

TURNING UP THE HEAT ON TUVALU: AN ASSESSMENT OF POTENTIAL COMPENSATION FOR CLIMATE CHANGE DAMAGE IN ACCORDANCE WITH STATE RESPONSIBILITY UNDER INTERNATIONAL LAW

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INTRODUCTION

Climate change is a well-researched issue, both scientifically and legally. It is now widely accepted that the fragile balance in the climate system is being destroyed as human activities influence atmospheric concentrations of greenhouse gases.¹ However, academics have devoted comparatively less attention to evaluating the legal implications of climate change damage for countries and their populations. This article undertakes such an evaluation. It examines, in the context of public international law, the feasibility of litigation strategies as a means of compensating for climate change damage, or risk of damage, to human beings and the environment alike.

This article adopts the case study of Tuvalu as an example, to provide a viable context in which to demonstrate the legal avenues available at international level for those countries and people facing climate change damage. Ironically, it is such small, vulnerable island states, which are low contributors to greenhouse gases, that will be most affected by climate change but least equipped to deal with the consequences.² Tuvalu is already feeling the 'heat' of climate change, with the entire population making preparations for emigration.³ In 2002, Koloa Talake, Tuvalu's then Prime Minister, threatened to bring a claim against the United States and Australia for compensation, though a change of government meant this never eventuated.⁴ This article examines whether such a claim could be brought by Tuvalu against the United States,⁵ the second greatest emitter of greenhouse

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1 This article does not seek to undertake an analysis of evidence regarding the reality of anthropogenic climate change; the evidence in this area is already extensive. See, for example, Intergovernmental Panel on Climate Change, *The Scientific Basis. Summary for Policymakers* (2001), especially Ch 2; Intergovernmental Panel on Climate Change, *The Physical Science Basis, Summary for Policymakers* (2007).

2 See Christina Voigt, 'State Responsibility for Climate Change Damages' (2008) 77 *Nordic Journal of International Law* 2.

3 Richard Tol and Roda Verheyen, 'State responsibility and compensation for climate change damage: a legal and economic assessment' (2004) 32 *Energy Policy* 1109.

4 See Reuters, *Tuvalu seeks help in US global warming lawsuit* (2002) Planet Ark, <<http://www.planetark.com/dailynewsstory.cfm/newsid/17514/story.htm>> at October 2008; Robin Pomeroy, *US faces legal battles as climate bogeyman* (2002) Planet Ark, <<http://www.planetark.org/dailynewsstory.cfm/newsid/17512/story.htm>> at October 2008.

5 The focus is on the United States rather than Australia, as the United States is the most likely target of legal actions in international courts. Consideration is taken of the fact that Australia has recently ratified the Kyoto Protocol.

gases after China,⁶ in an international forum. The focus is on the viability of such a cause of action, including the complex issues of causation and responsibility.⁷

The ultimate aim is to determine whether international law provides a basis for potential action by vulnerable states such as Tuvalu. This requires a consideration of the current international climate change regime, comprising the *United Nations Framework Convention on Climate Change* (FCCC)⁸ and the *Kyoto Protocol*.⁹ However, as this regime does not, in its current state, deal fully with the issue of climate change damage it is also necessary to consider how international law outside the climate regime treats damage. This necessitates a thorough examination of the law of state responsibility, including the relevant liability standard, and how causation for climate change can be established. The International Law Commission's *Draft Articles on the Responsibility of States for Internationally Wrongful Acts* (Draft Articles)¹⁰ are an integral tool in determining whether the law on state responsibility can provide the basis for a claim of compensation for injury. It is also appropriate to consider the essential norm of customary international law that countries shall do each other no harm, a rule reinforced by numerous declarations and treaties, including the FCCC.

The lack of effective action taken by governments thus far to combat global warming means the pursuit of litigation is increasingly perceived by vulnerable states as an alternative to diplomacy.¹¹ It is now recognised that whether or not greenhouse gas emissions are reduced, some degree of damage from climate change is inevitable due to past and current emissions; 'mankind is committed to change'.¹² As such, it is necessary to determine how to allocate responsibility for damage that has already occurred, and will continue to exist, despite mitigation and adaptation measures.¹³

However, traditional law on state responsibility is not well equipped to deal with the 'vague primary rules, multiplicity of actors, different types of damages and non-linear causation'¹⁴ posed by the complex global problem of climate

6 'China overtakes U.S. in greenhouse gas emissions', *International Herald Tribune* (London), 20 June 2007, <<http://www.ihf.com/articles/2007/06/20/business/emit.php>> at September 2008.

7 See William Burns, 'Climate Justice: The Prospects for Climate Change Litigation' (2004) 98 *American Society International Law Procedure* 223, 227.

8 *The United Nations Framework Convention on Climate Change*, opened for signature New York, 9 May 1992, 1771 UNTS 107, (entered into force 21 March 1994), hereafter FCCC.

9 *The Kyoto Protocol to the United Nations Framework Convention on Climate Change*, Dec. 10, 1997, UN Doc FCCC/CP/1997/7/Add.1.

10 *Draft Articles on the Responsibility of States for Internationally Wrongful Acts*, UN GAOR, Int'l Law Comm'n, 53rd sess., UN Doc A/CN.4/L.602/Rev.1 (2001), finalized in Report of the International Law Commission on the Work of its Fifty-third Session, UN GAOR, 56th sess., Supp. No. 10, UN Doc A/56/10 (2001), ch.IV.E.I, hereafter DASR.

11 See Kristin Choo, 'Feeling the Heat: The Growing Debate Over Climate Change Takes on Legal Overtones' (2006) 92(7) *American Bar Association Journal* 28, 32.

12 Tol and Verheyen, above n 3, 1109. For evidence and discussion, see IPCC, *The Physical Science Basis*, above n 1; Daniel Farber, 'Basic Compensation for Victims of Climate Change' (2006-2007) 155 *University of Pennsylvania Law Review* 1605.

13 Intergovernmental Panel on Climate Change, *Impacts, Adaptation, and Vulnerability, Summary for Policymakers* 6, (2001), 7-8.

14 Voigt, above n 2, 22.

change damage. It is therefore also appropriate to contemplate the broader long-term legal implications of this issue, and to assess whether litigation for climate change damage at the international level is the most desirable way forward. Alternatives will be discussed, including complementing the international climate change regime with other avenues that tackle the issue of climate change damage in a more comprehensive manner.

Despite the fraught nature of the task,¹⁵ there is an obligation under public international law on developed nations to compensate developing nations for damage caused by anthropogenic climate change. This obligation is founded in treaties, as well as customary international law. It is hoped that this assessment of the legal responsibilities of states under international law will encourage greater state responsibility for environmental damage, and serve as a basis for predicting the likely outcome of claims brought under international law if and when they should arise.

I. CLIMATE CHANGE DAMAGE AND THE PROBLEM OF TUVALU

Introduction

This section examines the gravity of the climate change issue and highlights its actual and potential impacts for vulnerable island nations like Tuvalu. It is outside the scope of this article to offer any in-depth scientific analysis of why climate change is occurring. However, it is useful to reiterate the fundamental facts and effects of climate change as they are relevant to liability and proving causation.

Climate Change and the Greenhouse Gas Effect

It is now widely accepted that anthropogenic climate change is occurring.¹⁶ Article 1.2 FCCC defines climate change as ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’.¹⁷ The Intergovernmental Panel on Climate Change (IPCC), established by the United Nations to assess the impacts of climate change, reported in February 2007 that the warming of the climate system is ‘unequivocal, as is now evident from observations of increases in global average air temperatures, widespread melting of snow and ice, and rising global mean sea level’.¹⁸ This is in line with the findings of Naomi Oreskes who, in 2004, reviewed 928 scientific papers concerning climate change published between 1993 and 2003 and found a significant degree of consensus on the existence of anthropogenic climate change.¹⁹

15 See Reimung Schwarze, ‘Liability for Climate Change: The Benefits, The Costs, and the Transaction Costs’ (2006-2007) 155 *University of Pennsylvania Law Review* 1947.

16 See above n 1. Cf, for examples of climate sceptics Nicholas Stern, *Stern Review: The Economics on Climate Change* (2007) 1-61; Patrick Michaels, ‘The Way of Warming’ (2000) 23 *Regulation* 3; Richard Lindzen, ‘Global Warming: The Origin and Nature of the Alleged Scientific Consensus’ (1992) 15 *Regulation – The Cato Review of Business and Government* 2.

