be imposed for a defendant's contribution to the risk of an indivisible harm.

The question then would be whether a New Zealand defendant ought to be liable. Two issues arise. First, joint and several liability for a contribution to the risk of harm was imposed in

[261] *Hawkes Bay Protein*, above n 104, at [18].
[262] This test was initially explained by Hart and Honoré, above n 123, and developed by Wright: Richard Wright "The NESS Account of Natural Causation: A Response to Criticisms" in R Goldberg (Ed) *Perspectives on Causation* (Hart Publishing, Oxford, 2011) 285 ["NESS Account"].
[263] Hart and Honoré, above n 123, at 211.

Fairchild but later rejected by *Barker*.[264] Is the contribution to the risk approach consistent with joint and several liability at all?

I would say that it can be. Mesothelioma is different to climate change in a crucial respect. Mesothelioma may be caused by a single particle of asbestos, or it may be caused by an accumulation of particles.[265] If mesothelioma is caused by an accumulation of particles, then a defendant who exposes a plaintiff to asbestos has contributed to the harm that results.[266] Mesothelioma would only result once a threshold level of asbestos accumulated in that person's body: a defendant's contribution of asbestos could well be a necessary condition for that threshold to be reached. However, if mesothelioma is caused by a single particle, then joint and several liability is inappropriate because only one defendant has in fact caused the harm.[267] This uncertainty is one explanation for the House of Lords' reluctance to defend the imposition of joint and several liability in *Fairchild*.[268]

By contrast, every greenhouse gas particle in the atmosphere influences global climate patterns. The effects of climate change do occur because of an accumulation of greenhouse gases in the atmosphere. Joint and several liability would be appropriate where someone's emissions "made the difference" and caused the stock of gases to surpass the threshold beyond which the relevant harm manifests.[269] The contribution to the risk approach is necessary to overcome the evidential uncertainty relating to how specific events occur but, in contrast to mesothelioma, there is no chance that only one greenhouse gas particle could cause the relevant effects of climate change.

This raises the second issue. It *is* possible that a defendant in New Zealand could add a metaphorical teaspoon of greenhouse gases to the flood of gases already in the atmosphere and cause a weather event that would never have happened otherwise. If this happened, they ought to be liable – although it would be open to a legal system to limit someone's liability for policy reasons.[270] However, it is incredibly unlikely that a limited amount of greenhouse gas emissions from New Zealand would be causative when there are so many other sources of human-added greenhouse gases driving the global climate. The *Fairchild* requirement that the contribution be material and the *Baltimore* limit on de minimis contributions are acting as presumptions that a small contribution is not causative: the smaller a defendant's contribution, the greater the chance that the event would have happened anyway, and the greater the injustice in holding a defendant liable for all the harm that results. The conclusion

[264] For example, at [126], rejecting the suggestion that a defendant has contributed to an indivisible harm, and characterising the contribution as to the risk of harm.
[265] *Fairchild*, above n 142, at [7].
[266] Stapleton, above n 140, at 224, 226.
[267] Although the Supreme Court of California was content to do so where two hunters fired a shot and it was impossible to prove who had injured the plaintiff: *Summers v Tice* (1948) 199 P 2d 1.
[268] Stapleton, above n 140, at 224, 226. Stapleton is commenting on *Sienkiewicz* (SC) but the logic applies with just as much force to *Barker*. See also, Steel and Ibbetson, above n 167, at 459-460.
[269] Hart and Honoré, above n 123, at 211.
[270] Hart and Honoré, above n 123, at 84-85.

is equally hopeless for climate change plaintiffs: contributions from New Zealand are not causative. But it is important to realise that this is not because *Fairchild* is fundamentally unsound.

(c) Joint and Several Liability – Multiple Tortious Actors

The other route by which joint and several liability might be imposed relies upon foreign sources of greenhouse gases being characterised as tortious, contrary to the conclusion reached above.[271] An absurd consequence results from the reasoning outlined at 5.4(b). Imagine that four people add a drop of poison to a man's coffee. As a result the man dies. Three drops would have been sufficient to kill the man. Each person can say that, if they had not added any poison, the man would still have died.[272] In *Warren v Parkhurst*, the sewage contributed by each farmer was insignificant on its own to create the stench on the plaintiff's land.[273] Each farmer could point to the other 25 farmers and suggest that the harm would have happened anyway.