17 FCCC art 1.2.

18 IPCC, *The Physical Science Basis*, above n 1, 4.

19 Naomi Oreskes, ‘Beyond the Ivory Tower: The Scientific Consensus on Climate Change’ (2004) 306 *Science* 1686.

This is not a new discovery. The *Brundtland Report* of 1987, for example, identified human-caused climate change as one of the major environmental threats of the future and called upon governments to take action.²⁰ It is therefore now clear that human induced build-up of greenhouse gases in the atmosphere has resulted in ‘radiative forcing’;²¹ increased levels of gases result in enhanced absorption of infrared radiation and ultimate increases in temperature when part of this radiation is reradiated to the earth’s surface.²² The result is that the earth is today at least 0.6 degrees Celsius warmer than it was in 1900.²³ As the IPCC has emphasised, the ‘present CO₂ concentration has not been exceeded during the past 420,000 years and likely [66-90% probability] not during the past 20 million years’.²⁴ The IPCC has also predicted that the global average sea level will rise by between nine and 88 centimetres by 2100 as a result of thermal expansion and the melting of glaciers and icecaps.²⁵

The Effects of Climate Change

The prognosis for ecosystems and human institutions is, therefore, poor. As the IPCC has acknowledged, climate change has ‘the potential to lead to future large-scale and possibly irreversible changes in Earth systems resulting in impacts at continental and global scales’.²⁶ No degree of adaptation and mitigation will allow complete avoidance of climate change impacts.

Article 1.1 of the FCCC defines adverse effects of climate change as ‘changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience, or productivity of natural or managed ecosystems or on the operation of socio-economic systems or on human health and welfare’.²⁷ As such, a variety of damage can result from climate change. A 2004 study predicted that by the second half of this century climate change is likely to commit 15 to 37 percent of species to extinction.²⁸ Environmental damage at local, national, regional and international levels includes rising sea levels, interferences with weather patterns and the disruption of oceanic currents.²⁹ Flooding is likely, but so are droughts.³⁰ In terms of impacts on humans, 100 million people

20 World Commission on Environment and Development, *Our Common Future* [The Brundtland Report] (1987).

21 Intergovernmental Panel on Climate Change, *Radiative Forcing of Climate Change* (1994); James Hansen, ‘Defusing the Global Warming Time Bomb’ (2004) 290 *Scientific American* 3, 68, 71.

22 IPCC, *ibid*; Hansen, *ibid*.

23 William C G Burns, ‘Pacific Island Developing Country Water Resources and Climate Change’ in Peter Gleick, *The World’s Water 2002-2003* (2003) 121.

24 IPCC, *The Scientific Basis*, above n 1, 185.

25 *Ibid*.

26 Intergovernmental Panel on Climate Change, *Impacts Adaptation and Vulnerability, Summary for Policymakers* (2001).

27 FCCC art 1.1.

28 Craig D Thomas, ‘Extinction Risk from Climate Change’ (2004) 427 *Nature* 145.

29 Philippe Cullet, ‘Liability and Redress for Human-Induced Global Warming: Towards an International Regime’ (2007) 26 *Standard Environmental Law Journal* 99, 102-103.

30 See National Climate Center, *Extreme Weather and Climate Events* (2008) National Environmental Satellite, Data, and Information Service, <<http://www.ncdc.noaa.gov/oa/climate/severeweather/extremes.html>> at October 2008 for current information on how climate will affect extreme weather.

are likely to be affected by coastal flooding³¹ with the futures of developing nations and small island states particularly precarious.³² Countries that face physical submergence may lose their entire culture or civilization. This creates environmental refugees, a new global phenomenon that is already assuming massive proportions.³³ Scientists predict 50 million environmental refugees by 2010.³⁴

Climate change, then, also brings disruption at the individual level, with the kind of damage likely to 'irrevocably affect the realization of a number of human rights'³⁵ for many individuals. In low-lying developing nations, in particular, this means potential loss of productive land and livelihood including threats to the human right to water, food, health and housing. Health impacts from climate change include a decline in water quality, air pollution and the spread of infectious diseases.³⁶ Between 75 and 250 million people in Africa, for example, are expected to be exposed to increased water stress due to climate change by 2020.³⁷ The availability of fresh water in Central, South, East and Southeast Asia is also predicted to decrease dramatically, affecting more than a billion people by the 2050s.³⁸

The Problem of Tuvalu

These projections of climate change damage are particularly concerning for small low-lying island states. 'Much of their critical infrastructure and many socio-economic activities tend to be located along the coastline, in many cases at or close to present sea level'.³⁹ Therefore, when the FCCC was signed in 1992, four such states, Fiji, Kiribati, Nauru and Tuvalu, entered the following declaration:

Understanding that signature of the convention shall in no way constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change and that no provisions in the convention can be interpreted as derogating from the principles of general international law.⁴⁰

These states have therefore expressly reserved the right to bring an interstate claim. This is unsurprising given they are routinely mentioned as the first likely victims of climate change.

31 Climate Action Network, *Preventing Dangerous Climate Change* (2002) <<http://www.climatenetwork.org/climate-change-basics/by-meeting/cop-8docs/CAN-adequacy30102002.pdf>> at September 2008.

32 See William Burns, *The Possible Impacts of Climate Change on Pacific Island State Ecosystems, Occasional Paper of the Pacific Institute for Studies in Development, Environment & Security* (March 2000) 1-19.

33 IPCC, *Impacts, Adaptation and Vulnerability*, above n 16, 6.

34 Norman Myers, 'Environmental Refugees: An Emergent Security Issue' (Paper presented at the 13th Economic Forum, Prague, 23-27 May 2005).

35 IPCC, *Impacts, Adaptation and Vulnerability*, above n 13, 9.

36 See Michael Weisslitz, 'Rethinking the Equitable Principle of Common but Differentiated Responsibility: Differential Versus Absolute Norms of Compliance and Contribution in the Global Climate Change Context' (2002) 13 *Colombia Journal of International Environmental Law and Policy* 473, 475.

37 Voigt, above n 2, 1.

38 Ibid 2.

39 IPCC, *Regional Impacts of Climate Change: An Assessment of Vulnerability* (1998) 339.

40 Declarations made by the Governments of Nauru, Tuvalu, Fiji and Papua New Guinea to the FCCC, see <<http://unfccc.int/resource/docs/cop6secpart/inf01.pdf>> p 23.

The first state likely to be overwhelmed by climate change is Tuvalu, a sovereign Pacific Island nation consisting of four reef islands and five atolls.⁴¹ Its population of 11,992 makes it the third-least populated independent state in the world and, at 26 square kilometres, the fourth smallest country in the world.⁴² Tuvalu's highest elevation is five metres above sea-level, the second-lowest maximum elevation of any country after the Maldives.⁴³ In 1978 a tidal gauge was installed at Funafiti, the largest of Tuvalu's islands. Over 23 years it measured a sea level rise of 1.2 millimetres per year, a figure consistent with the IPCC global average estimate of 1.2 millimetres per year for the twentieth century.⁴⁴ It is understandable, then, that sea level rise is of utmost concern to Tuvalu. As the Global Environment Facility has reported, there has been a 'notable increase in the frequency and intensity of extreme hydro-meteorological events as well as the climate change-related accelerated rise of sea level'.⁴⁵ This is compounded by the fact that Tuvalu is affected by 'King Tides' which raise the sea level higher than a normal tide and may eventually submerge the entire nation.⁴⁶ In the meantime, changes in sea temperature are causing thermal expansion, and are already resulting in the loss of coastlines, intrusion of estuaries and drinking sources with salt water, and increased storm surges.⁴⁷ As David Shukman observes:

The rising waters are slowly creeping into the heart of these islands and slowly but effectively killing them off. Water bubbles up in tiny streams; and everywhere you look, it just lies on the surface. And the problem is getting worse.⁴⁸

This rise in sea level threatens vital infrastructure, settlements and facilities that support the livelihood of island communities⁴⁹ and is particularly concerning, given that Tuvalu is only 400 metres across at its widest point.⁵⁰ Furthermore, reduction of fresh water on the atolls will drastically lower crop production, particularly of the *pulaka* (giant taro). Such a reduction is 'likely to have significant cultural ramifications, given the central role of this crop in Tuvaluan society'.⁵¹ Samir Patel provides an appropriate summary of the problems Tuvalu faces:

41 Brad Crouch, *Tuvalu: Climate Change SOS* (2008) <<http://media.adelaidenow.com.au/multimedia/2008/10/tuvalu/tuvalu-perthnow.html>> at November 2008.

42 Ibid. See also for the same figures Holley Ralston, Britta Horstmann and Carina Holl, *Climate Change Challenges Tuvalu* (2004) 4 [information booklet].

43 Bureau of East Asian and Pacific Affairs, *Background Note: Tuvalu* (2008) United States Department of State <<http://www.state.gov/r/pa/ei/bgn/16479.htm>> at October 2008.

44 Kennedy Warne, 'Dance of a Dangerous Sea' (October 2008) *Canadian Geographic Magazine* 58.

45 Global Environment Facility, *Tuvalu: Increasing Resilience of Coastal Areas and Community Settlements to Climate Change* (2008) <http://thegef.org/uploadedfiles/LDCF/LDCF_insert_Tuvalu.pdf> at December 2008.

46 David Shukman, *Tuvalu Struggles to Hold Back Tide* (22 January 2008) BBC News <<http://news.bbc.co.uk/2/hi/science/nature/7203313.stm>> at November 2008.

47 Farber, above n 12, 1611.

48 Shukman, above n 46.

49 Voigt, above n 2, 2.

50 Ralston, Horstmann and Holl, above n 42, 9.

51 IPCC, *Regional Impacts of Climate Change*, above n 39, 345 citing SPREP, *Integrated Coastal Zone Management Programme for Fiji and Tuvalu – Coastal vulnerability and resilience in Tuvalu – Assessment of Climate Change Impacts and Adaptation, Phase IV*, South Pacific

A mean sea-level rise in Tuvalu of just 20 to 40cm in the next hundred years would significantly increase the frequency and depth of saltwater flooding and accelerate coastal erosion. It would threaten the Tuvaluans' food and housing, poisoning the pits where they grow giant swamp taro plants and undermining buildings. It could make the country simply uninhabitable.⁵²

A study by John Pernetta ranked Pacific Islands in terms of their vulnerability to sea level rise, also taking into account factors such as elevation. His research concluded that Tuvalu, along with the Marshall Islands and Kiribati, will suffer 'profound' impacts including potentially disappearance.⁵³ Richard Tol and Roda Verheyen have also predicted that, with rising sea levels, 'the homes and infrastructure of the population of Tuvalu could quickly become uninhabitable and unusable so that immigration would be their only option'.⁵⁴

In addition, alteration to the baseline will affect maritime zones and the areas in which a state may legitimately claim jurisdiction.⁵⁵ In the event of total inundation, novel legal problems would arise, including how to conduct an environmental evacuation, and whether a state could continue to exist if its total land mass was covered by the sea.⁵⁶ As Anwen Roberts writes, it is unprecedented for a country to entirely lose its territory without the use of military force.⁵⁷

It is these concerning predictions for Tuvalu that led the previous Prime Minister, Koloa Talake, to discuss the possibility of suing the United States or Australia for damages.⁵⁸ As Ralston, Horstmann and Holl write, the 'wide gap between Tuvalu's global share in greenhouse gas emissions and the consequences it faces because of climate change brought forward the question of responsibility'.⁵⁹ The current Prime Minister, Saufatu Sopoanga, has not pursued such a claim, but Talake's suggestion has sparked academic discussion over the possibility that states may turn to the International Court of Justice (ICJ) to seek compensation for climate change damage.⁶⁰ The most likely claimants are members of the Alliance of Small Island States (AOSIS), formed in 1990 to argue for dramatic emissions reductions.⁶¹ The

Regional Environmental Programme, Environment Agency, Government of Japan and the Overseas Environmental Cooperation Center, Japan, Apia, Western Samoa (1996) section 6.4.1.

52 Samir Patel, 'A Sinking Feeling' (April 2006) 440 *Nature* 734.

53 IPCC, *Regional Impacts of Climate Change*, above n 39, 350, referring to John Pernetta, 'Projected climate change and sea level rise: a relative impact rating for countries of the Pacific Basin' in John Pernetta (ed), *Potential Impacts of Greenhouse Gas Generated Climate Change and Projected Sea Level Rise on Pacific Island States of the SPREP Region* (1988).

54 Tol and Verheyen, above n 3, 1109. See also Nobuo Mimura, 'Vulnerability of island countries in the South Pacific to sea level rise and climate change' (1999) 12 *Climate Research* 139.

55 See David Freestone, 'International Law and Sea Level Rise' in Robin Churchill and David Freestone (eds), *International Law and Global Climate Change* (1991) 112.

56 Freestone, *ibid* 115.

57 Anwen Roberts, *What Will Become of Tuvalu's Climate Refugees?* (14th September, 2007) Der Spiegel, <<http://www.spiegel.de/international/world/0,1518,505819,00.html>> at November 2008.

58 See above n 5.

59 Ralston, Horstman and Holl, above n 42, 15.

60 See Barton's prediction in 2002 that an AOSIS state may take a claim to the ICJ – Phillip Barton, 'State Responsibility and Climate Change: Could Canada be Liable to Small Island States?' (2002) 11 *Dalbusie Journal of Legal Studies* 65, 69.

61 Alliance of Small Island States, 'The Alliance' (2007), <http://www.sidsnet.org/aosis/>.

ultimate question, then, is whether it is possible and appropriate for a major contributor to climate change, such as the United States, to bear the costs of such past and future climate change damage should such a claim be brought by a member such as Tuvalu. This is a fraught issue which is introduced below and is the concern of this article.

The Difficulties Associated with Climate Change Damage

It has been established that strong scientific evidence supports the argument that human-induced climate change is a reality. However, uncertainty will 'always remain an embedded problem when discussing climate change damage – be it in factual or legal terms'.⁶² As assessing emissions outputs inevitably involves estimates, the potential for inaccuracy exists. Verheyen, for example, explains that '[u]ncertainties in observational data ... make it difficult to trace particular damage and attribute it to climate change'.⁶³ This is particularly so when measuring regional and local impacts of climate change.⁶⁴ It is promising that uncertainty is continually being reduced as scientists develop more accurate climate models and predictions to assess climate change on a global scale.⁶⁵ However, it is much more difficult (though not impossible) to attribute regional impacts to climate change. Accurately connecting sea level rise to anthropogenic climate change is problematic due to data constraints, but also because of 'the time delay required for surface warming to translate into ocean warming (and expansion) which may take years, decades or centuries depending on the ocean depth considered'.⁶⁶ The reverse is that even if all greenhouse gas emissions were immediately stopped 'sea levels would continue to rise due to the slow response of oceans to surface temperature change'.⁶⁷

This renders establishing a sufficient causal relationship between states' emissions and sea level rise difficult, even if the changes are readily apparent. However, several scholars maintain it can be done. Randall Abate, for example, argues that climate change impacts felt by low-lying islands are 'closely linked to greenhouse gas emissions in the United States and the US government's refusal to regulate such missions'.⁶⁸ After all, the United States is responsible for approximately twenty-five percent of worldwide greenhouse gas emissions.⁶⁹ Abate goes on to argue that the United States' failure to introduce a mandatory climate change regime renders it an obvious target for a climate change lawsuit in an international forum such as the ICJ.⁷⁰

62 Roda Verheyen, *Climate Change Damage and International Law: Prevention Duties and State Responsibility* (2005) 12. Note, causation is discussed in detail in Section V below.

63 Ibid 21.

64 See Eduardo Penalver, 'Acts of God or Toxic Torts? Applying the Tort Principles to the Problem of Climate Change' (1998) 38 *Natural Resources Journal* 563, 567.

65 Verheyen, above n 62, 21.

66 Ibid 312.

67 Ibid 309.

68 Randall Abate, 'Climate Change, The United States, and the Impacts of Arctic Melting: A Case Study in the Need for Enforceable International Environmental Human Rights' (2007) 26 *Stanford Environmental Law Journal* 3, 6.

69 Pew Center on Global Climate Change, *Global Warming Basics: Policy FAQs*, <http://www.pewclimate.org/global-warming-basics/faq_s/faqs_policy.cfm>, at September 2008.

70 Abate, above n 68, 8.

Such a claim may be based on loss which has already occurred, in accordance with traditional state responsibility.⁷¹ An alternative route may be a claim regarding the increased projected risk posed by anthropogenic climate change in the future; past and current greenhouse gas emissions contribute to climate change and therefore to the risk of future sea level rise. Tuvalu, after all, faces 'reduced equity value due to ... risk of sea level rise in the 21st century'.⁷² The no-harm rule would support a reduced equity claim of this type, as would the relatively new environmental tools of intergenerational equity and the precautionary principle.⁷³ Michael Faure and Andre Nollkaemper are correct to emphasise in their 2007 article that the possibility of a small island state bringing a liability claim against states responsible for climate change 'no longer is a topic for fiction or a theoretical prospect. There is a rise in plans for litigation worldwide for consequences of global warming'.⁷⁴ It is to the specifics of such a claim that we now turn.