As the case law above demonstrated,[274] courts do not accept this result. Each defendant is jointly and severally liable for the harm, even though their contribution was not necessary to produce the outcome. It seems absurd that the more tortfeasors there are, the less liable each will be, even though their behaviour is still wrongful, and some of them must have caused the event.[275] Note that this outcome cannot be justified on strictly causal grounds: each person's behaviour was not necessary for the outcome to occur. The imposition of liability is a practical response to avoid the absurd situation where no-one is held liable.[276]

The case law above[277] also demonstrated that the position is different if the background factors sufficient to cause the harm are natural. Corrective justice is not served by giving plaintiff's a "windfall" and imposing full liability on a person when, but for that person's action, the harm would have manifested nevertheless.[278] Wright insists that this is technically causative,[279] but agrees with Fischer that legal systems may choose not to impose liability in this instance.[280] Courts may relax the requirement and hold that a material contribution to the risk attracts liability even where other background factors would have been sufficient to

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[271] Chapter four, at 4.6.
[272] Wright "Joint and Several", above n 240, at 56-57; *Pride of Derby* (CA), above n 121, was a case to this effect.
[273] Above n 219.
[274] Chapter four, at 4.5.
[275] Wright "Joint and Several Liability", above n 240 at 56-57; *Pride of Derby* (Ch), above n 163, per Harman J, rejecting an argument by two of the defendants that because the other defendant's activity was sufficient alone to cause the harm, the others should not be liable.
[276] Fischer, above n 219, at 288-289. Contrast, Wright "NESS Account", above n 262, at 304-305.
[277] Chapter four, at 4.5.
[278] Fischer, above n 219, at 293.
[279] Wright "NESS Account", above n 262, 304-305.
[280] Fischer, above n 219, at 292-293; Richard Wright "Causation in Tort Law" (1985) 73 Cal L Rev 1735 at 1799 ["Causation in Tort Law"].

produce the event.[281] However, where a defendant's tortious contribution is small and background factors are sufficient to produce the event, joint and several liability seems far too harsh. The position is exactly as outlined above at 5.4(b).

Climate change sits in an awkward space between these two ends of the spectrum. Actors in other jurisdictions are hardly natural contributors. If, in every jurisdiction around the world, other actors beyond the border are treated as non-tortious, then climate change remains an "unexplained, non-causal miracle".[282] Indeed, if a court had found that all these actors had acted tortiously, a court would impose joint and several liability, despite the apparent injustice in doing so: "Even if, as between D1 and D2, D1 may be only five percent to blame, as between P and D1, D1 is 100 percent to blame."[283]

There is probably no conceptually perfect answer, but there may be a practical one. The simple answer is that the word "tortfeasor" implies that the person in question has actually committed a tort.[284] Corrective justice is a moral term but it manifests legally, and so it is not activated if a New Zealand court has not held that the other contributions to climate change are tortious causes.[285] In *Balfour*, the claimant's previous employers were not before the court. The claimant, who was suffering from pneumoconiosis due to exposure to dust, had argued that his previous employers and the defendant were all joint tortfeasors. Lord Strachan stated, "I cannot possibly hold in this case that any of the previous employers were negligent." Presumably this was because they were not before the court.

The underlying rationale could be that joint and several liability presumes that – absent exceptional situations where only one deep-pocketed tortfeasor is in a position to pay – a defendant can proceed against the other responsible parties.[286] Being able to proceed against the other responsible parties seems especially important where, as here, any defendant would have made an almost infinitesimally small contribution to any harm. In climate change, where most of the other actors are located overseas, and where it is unclear whether other actors have even acted tortiously, a defendant would struggle to proceed against any of the other tortfeasors. It seems unfair to make that defendant bear the considerable risk that the other contributors will not turn up or will not be found to be tortious. This is not entirely satisfactory though because it does not explain why a person affected by climate change should bear that risk instead.[287]