II. AN INTRODUCTION TO STATE RESPONSIBILITY UNDER INTERNATIONAL LAW

Introduction

State responsibility strengthens the international community's ability to preserve the environment.⁷⁵ It involves ascertaining breaches of international legal obligations contained in customary law or treaties as well as determining damage. The question is, can states be held responsible under international law for past, current or future climate change damage?

In 2001, the International Law Commission issued its *Draft Articles on the Responsibility of States for Internationally Wrongful Acts*,⁷⁶ which provide a code of the general principles of state responsibility and exist as the authoritative restatement of the law in this area. Where an international obligation is violated, the Draft Articles set out the obligation to cease continuation of the act and, if required, provide reparation including restitution, compensation or satisfaction. The essential point is that legal consequences arise when an internationally wrongful act is committed.⁷⁷ It is the nature of the activity and the form of the obligation, particularly its wrongfulness, that will engage state responsibility. In accordance with article 3, a wrongful act requires

71 See the *Corfu Channel Case (United Kingdom v Albania)* [1949] ICJ Rep 4.

72 Verheyen, above n 62, 322.

73 See Prue Taylor, *An Ecological Approach to International Law: Responding to Challenges of Climate Change* (1998) 3; Catherine Redgwell, 'Intergenerational Equity and Global Warming' in Robin Churchill and David Freestone, *International Law and Global Climate Change* (1991).

74 Michael Faure and Andre Nollkaemper, 'International Liability as an Instrument to Prevent and Compensate for Climate Change' (2007) 26 *Stanford Environmental Law Journal* 123, 125.

75 Marcos Orellana, 'Criminal Punishment for Environmental Damage: Individual and State Responsibility at a Crossroad' (2004-2005) 17 *Georgetown International Environmental Law Review* 673, 674.

76 *Draft Articles on the Responsibility of States for Internationally Wrongful Acts*, above n 12. See also James Crawford (ed) *The International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries* (2002).

77 Ibid art 1.

a breach of an international obligation and its attribution to a particular state.⁷⁸ The ICJ has emphasised that rules on state responsibility are generally applicable for all kinds of breaches of international law. This was established in the widely cited *Chorzow Factory Case*,⁷⁹ and it has since been accepted in other cases that the responsibility of states is a rule of customary international law.⁸⁰ In the environmental context, state responsibility promotes prevention and the provision of compensation to injured states.⁸¹

It is appropriate, then, to examine how Tuvalu could establish state responsibility of the United States for climate change damage. The obligations that may impute responsibility to a state for climate change fall into two categories: the first relates specifically to the climate change regime, while the second form of obligation is based on the general customary law obligation incumbent upon states to do no harm to the territory of another state.⁸² The breach of either type of obligation could lead to the establishment of state responsibility for global climate change.

State Responsibility Under the Draft Articles

The general principle that state responsibility can flow from breaches of international obligations has been accepted since the beginning of the twentieth century. Although the Draft Articles do not replace any existing law on state responsibility, they offer an explanatory codification, albeit in a draft form. Four sections make up the Draft Articles: The International Wrongful Act of a State; Content of the International Responsibility of a State; The Implementation of International Responsibility of a State; and General Provisions.

Under article 12 of the Draft Articles, a state breaches an international obligation 'when an act of that State is not in conformity with what is required of it by that obligation'.⁸³ The requirement here is for the international obligation to be in force for the state at the time of the breach (article 13). Tuvalu, then, would not be able to argue that the United States is responsible for failing to comply with the reduction targets set out in the Kyoto Protocol, even after its entry into force, as the United States has not ratified the Protocol.⁸⁴ We can also take from article 13 that the relevant period to determine whether an obligation exists is when the activity occurs that *causes* damage, rather than when the *actual* damage arises. As Verheyen explains, the time-lag between emissions and impacts renders this a particularly important point in the context of climate change damage.⁸⁵ A breach will

78 Ibid art 3.

79 *Case Concerning the Factory at Chorzow* [1927] PCIJ (ser A) No 9, 21.

80 See, for example, *Garrido and Baigorria v Argentina* (1998) Inter-Am Ct HR (ser C) No 39, para 40; *Rainbow Warrior Arbitration (New Zealand v France)* XX RIAA 217(1990), 251.

81 Verheyen, above n 62, 232, referring to Orrego Vicuna, Institut de Droit International, 'Resolution on Responsibility and Liability: Responsibility and Liability for Environmental Damage Under International Law: Issues and Trends' (1998) 10 *Georgetown International Environmental Law Review* 279, 280.

82 Joy-Dee Davis, *State Responsibility for Climate Change: The Case of the Maldives* (2005) 25.

83 DASR art 12.

84 See Verheyen, above n 62, 235.

85 Ibid.

then occur when a wrongful act or omission takes place and continues so long as the acts are repeated. Article 15, which addresses the breach of an international obligation through a series of wrongful acts or omissions, may potentially be invoked 'where the cumulative behaviour of a State does not conform to a standard of care for preventing damage or risk thereof, in the context of the no-harm rule'.⁸⁶

A related issue is that of continuing breach, a particularly pertinent issue for climate change damage given that humans have been emitting greenhouse gases for many centuries. While the obligations contained in the FCCC have a continuing character⁸⁷ (ie, states must continue to reduce emissions), in accordance with the no-harm rule a state will no longer be in breach once it has ceased to cause damage to another state. Article 14.2 states that the 'breach of an international obligation by an act of a State having a continuing character extends over the entire period during which the act continues and remains not in conformity with the international obligation'.⁸⁸ In accordance with this argument, Tuvalu could argue that the United States continues to commit a breach until it reduces its emissions to fall within a legal limit. Such an approach would be in line with the *Trail Smelter Arbitration*⁸⁹ which held that the obligation to prevent transboundary air pollution was breached so long as pollution continued.

As mentioned in Section I, a state at risk of damage from climate change may wish to base a claim on a risk of future damage. This would be possible as articles 14 and 15 do not require actual damage to have occurred for state responsibility to be invoked. Rather, it is sufficient when a risk increases so as to constitute a breach of an international obligation. Verheyen emphasises that whether injury has occurred is then a matter which 'must be discussed in the context of proof of damage i.e. within the determination of consequences'.⁹⁰

Erga Omnes Obligations

Responsibility can be invoked by an injured state where the obligation breached is owed to that state individually,⁹¹ or to the international community as a whole where the breach of obligation specifically affects the state invoking responsibility.⁹² In simplistic terms, the United States' emissions affect the atmosphere as a whole, but also specifically affect Tuvalu. It is then also worth considering whether the duty to protect the climate system is an *erga omnes* obligation in that it is owed to the international community as a whole. This has been claimed by several commentators⁹³ and is a real possibility given the nature of climate change and the extent to which the FCCC has been ratified.

86 Ibid 236.

87 See, for example, FCCC arts 2 and 4.2.

88 DASR art 14.2.

89 *Trail Smelter Arbitration (United States v Canada)* III RIAA (1941).

90 Verheyen, above n 62, 237.

91 DASR art 42(a).

92 DASR art 42(b).

93 Tol and Verheyen, above n 3.

Erga omnes obligations are covered by article 48 of the Draft Articles which sets out that any state can invoke state responsibility where the obligation breached is either owed to a group of states and is established for the protection of a collective interest (art 48(1)(a)) or is owed to the international community as a whole (art 48(1)(b)). Therefore, any state could invoke responsibility for a breach of an obligation with the aim of preserving the climate system regardless of any injury. Verheyen appropriately suggests that either article 2 or article 4.2 of the FCCC or the Kyoto targets would suffice.⁹⁴ A strong argument can then be made that any state could invoke state responsibility and demand compensation where another state breaches its climate change duties. In reality, it may be a more likely scenario that a state with far greater financial resources than Tuvalu will eventually take on the United States or another major emitter, on the basis that a breach of an obligation owed to the international community as a whole has occurred.