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[281] *McGhee* was a case to this effect, above n 199. See also, Steel and Ibbetson, above n 167, at 455-456.
[282] Wright "NESS Account", above n 262, at 305.
[283] Law Commission "Apportionment of Civil Liability" NZLC R47 (report, Wellington, May 1998) at [6]. P stands for plaintiff; D for Defendant. This statement is not perfect because it presumes that a defendant has already been found to be a tortfeasor, but it captures the essence of the moral argument.
[284] *Chee v Stareast Investment Ltd* HC Auckland CIV 2009-404-005255, 1 April 2010, at [134]-[135]. See, for example, *Morton v Douglas Homes Ltd*, above n 171.
[285] Above n 173, at 216,
[286] Law Reform Act 1936, s 17(1)(c);
[287] Law Commission, above n 283, at [6].

Another practical problem is that, if the de minimis standard was relaxed, and people not before the court were characterised as tortfeasors, then every emission of greenhouse gases over land which satisfied the basic requirements of nuisance would be actionable, and every person in New Zealand would be jointly and severally liable for the full extent of the harm caused by climate change in New Zealand. It would be necessary to relax the de minimis standard somewhat but then create an exception for ordinary activities. Presumably, the process constraints that Henderson writes about are at play here, including the impossibility of complying with and objectively verifying breaches of laws which hold people jointly and severally liable for infinitesimal contributions to a wrong.

The arguments against imposing liability on emitters of greenhouse gases are weaker in relation to injunctions because a defendant who is subject to an injunction is not liable for a judgment far in excess of the contribution they have made to an event. However, from a corrective justice stand point, the justification for injunctions is that they prevent a right being breached.[288] Where the majority of the emitters are not before the court the right will still be breached. The potentially unfair result is that a defendant is restrained from carrying out an activity, and yet no corrective justice is achieved.

(d) Abandoning Corrective Justice

Those affected by climate change will struggle to rely on traditional notions of causation to impose liability on greenhouse gas emitters. But optimal deterrence is only achieved if a tortious defendant is threatened with the aggregate, average loss for its tortious conduct.[289] The last alternative, and the response to this problem, is to have New Zealand emitters compensate New Zealanders affected by climate change. This approach would rely on a legal presumption that any costs suffered by New Zealanders affected by climate change were caused by New Zealand emitters of greenhouse gases. The rationale is that New Zealanders affected by climate change are unlikely to be compensated by foreign emitters who are causing them harm. At the same time, New Zealand emitters are unlikely to be sued by the majority of people affected by their emissions. Assuming that the costs a country will suffer as a result of climate change correlate with its contribution to climate change,[290] then a measure of rough justice would be achieved.[291] This would also require a prohibition on New

[288] Weinrib *Idea of Private Law*, above n 234, at 144.
[289] Rosenberg, above n 240, at 239-240.
[290] This is an incredibly problematic assumption. For the geographic diversity of the effects of climate change, see IPCC "Physical Science Summary", above n 5, at 14-15. For the geographic diversity of contributions to climate change, see United Nations Statistics Division "Carbon dioxide emissions (CO2), thousand metric tons of CO2 (CDIAC)" (2 July 2012) Millenium Development Goals Indicators <http://mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749&crid=>.
[291] Grossman "Warming Up", above n 76, at 5, stating that tort law's twin functions of reducing the cost of accidents and serving the principles of corrective justice favour compensation for those affected by climate change.

Zealand plaintiffs pursuing international suits and protection from international suits for New Zealand emitters.

Sindell v Abbott Laboratories might support such an approach. *Sindell* was a class action against manufacturers of a drug, DES, for personal injury which allegedly resulted from pre-natal exposure to DES.[292] The plaintiff could not identify which defendant had supplied the drug to her.[293] The Supreme Court of California refused to impose joint and several liability because 200 manufacturers were not before the court and there was a possibility that one of those manufacturers had supplied the DES which caused the plaintiff's injury.[294] However, the companies before the court produced 90 percent of the DES marketed.[295] The court held each of the companies liable. The extent of each company's liability was limited to the proportion of the judgment represented by that company's market share.[296] Even though there was probably a discrepancy between the amount of DES a defendant had supplied and its market share, the court saw this as something which was practically inevitable in awarding damages and which "does not serious militate against the rule".[297] The decision was radical because, any given defendant would not be compensating those whom it had supplied DES to. In aggregate, the defendants would compensate the plaintiffs for the extent of the harm they had caused, but they would not be compensating the particular plaintiffs that they had caused harm to.[298]

The principled justification for *Sindell* is that corrective justice was achieved in aggregate. Overall, the net redistribution of wealth ensured that defendants only had to compensate for the extent of the harm which they caused. This is the prima facie similarity with a legal presumption: New Zealand emitters would be liable for roughly the extent of the harm they had caused and those affected by climate change in New Zealand could be compensated for their losses.

The critical distinction between the two is that in *Sindell*, the defendants as a group were not liable for more harm than they had caused to the plaintiffs as a group. The compensation New Zealand plaintiffs would receive from New Zealand defendants would substantially exceed the harm which those defendants had caused to those plaintiffs, even in aggregate. Of course, if a substantial percentage of global emitters were before a court, and most of the affected plaintiffs were before a court, then such an approach would be analogous to *Sindell*. Where only a tiny fraction of the world are before the court, corrective justice is not achieved in the aggregate because most of the world is not compensated and most of the world does not have to pay damages. Such an extension would carry a court far beyond anywhere that tort law has

[292] At 593. DES stands for
[293] At 595-596.
[294] At 602-603.
[295] At 612.
[296] At 611-612.
[297] At 613.
[298] Wright "Causation in Tort Law", above n 280, at 1819.

been, in to the land of naked deterrence and compensation unconnected by a causal relationship – that is distributive, not corrective justice.

5.5 Corrective Justice, Causation and Process Constraints

These principles of corrective justice are, of course, open to question. There are obvious distributive justice ramifications in the decision in *Barker* to recognise loss of a chance as an actionable wrong, or in any decision about the nature and extent of legal duties and legal rights.[299] However, once those decisions are made, corrective justice remains a necessary condition in applying those rules to individual cases.[300] The insistence by corrective justice on equality and correlativity involves recognition of people's existing stock of resources.[301] This allows the law to only step in when someone else's action disrupts this equality. It can allow the perennial existence of distributive injustice, but it keeps the law principled, manageable and depolycentrised.

The practical outcome of all this is that emitters in New Zealand are unlikely to be liable in nuisance. The first of the dual difficulties, a defendant's small contribution to climate change, can be overcome if liability is imposed for that defendant's contribution to the risk of harm, or divisible contribution to the harm. But this renders an action practically pointless and, by individualising the harm, shrinks the scale of the harm so as to undermine the basis for imposing strict liability in the first place.

Joint and several liability is sometimes justified, because small contributions can theoretically be causative. However, requiring contributions to be material gives effect to the reality that de minimis contributions generally are not causative. This policy is relaxed, to prevent injustice, where there are multiple tortious wrongdoers. Where those wrongdoers are causing greenhouse gases to emanate from other countries, they are unlikely to be characterised as tortious, meaning de minimis emissions by New Zealand emitters will not attract joint and several liability. Lastly, plaintiffs could use a legal fiction to demand full compensation and avoid both of these dual difficulties all together. However, the difficulties are only avoided by ignoring corrective justice entirely, and this takes any legal fiction too far outside the parameters of tort law.

[299] Cane "Distributive Justice", above n 252, at 404.
[300] Cane "Distributive Justice", above n 252, at 416.
[301] Wright "Principled Adjudication", above nWright, at 277.

Chapter Six: Alternatives

The conclusion from the last chapter was that proving causation is a fundamental difficulty facing suits by those affected by climate change. This chapter explores two alternative options which could be relevant. It is only a brief sketch, but aims to give some indication of other routes forward given the difficulties plaguing nuisance suits and liability for damage caused by climate change in tort law generally.