Attribution of Breach

The damaging activity must also be attributable to a state, dealt with in Chapter II of the Draft Articles. Article 4 states that the 'conduct of any State organ shall be considered an act of that State under international law' regardless of its character and functions. This is relevant in the context of climate change because it will mostly be private entities and companies that actually produce emissions and destroy carbon sinks.⁹⁵ However, it is the obligations of the state rather than the private activity that determine whether the state is in breach of a legal obligation; a breach may be attributable to the state regardless. Article 8, for example, states that the conduct of a person or group will be considered an act of a state if the person or group is acting under the instructions, directions or control of a state; a state can therefore be liable for conduct it has approved. This is supported by article 11 which further states that conduct that a state has acknowledged or adopted will be considered as its own. Verheyen offers clarification:

In cases where private conduct leads to transboundary damage, a State, by approving such conduct through active policies, implicitly or explicitly approves of it and thus incurs legal responsibility. Generally, the breach of duty to exercise due diligence in control of private persons is an acknowledged principle in the law of State responsibility.⁹⁶

This has been argued particularly with regard to hazardous activities.⁹⁷ The United States could therefore not defend itself against state responsibility by stating that the activities leading to excess emissions were not directly caused by the state itself. As Joy-Dee Davis explains, large industrial global warming-inducing activities such as transport and electricity production are all subject to licensing for their operation; the Draft Articles could be

94 Verheyen, above n 62, 266-267.

95 See discussion in Faure and Nollkaemper, above n 74, 144-145.

96 Verheyen, above n 62, 240, referring also to the findings in the *Youmans Claim (United States v Mexico)* IV RIAA 110 (1926); *Janes Claim (United States v Mexico)* IV RIAA 82 (1926); *Massey Claim (United States v Mexico)* IV RIAA 155 (1927). See also Ian Brownlie, *State Responsibility* (Oxford, 1983) 162.

97 See Gianther Handl, 'State liability for accidental transnational environmental damage by private persons' (1980) 74 *American Journal of International Law* 525.

interpreted to imply that as soon as an activity is licensed by the state it is under state control.⁹⁸ Ultimately, '[i]t would be incorrect if it were intimated that greenhouse gas emissions are not attributable to the state'.⁹⁹ This argument is also made by Tol and Verheyen, who assert that permitting emissions of greenhouse gases per se, and not implementing regulatory measures to stop emissions above a certain level are both legally relevant actions and omissions; 'the failure to stop, reduce or regulate emitting activities with due care can trigger state responsibility'.¹⁰⁰ Acts of private corporations could also be deemed attributable to the state because of the principle that states should not harm the environments of other states.

Environmental Crimes

Over the past few decades, an ongoing debate has existed over whether a state may attract criminal responsibility for committing an environmental crime. This debate has been fuelled by the International Law Commission's contemplation of including the concept of an international environmental crime in article 19 of the first reading of the Draft Articles. The proposal was that an international environmental crime would occur where there was 'a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas'.¹⁰¹ At the time, though, 'the distinction between crimes and non-criminal international offenses was not recognised by international custom or practice, which resulted in stiff opposition to the proposed language from some states'.¹⁰² The final version of the Draft Articles therefore does not refer to environmental crimes, but gives greater consideration to violations of *erga omnes* obligations. This is an area to bear in mind, though, as any inclusion of the concept of environmental crimes in a future version of the Draft Articles would have a major bearing on state responsibility and claims for climate change damage.

III. STATE RESPONSIBILITY UNDER THE CLIMATE CHANGE REGIME

Introduction

Treaty law provides the primary source of obligations in international environmental law. This section examines the climate change regime to determine whether it contains obligations that may give rise to a claim for reparation under the law of state responsibility. At present, the international climate change regime consists of the *United Nations Framework Convention on Climate Change* and the *Kyoto Protocol*.¹⁰³ These treaties represent the

98 Davis, above n 82, 49.

99 Ibid.

100 Tol and Verheyen, above n 3, 1112.

101 Text adopted by the International Law Commission upon completion of its first reading of Part I of the DASR (1996), art 19(3)(d). See the text reproduced in Ian Brownlie, *Basic Documents in International Law* (2002) 426-37.

102 Orellana, above n 75.

103 For an overall analysis of the climate change regime, see Farhana Yamin and Joanna Depledge, *The International Climate Change Regime* (2004).

primary international legal response to date dealing with climate change¹⁰⁴ and embody obligations for states to take action to mitigate against damage from global warming.¹⁰⁵ However, as Philippe Cullet states, they represent ‘at best a first attempt’¹⁰⁶ at developing a comprehensive legal regime dealing with climate change. Importantly, liability and compensation are essentially avoided by the regime.

The United Nations Framework Convention on Climate Change

The FCCC was adopted on 9 May 1992 by the Intergovernmental Negotiation Committee, signed at the United Nations Conference on Environment and Development (UNCED) by 155 states, and entered into force after the 50th ratification on 21 March 1994.¹⁰⁷ Its provisions fall into four primary categories: objectives and principles; obligations (substantive, reporting, monitoring, financial); institutions and procedures; and miscellaneous. Article 2 sets out the Framework’s objective as achieving ‘stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system’.¹⁰⁸ The adoption of this article appears to be an acknowledgement of the correlation between emissions and the consequent damage.

Article 3 establishes principles by which State Parties ‘shall be guided’. The precautionary principle should influence Parties in their development of measures to ‘anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects’,¹⁰⁹ while measures should also promote sustainable development.¹¹⁰ Article 3.1 promotes the concept of intergenerational equity through its statement that Parties ‘should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities’. This is a recognition that industrialised nations should take the lead in combating global warming and its effects,¹¹¹ therefore also implying a primary role with regards to damage. The inclusion of the concept of common but differentiated responsibility infuses the entire regime, with only industrialised nations required to take mitigation action.¹¹² The precautionary principle, intergenerational equity, and common but differentiated responsibilities are ‘binding principles of international law to be applied in the context of climate change, including

104 Burns, above n 7, 224.

105 Note that the fact that this article does not enter into an extensive discussion of other treaties as possible basis of claims does not preclude their potential applicability.

106 Cullet, above n 29, 115.

107 For an overview of its negotiation history and provisions see, for example: Daniel Bodansky, ‘The UN Framework Convention on Climate Change: A Commentary’ (1993) 18 *Yale Journal of International Law* 451; Urs Luterbacher and Detlef Sprinz (eds), *International Relations and Global Climate Change* (1997); Steinar Andresen and Shardul Aggrawala, ‘Leaders, Pushers and Laggards in the Making of the Climate Regime’ (2002) 12 *Global Environmental Change* 41.

108 FCCC art 2.

109 FCCC art 3.3.

110 FCCC art 3.4.

111 FCCC art 3.1, but see also preamble paragraphs 3 & 18 and FCCC art 4.2(b).

112 See FCCC art 4.2 and art 3.

the issue of climate change damage'.¹¹³ All promote contemplation of the overall effects of responses to climate change and, in particular, consideration of future generations.

Article 4 of the FCCC deals with the main substantive commitments of Parties, and is supported by the predominantly declaratory articles 5 (Research and Systematic Observation) and 6 (Education, Training and Public Awareness), and article 12 (Reporting). Under article 4.1(b) Parties are required to formulate and implement national or regional programmes containing measures to mitigate or adapt to climate change. Article 4.2 sets out the objective of returning Annex 1 states' emissions of greenhouse gases to 1990 levels by 2000. Exactly how to do this was left to the individual state.¹¹⁴ Financial commitments are dealt with by articles 4.3 and 4.4. These articles establish a binding obligation on developed nations to financially support developing states to comply with their obligations under the FCCC, including the costs of adaptation to the adverse effects of climate change. This is again an explicit recognition of the principle of common but differentiated responsibilities, supported by the financial mechanism established by article 11.

The resistance of the United States in particular during the negotiation process ultimately resulted in the FCCC drafters opting for 'constructive ambiguities' and 'guidelines rather than a legal commitment'.¹¹⁵ The mitigation duties contained in articles 4.2(a) and (b) were deemed inadequate by the First Conference of the Parties (COP1) in the 'Berlin Mandate'.¹¹⁶ As William Burns explains, this led to the 'realisation that more substantive measures were needed, and ultimately to the Kyoto Protocol'.¹¹⁷

The Kyoto Protocol

The Kyoto Protocol to the FCCC is an international treaty to complement the original Convention.¹¹⁸ It entered into force on 16 February 2005 with 183 Parties of the FCCC having ratified the Protocol to date.¹¹⁹ The United States, unfortunately, is not one of these. Although it has signed the Protocol it has not ratified it, and clearly has no intention to do so.¹²⁰ The Kyoto Protocol essentially sets out greenhouse gas stabilisation and reduction commitments for industrialised countries. Article 3.1 states that these Annex 1 countries shall ensure that their:

113 Verheyen, above n 62, 78.

114 FCCC art 4.1(b).

115 Raneé Khooshie Lai Panjabi, 'Can International Law Improve the Climate? An Analysis of the United Nations Framework Convention on Climate Change Signed at the Rio Summit in 1992' (1993) 18 *North Carolina Journal of International Law and Commercial Regulation* 491, 404.