6.1 Scaling up the Action

If the reason for the aforementioned difficulties is that New Zealand emitters make an insignificant contribution to global greenhouse gas levels, the obvious solution is to find larger sources of emissions. Changing the cause of action will not help. Public nuisance is a wrong to the "community at large" and so would allow a greater number of plaintiffs to be considered.[302] Public nuisance actions can be taken by the Attorney-General[303] or a plaintiff who has suffered "particular" damage.[304] Presumably, the relevant damage would be harm caused by human-added greenhouse gas emissions in the atmosphere. If so, any plaintiff would still have to show how a defendant's greenhouse gas emissions had caused them harm. The same goes for claims in negligence and products liability.[305] If a plaintiff was seeking compensation for loss then they would always have establish some minimum causal relationship between a defendant's action in emitting greenhouse gases and harm suffered by a plaintiff. If the defendant or defendants were New Zealand-based, the difficulties outlined above would apply.

The best option would be for those affected by climate change to look offshore. In 2004, Friends of the Earth claimed that ExxonMobil had contributed 5% of man-made carbon dioxide emissions over the last 120 years.[306] In 2002, the United States electricity industry accounted for 10% of total manmade carbon dioxide emissions worldwide.[307] Exploring this issue further is beyond the scope of this paper. Note though that plaintiffs would need to choose whether to bring foreign defendants to a New Zealand court – service for tortious claims on defendants outside of New Zealand is allowed as of right when the damage occurs

[302] *Attorney-General v PYA Quarries*, above n 86, at 191.
[303] See, for example, *Attorney-General v Abraham and Williams Ltd*, above n 86. Despite the Attorney-General's independence, this seems an unlikely prospect.
[304] *Benjamin v Storr* (1874) LR 9 CP 400 at 407.
[305] See for example, Hart and Honoré, above n 123 at Chapter VI where the causation requirements are treated as universal across tort law. See also Grossman "Tort Litigation", above n 74, at 215, where he applies the same causation analysis to public nuisance, negligence and products liability.
[306] Friends of the Earth "Exxonmobil's contribution to global warming revealed" (press release, 29 January 2004) Archived press release <http://www.foe.co.uk/resource/press_releases/exxonmobils_contribution_t_28012004.html>.
[307] Grossman "Warming Up", above n 76, at 29. See also Kysar, above n 76, at 38.

within New Zealand[308] – or whether they would pursue a claim in the courts of a foreign jurisdiction.

6.2 Offence to Community Morality

For those concerned about how to prevent the effects of climate change from manifesting rather than how to be compensated for loss suffered, one option is to seek to restrain individuals from emitting substantial amounts of greenhouse gases. In *Thompson-Schwab v Costaki*,[309] the plaintiffs complained that their neighbours' brothel was a nuisance. The English Court of Appeal accepted that the plaintiffs had shown a sufficient prima facie case to justify the grant of an interlocutory injunction.[310] Lord Evershed MR emphasised that even though an activity does not impinge upon the senses – the nose or the ear, for example – the concept of a nuisance is broad and flexible.[311] In a later case, *Laws v Florinplace Ltd*,[312] the Chancery Division granted an interlocutory injunction against the owners of a sex shop with bright signs describing its goods. In the United States, injunctions have been granted against cemeteries, funeral homes and even a used car yard.[313]

Because these cases do not involve a tangible interference with another's rights, they are difficult to reconcile with strict notions of corrective justice.[314] However, they do reflect the role of nuisance as a flexible guardian of community values, The argument for those concerned about climate change would be that, given the urgent need to reduce emissions globally, the existence of carbon-intensive industries – an aluminium smelter, a coal-fired power station – in a neighbourhood is an affront to people's senses.

This argument would be difficult to make. First, *Thompson-Schwab v Costaki* and *Laws v Florinplace* were pre-trial applications, meaning that the plaintiffs only needed to make out a prima facie case that no physical interference with their rights was required.[315] Second, because physical damage would not be alleged, the court would balance the reasonableness of the different uses.[316] This inquiry would be highly context-specific, but particularly if the relevant activity was in an industrial area, then the nature of the locality might render carbon-intensive activities reasonable.[317] Lastly, climate change does not have the same moral stigma as the sex trade. In *Thompson-Schwab v Costaki*, where the plaintiffs had children, Romer LJ

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[308] High Court Rules, r 6.27. For some of the other relevant aspects of this route, see *Kuwait Asia Bank EC v National Mutual Life Nominees Ltd* [1990] 3 NZLR 513 at 525 (PC); and *McConnell Dowell Constructors Ltd v Lloyd Sindicate 396* [1988] 2 NZLR at 280 (CA).
[309] [1956] 1 WLR 335 (CA).
[310] At 339.
[311] At 338. See also, "Injunction Against 'Sight' Nuisance" (1935-1936) 2 U Pitt L Rev 191;
[312] [1981] 1 All ER 659 (Ch).
[313] "Aesthetic Nuisance: An Emerging Cause of Action" (1970) 45 NYU L Rev 1075 at 1078-1079.
[314] Epstein, above n 108, at 64-65.
[315] *Thompson-Schwab*, above n 309, at 341, per Romer LJ.
[316] *Hawkes Bay Protein*, above n 104, at [17].
[317] At [18].

could base his decision on the effect that living next to a brothel would have "on the minds of those young people".[318] It is hard to imagine what relevant harm would result solely from living near a carbon-intensive industry. If this strategy was going to work, it would only apply somewhere where there was already strong community opposition to carbon-intensive activities: the law would follow, not lead, community values.

[318] At 342.

Chapter Seven: Conclusion

This paper began by outlining the optimistic belief that people affected by climate change might be able to use tort law to sue those who had contributed to climate change. As chapter three demonstrated, many of the concerns about the inability of tort law to deal with climate change are incorrect. As chapter four showed, the fundamental problem which any climate change suit will face is that those who have contributed to climate change are separated across jurisdictions, time and types of activity. Although the law has been flexible in bending the requirements of causation when multiple contributors in the same jurisdiction caused harm, climate change stretches tort law too far.

There are two routes which come close to providing the basis for a nuisance suit. The first is to abandon the limit on de minimis harm and require defendants to compensate plaintiffs for the proportion of the harm which they caused based on the proportion of greenhouse gases that they have contributed to the human-added stock of greenhouse gases in the atmosphere. This is fundamentally sound but practically problematic as is it does not compensate plaintiffs enough for it to be worthwhile. Additionally, by individualising the harm, it removes the basis for strict liability in the first place: a defendant in New Zealand will have only caused minimal physical harm or contributed to a minimal risk of physical harm.

The second route is joint and several liability. If a substantial percentage of global emissions emanated from New Zealand then joint and several liability might be justified because, if it was not imposed, each defendant could point to another defendant as the cause: the result is that no-one would be liable. This analogy becomes difficult when the other emitters are located overseas. The more appropriate analogy becomes background natural conditions. The result is that, because emissions from overseas will always be sufficient to produce any given effects of climate change, small contributions by emitters in New Zealand will not attract liability.

This is not a situation where existing precedent is inconsistent with the underlying rationale of tort law. Corrective justice mandates that compensation and deterrence are functions which are achieved within a requirement that a person's actions causally connect with the person who has suffered harm. It would be straying too far in to distributive justice and beyond the process constraints of an adjudicative system if judges were to re-allocate defendants' wealth in greater measure than the harm they have caused to a plaintiff,

There are alternatives, but detailed exploration of them is beyond the scope of this paper. If corrective justice is to be done, then suits will only be successful where a substantial portion of those who have contributed to climate change are before a court. An international class action might achieve this. Those interested in ways to reduce emissions closer to home could look to *Thompson-Schwab v Costaki*, but they would find that it was a rare case and that, in

any event, opposition to the emission of greenhouse gases does not run as deep as opposition to cemeteries and brothels.

The question that this paper sought to answer was whether tort law could play a role in compensating those affected by climate change or deterring conduct which contributes to climate change. The focus was on the tort of private nuisance. However, in any tortious claim premised on a causal chain whereby a defendant's greenhouse gas emissions cause harm to a person, the difficulties outlined in this paper will arise. Thus, the answer to the question posed at the outset is that unless New Zealand abandons its adjudicative process and the basis of most of its tort law, there is not much that tort law can do. With the possible exception of the United States, a similar conclusion could no doubt be reached in other jurisdictions. Tort scholars interested in how tort law can respond to climate change would be best focusing their attentions on international class actions or on other routes altogether.

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