116 *The Berlin Mandate* Decision 1/CP.1, FCCC/CP/1995/7/Add.1.

117 Burns, above n 7, 225.

118 For literature on the Protocol specifically see, for example, Michael Grubb, Christian Vrolijk and Duncan Brack, *The Kyoto Protocol, A Guide and Assessment* (1999); Yamin and Depledge, above n 103.

119 United Nations Framework Convention on Climate Change, *Parties to the Kyoto Protocol* (2009) <http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification_20090708.pdf> at January 2009.

120 Elizabeth Kolbert, *Global Warming* (2005) *The New Yorker*, December 12, <http://www.newyorker.com/archive/2005/12/12/051212ta_talk_kolbert> at September 2008.

anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts ... with a view to reducing their overall emissions of such gases by at least 5 percent below 1990 levels in the commitment period 2008 to 2012.¹²¹

No enforcement mechanism currently exists under the Protocol, and it was not until March 2006 that a Compliance Committee was established under the FCCC. As a result, Kristin Choo is understandably concerned that 'even some of the protocol's strongest proponents are slipping behind in their national targets for emissions reductions'.¹²² It is promising, though, that the targets set by the Protocol are legally enforceable; countries that fail to meet their targets by 2012, the end of the first commitment period, will have breached an international obligation.¹²³

Liability and Compensation

The FCCC and the Kyoto Protocol provide only a 'partial answer'¹²⁴ to the issue of responsibility for damage as neither directly addresses, or regulates, the issues of damage or compensation. There are no provisions defining climate change, or dealing with any possibility of claiming compensation for injury; 'These questions were deliberately avoided during the negotiations'.¹²⁵ That does not suggest that states were oblivious to these issues. On the contrary, the background to the adoption of the FCCC reveals that states were clearly aware of the problem of climate change damage, particularly with regard to vulnerable small island states.¹²⁶ As Christina Voigt observes, this is reflected in the FCCC Preamble which reiterates that states have the 'responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or to other areas beyond the limits of national jurisdiction'.¹²⁷ Awareness of the potential for serious damage is also apparent from the reservations entered to the FCCC¹²⁸ as well as the agreement of developed nations to support developing State Parties in their adaptation efforts.

However, industrialised nations were clear that they would not accept any provisions that alluded to potential state responsibility.¹²⁹ The final texts of both instruments, therefore, focus on provisions dealing with mitigation and adaptation as opposed to concentrating on how to tackle potential damage to individuals and environments. 'Climate change damage in terms of specific impacts is not at the heart of these treaties'.¹³⁰ As such, the climate regime as it currently stands must be seen as a starting point only with regard to state responsibility. As Cullet states: 'The present legal framework for addressing

121 Kyoto Protocol art 3.1.

122 Choo, above n 11, 31.

123 See Davis, above n 82, 28.

124 Tol and Verheyen, above n 3, 1114.

125 Verheyen, above n 62, 107.

126 See *ibid* 45-54.

127 Voigt, above n 2, 4, citing FCCC Preamble para 8.

128 See above n 40.

129 Tol and Verheyen, above n 3, 1114.

130 Verheyen, above n 62, 135.

climate change thus lacks a liability dimension that is critical to ensuring that people and countries already suffering the negative consequences of climate change are compensated.¹³¹

Implications of the Obligations Contained in the Climate Change Regime for Tuvalu's Claim

The fact that liability and compensation are avoided in the FCCC and Kyoto Protocol is problematic for any inter-state compensation claim. In terms of establishing breach, the obligations under the FCCC and Kyoto Protocol have been set out. However, the relatively modest and ambiguous terminology adopted in the final text of the FCCC would render it difficult to establish any enforceable duty on states to reduce greenhouse gases to 1990 levels by 2000. If, however, a country has continued to increase its emissions since ratification of the FCCC, this could amount to a breach of the Convention.¹³² Under the Kyoto Protocol, as already mentioned, a country that fails to meet its allocated reduction target by 2012 has breached international law. As Tol and Verheyen explain:

There would be no need to show negligent behaviour of the respective state, rather the breach of obligation would in itself constitute the required 'wrongdoing' to trigger the right to reparation, i.e. compensation for damage in as much as [emissions] are attributable to the State exceeding its Kyoto target.¹³³

These commentators do go on to concede, however, that any such claim could only encompass excess emissions above the target emissions level.¹³⁴

For Tuvalu, the difficulty of establishing the responsibility of the United States is complicated by the failure of the United States to ratify the Kyoto Protocol. The Bush Administration remained staunch in its opposition to mandatory reduction, instead preferring voluntary measures of emissions reductions.¹³⁵ As Davis observes, this means that the United States is not bound by the emissions reductions targets contained in the Kyoto Protocol.¹³⁶ Article 18 of the *Vienna Convention on the Law of Treaties* establishes that a state which has signed a treaty is 'obliged to refrain from acts which would defeat the object and purpose of [that] treaty', pending ratification.¹³⁷ Although this could be of assistance if Tuvalu were to bring a claim against another major emitter which had signed but not yet ratified the Protocol, the clear indication from the United States that it has no intention of ratifying the Protocol excludes the application of this section to Tuvalu's claim. Tuvalu would therefore need to base its claim on a breach of the FCCC as opposed to the Protocol; having ratified the FCCC, the United States is under a legal obligation in international law to reduce its greenhouse gas emissions to levels where they do not cause dangerous interference with the climate system.¹³⁸

131 Cullet, above n 29, 102.

132 Tol and Verheyen, above n 3, 1115.

133 Ibid.

134 Ibid 1115-1116.

135 Choo, above n 11, 31.

136 Davis, above n 82, 39. See also *ibid*.

137 *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) art 18.

138 Davis, above n 82, 40.

IV. STATE RESPONSIBILITY UNDER CUSTOMARY INTERNATIONAL LAW

Introduction

State responsibility can also be invoked where a state violates customary international law. The elements of customary international law are well established;¹³⁹ state practice can give rise to customary international law when that practice is uniform, consistent and general and if it is coupled with the *opinio juris* (the belief that an action was carried out because it was a legal obligation).¹⁴⁰ This section considers state responsibility for environmental damage under customary international law.

Transboundary Environmental Damage

It is a long-standing principle of international law that states should refrain from inflicting damage on, or violating the rights of, other states. This rule is often referred to as the 'no-harm rule' and has been accepted as a general principle of international law since the *Trail Smelter Arbitration*.¹⁴¹ The Tribunal held that under international law:

no State has the right to use or permit the use of its territory in such a manner as to cause [environmental] injury by fumes in or to the territory of another or the properties of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.¹⁴²

This principle was codified in Principle 21 of the *Stockholm Declaration 1972*, in which form it is widely regarded as customary international law: states have the 'responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction'.¹⁴³ This concept was again restated in Principle 2 of the *Rio Declaration on Environment and Development*,¹⁴⁴ and has formed the basis of several subsequent environmental treaties.¹⁴⁵ Therefore, although the *Trail Smelter Arbitration* involved the pollution of United States territory by a smelter plant in Canada, it is clear that the no-

139 Though their relative importance remains debated. See, for example, Rein Müllerson, 'The Interplay of Objective and Subjective Elements in Customary Law' in Karel Wellens (ed), *International Law: Theory and Practice* (1998), 161; Torsten Gihl, 'The Legal Character of Sources of International Law' (1957) 1 *Scandinavian Studies in Law* 53, 84.

140 For commentary in this area, see Louis Henkin, *How Nations Behave: Law and Foreign Policy* (2nd ed, 1979) 12.

141 *Trail Smelter Arbitration (United States v Canada)* III RIAA (1941). See also, for example: *Convention on Long-Range Transboundary Air Pollution*, opened for signature 13 November 1979, 18 ILM 1442 (entered into force 16 March 1983); *Vienna Convention for the Protection of the Ozone Layer*, opened for signature 22 March 1985, 1531 UNTS 324 (entered into force 22 September 1988).

142 *Trail Smelter Arbitration (United States v Canada)* III RIAA (1941), 1965.

143 *Stockholm Declaration of the United Nations Conference on the Human Environment* UN Doc A/CONF.48/14 Rev. 1 (1972).

144 *Rio Declaration on Environment and Development*, The United Nations Conference on Environment and Development, A/Conf.151/26 (Vol. 1) Chapter 1, Annex 1.

145 See for example, *Convention on Long-Range Transboundary Air Pollution; Vienna Convention for the Protection of the Ozone Layer*, above n 141.

harm rule now extends to all relations between states, and areas beyond a state's jurisdiction. This has since been confirmed by the ICJ in the seminal *Nuclear Weapons Case*:

The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.¹⁴⁶

Although the exact boundaries of this rule remain subject to debate, the essential rule is clear: state responsibility can be invoked where states' activities cause transboundary environmental injury to other states. In the context of our hypothetical example, the United States would be free to exploit its own fossil fuel resources, so long as this did not cause significant impacts to Tuvalu's environment. Barton makes the important further point that 'this concept is included in the preamble to the United Nations Framework Convention on Climate Change and so can fairly be considered a component of the international law surrounding the climate change issue'.¹⁴⁷

Given territorial sovereignty remains a fundamental tenet of international law, the no-harm rule is subject to restrictions. Neither Principle 21 of the *Stockholm Declaration* nor Principle 2 of the *Rio Declaration* define the threshold at which environmental state responsibility applies. However, it is clear that at least significant damage must have occurred before the no-harm principle can be invoked;¹⁴⁸ the *Trail Smelter Arbitration* held that 'serious consequence'¹⁴⁹ is necessary. A state like Tuvalu which is already feeling the effects of climate change could convincingly argue that the damage it faces meets this threshold. After all, the IPCC Fourth Assessment Report states that the impacts of climate change cause significant damages to the environment due to landslides, droughts, floods, storms and sea level rise, as well as to human health and property.¹⁵⁰ Christina Voigt summarises aptly: '[A]lmost all injury expected from and already resulting from climate change is more than *de minimis* or insignificant'.¹⁵¹

Tuvalu, then, could argue that the United States has breached the customary international law obligation to prevent and minimise foreseeable risk and damage and not to cause harm.¹⁵² In the context of climate change, the no-harm rule is particularly relevant to the issue of adaptation and the issue of who should bear the costs involved.¹⁵³ Where actual harm already caused by climate change can be proven, the rule also includes the obligation of compensation.¹⁵⁴

146 *Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion)* [1996] ICJ Rep 226, para 29; re-stated in *Gabcikovo-Nagymaros Project (Hungary v Slovakia)* 37 ILM 162.

147 Barton, above n 60, 72.

148 See, for example, *Resolution on Cooperation Between States in the Field of the Environment*, GA Res 2995, UN GAOR, 27th Sess., UN Doc A/RES/2995 (1972) which prohibits 'significant harmful effects' on other states when states utilize their natural resources.

149 *Trail Smelter Arbitration (United States v Canada)* III RIAA (1941) 1965.

150 IPCC, *Climate Change 2007: Fourth Assessment Report* (2007), referred to by Voigt, above n 2, 9.

151 Voigt *ibid.*

152 *Ibid.*

153 Tol and Verheyen, above n 3, 1111.

154 *Chorzow Factory Case* [1927] PCIJ (ser A) No 9, 21, 30.

V. CAUSATION AND CLIMATE CHANGE DAMAGE

Introduction

It has been shown that there is a real possibility of establishing a breach under international law in the context of climate change damage. However, it must also be established that the breach has caused the damage. This requires ‘the existence of a cause and effect relationship according to scientific or objective notions of physical sequence’.¹⁵⁵ The requirement of causation forms the basis of any claim for reparation under international law and lies at the heart of whether a state responsibility claim for climate change damage could succeed. This is a topic which is yet to receive significant attention in climate change literature, no doubt because of its inherent complexities. However, it is integral in determining whether compensation can arise.

It is first necessary to emphasise that proving injury has occurred is not necessarily a prerequisite for the establishment of state responsibility.¹⁵⁶ If a victim state wishes to base a claim on a breach of the no-harm principle, then it will be necessary to demonstrate that damage has occurred. However, a breach of the FCCC suffices as a wrongful act in itself without any requirement of proof of damage. In this situation, a claimant state can request cessation without demonstrating any causal link.¹⁵⁷

Causation, Science and Precaution

Proving causation in the context of climate change damage entails establishing a sufficient nexus between a certain state behaviour and injury to another state. Scientific evidence is therefore particularly relevant in this area, and will be relied upon by courts and tribunals to establish causation.¹⁵⁸ There is almost universal scientific consensus establishing a general causal link between anthropogenic greenhouse gas emissions and global warming.¹⁵⁹ However, in the case of climate change, science can never be 100% precise. This has necessarily led to the promotion and development of the precautionary principle, designed to operate in contexts of uncertainty. The principle requires the restriction of activities carrying unclear environmental consequences until science clarifies their impact.¹⁶⁰ The fact that precaution has been incorporated into almost every recent treaty and policy document relating to environmental protection and preservation¹⁶¹ signifies

155 Davis, above n 82, 50-51, referring to Phoebe Okawa, *State Responsibility for Transboundary Air Pollution in International Law* (2000) 180.

156 Verheyen, above n 62, 243, referring to Report of the International Law Commission, above n 10, Chapter IV.

157 Verheyen, *ibid* 249.

158 For an analysis of such issues, see Durward Sandifer, *Evidence before International Tribunals* (1975).

159 See above n 1.

160 For commentary, see Paul Baer, ‘Adaptation: Who Pays Whom?’ in W Neil Adger (ed), *Fairness in Adaptation to Climate Change* (2006) 132.

161 See the list of examples in David Freestone and Ellen Hey, ‘Origins and Development of the Precautionary Principle’ in David Freestone and Ellen Hey (eds), *The Precautionary Principle and International Law: The Challenge of Implementation* (1996) 3-4.

a movement towards ‘ideological and practical acceptance’¹⁶² of the precautionary principle to the extent that a strong argument can be made that it has now converted into customary international law.¹⁶³ The implication of this is that where science cannot dictate an outcome with explicit certainty, this should not be utilised as an excuse to preclude a finding of causation. Causation in the legal context is about determining whether a party should be held accountable for a particular injury, which party should be held liable where several actors have contributed to the injury, and what degree of responsibility is appropriate in a specific case.¹⁶⁴

The Draft Articles recognise the requirement for a causal link between the ‘internationally wrongful act’ and the injury, including material or moral damage caused by the act.¹⁶⁵ Although no further guidance as to how to define a causal link is offered, it is clear from the drafting history of the Articles that the ILC recognises that the issue cannot be solved ‘by a search for a single verbal formula’.¹⁶⁶ Rather, criteria such as directness, foreseeability, and proximity must qualify the relationship between the wrongful act and the damage and inform a determination of whether a sufficient nexus exists between the act and injury.

Approaches to Establishing Causation

However, as no specific formula exists in international law for determining causation, this is an area of considerable debate. Some commentators consider that state responsibility claims for climate change damage should fail because causation cannot be proven. Oscar Schachter and Wolfgang Durner, for example, both emphasise that injuries from transboundary air pollution and climate change cannot be recovered through judicial means because proof of causation and apportionment of responsibility are not possible.¹⁶⁷ These commentators make a fair point; it is, for example, virtually impossible to attribute specific emissions to specific impacts. Establishing a causal link between emissions and damage is therefore difficult. At the other end of the scale are commentators like David Grossmann and Eduardo Penalver who conclude that major greenhouse gas emitters can be held liable when causation theories are applied, based both on causation in fact and normative causation.¹⁶⁸

Although the inherent complexities are clear, there are various approaches that can be utilised to establish causation. Domestic and international law tribunals have traditionally adopted the ‘but for’ or *sine que non* formula

162 James Cameron and Juli Abouchar ‘The Status of the Precautionary Principle in International Law’ in Freestone and Hey, *ibid* 30.

163 James Cameron and Juli Abouchar, ‘The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment’ (1991) 14 *Boston College International and Comparative Law Review* 1, 4. For similar commentary supporting this claim, see for example, Elamparo Deloso Rabbi, *The Precautionary Principle: Relevance in International Law and Climate Change* (2005).

164 Verheyen, above n 62, 250.

165 DASR art 31.

166 Report of the International Law Commission, above n 10, 227 and 228.

167 Oscar Schachter, *International Law in Theory and Practice* (1991) 380; Wolfgang Durner, *Common Goods* (2001) 54.

168 David Grossman, ‘Warming up to a Not So Radical Idea: Tort-Based Climate Change Litigation’ (2003) 28 *Columbia Journal of Environmental Law* 1; Penalver, above n 64.

from *Donoghue v Stevenson*¹⁶⁹ to establish causation.¹⁷⁰ In accordance with this test, the plaintiff is required to prove that the defendant's conduct caused the harm experienced by the plaintiff, the burden therefore lying on the plaintiff to prove causation.¹⁷¹ However, it would be difficult to establish that removing the time specific emissions of the United States from the overall climate change equation would significantly alter the damage to Tuvalu. The 'but for' test in its traditional form is therefore of limited use when dealing with such cases of contributory causation.¹⁷²

A more appropriate avenue for establishing causation is on the basis of contribution to the problem, leaving the issue of how much damage may have been caused to the stage of apportioning damages. It is widely accepted in various jurisdictions throughout the world that contribution to a particular injury is sufficient to constitute causation¹⁷³ and this also appears to be the approach favoured by most commentators in relation to climate change.¹⁷⁴ Verheyen explains that 'if we know climate change is caused by human activities, evidence of a contribution to these pertinent activities is sufficient to establish causation for a particular actor'.¹⁷⁵ The victim state then does not have to bear the burden of proving whose shares caused the damage. Contributions of states to pollutants responsible for causing climate change are reasonably well established given the work of the IPCC and the fact that countries are obliged to submit greenhouse gas inventories under the FCCC.¹⁷⁶ For industrialised states, data is generally available on CO2 emissions for the last two centuries. On this basis, causation can be established through contribution to harm, rather than on a pure 'but for' test.

General Versus Specific Causation

Bearing in mind it is possible, we can then consider whether causation can be established in the specific case of climate change. In doing so, it is appropriate to differentiate between general and specific causation. General causation refers to the establishment of a causal link between anthropogenic greenhouse gas emissions and damages caused by global warming, while specific causation requires proof that a particular injury was caused by a specific actor. Specific causation, therefore, does not work well in the context of global warming due to the 'complex and synergetic effect of the diverse pollutants and polluters and the non-linearity of climate change'.¹⁷⁷ As Davis emphasises:

169 *Donoghue v Stevenson* [1932] AC 562 (HL).

170 Barton, above n 60, 83.

171 Ibid.

172 Voigt, above n 2, 15.

173 See, for example, Anthony Honore, 'Causation and Remoteness of Damage' in Andre Tunc (ed), *International Encyclopedia of Comparative Law*, Vol. XI, Torts, Chapter 7 (1983).

174 See, for example, Verheyen, above n 62; Voigt, above n 2; Faure and Nollkaemper, above n 74.

175 Verheyen, above n 62, 255.

176 Faure and Nollkaemper, above n 74, 165.

177 Voigt, above n 2, 15.

trying to prove specific causation will complicate and perhaps make impossible the process of pinpointing the perpetrators. The multiple sources of emissions that contribute to global warming make it virtually impossible to identify which set of emissions did which damage.¹⁷⁸

How would Tuvalu, for example, prove that the United States is responsible for the damage it faces as opposed to Australia or the United Kingdom? Science is not yet up to this task. Such difficulties have led some scholars to conclude that climate change does not fit with state responsibility because of these difficulties with establishing specific causation.¹⁷⁹

On the contrary, general causation is relatively uncontroversial to establish, given the extent of scientific research supporting the argument that anthropogenic climate change is occurring. This form of causation requires proof that the changes in climate already observed are due to human rather than natural variability,¹⁸⁰ and that there is a high chance climate change will lead to adverse impacts on ecosystems and human life. As has been stressed, the scientific evidence is clear. For example, the IPCC is 90-99% certain that global average surface temperature has increased by 0.6 degrees and has emphasised that 'in light of new evidence and taking into account the remaining uncertainties, most of the observed warming of the last 50 years is likely (66-90% confidence) to have been due to the increase in greenhouse gas concentrations'.¹⁸¹ The IPCC further predicts that regional changes in temperature have already affected many physical and biological systems.¹⁸² Although some degree of uncertainty will always exist, Myles Allen appropriately emphasises that this is 'rigorously quantified, allowing formal probabilistic attribution statements'.¹⁸³ Despite the differentiation in states' contributions to greenhouse gases, they are, as Tol and Verheyen put it, 'equally causal in a legal sense'.¹⁸⁴

Standard and Burden of Proof

General causation is all that is realistically available at this point. However, whether it is accepted by an international tribunal depends on the standard of proof applied. The only case in which an argument of causation (based on scientific findings such as those discussed above) would fail would be if a tribunal or court required full proof or proof beyond reasonable doubt. Although it is difficult to say for certain, there is no evidence to suggest that this would be required. For example, the *Trail Smelter Arbitration* did not require full proof while, in the *Corfu Channel Case*, the ICJ indicated

178 Davis, above n 82, 51.

179 Compare Alan Boyle, 'Remedying Harm to International Common Spaces and Resources: Compensation and Other Approaches' in Peter Wetterstein, *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (1997); Durner, above n 167; Phoebe Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (2000) (causation cannot be proven) with Grossmann, above n 168 and Penalver, above n 64 (causation can be proven).

180 Davis, above n 82, 52.

181 IPCC *Impacts, Adaptation and Vulnerability*, above n 10, 10.

182 *Ibid.*

183 See Myles Allen, *Liability for Climate Change* 42 *Nature* (2003) 891.

184 Tol and Verheyen, above n 3, 1112.

that proof based on a ‘balance of probabilities approach’ would suffice.¹⁸⁵ A balance of probabilities approach is consistent with the precautionary principle, which has been utilised by courts and tribunals to lower or reverse the standard of proof.¹⁸⁶

Verheyen further emphasises that although the burden of proof is a different matter from the standard of proof, ‘the application of the [precautionary] principle in this sense would mean that defendant States would be required to prove that their activities (greenhouse gas emissions) had not led to the injury of the claimant State’.¹⁸⁷ It would also be exceedingly difficult for a state to argue that full proof was required, given that parties acknowledged that climate change can be caused by anthropogenic emissions when they signed the FCCC.¹⁸⁸ It is apt to recount a paragraph of Judge Azevedo’s judgment in the *Corfu Channel Case*:

It would be going too far for an international court to insist on direct and visual evidence and to refuse to admit, after reflection, a reasonable amount of human presumptions with a view to reaching that state of moral, human certainty with which, despite the risks of occasional errors, a court of justice must be content.¹⁸⁹

Injury as a Result of Acts Which are Not Wrongful

There is one further issue to address relating to causation. Emissions from many sources accumulate in the atmosphere eventually causing damage. However, much of the accumulated damage is not caused by wrongful acts. Much debate has taken place over the distinction between prohibited and non-prohibited acts under international law.¹⁹⁰ Ian Brownlie, for example, considers that it is not the conduct of the party, but the harm that creates responsibility. Therefore, environmental damage, whether as a result of a breach or not, should be treated the same.¹⁹¹

The ILC began working on the issue of state responsibility for acts which are not wrongful in 1978.¹⁹² The 2006 *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities*¹⁹³ are the most recent development in this area and represent a shift in focus from state responsibility to civil liability. The only reference to state responsibility,

185 *Corfu Channel Case (United Kingdom v Albania)* [1949] ICJ Rep 4, 17.

186 See, for example, *Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan) (Provisional Measures)* (1999) 38 ILM 1624. (‘ITLOS Order’).

187 Verheyen, above n 62, 262.

188 *Ibid* 263.

189 *Corfu Channel Case (United Kingdom v Albania)* [1949] ICJ Rep 4, 90-91.

190 See, for example, Alan Boyle, ‘State Responsibility and Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?’ (1990) 39 *International and Comparative Law Quarterly* 1.

191 Ian Brownlie, ‘System of the Law of Nations: State Responsibility’ (1985) 79 *The American Journal of International Law* 471-474.

192 See Malgosia Fitzmaurice, ‘Development of Primary Rules of State Liability – Liability for Injurious Consequences of Acts Not Prohibited by International Law’ in Jutta Brunnee, Daniel Bodansky and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (2007) 1022.

193 United Nations International Law Commission, *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities*, Report of the International Law Commission on the Work of its 58th Session, UN Doc A/61/10 (2006).

for example, is under Principle 4 which expresses that states should ensure additional financial resources are available where measures mentioned are insufficient to provide adequate compensation. States assume the responsibility of facilitating liability through procedure, principles and mechanisms with regard to environmental damage under these articles. Operators are held strictly liable, as opposed to responsibility being held by the state. The 1972 *Convention on International Liability for Damage Caused by Space Objects*¹⁹⁴ and the *Nuclear Conventions*¹⁹⁵ are examples of state responsibility in the area of conduct not amounting to a breach under international law. Article II of the *Space Objects Convention* imposes absolute liability on states to pay compensation where damage is caused by their space objects 'on the surface of the earth or to aircraft flight'. Ultimately, states appear to be responsible for designing procedures to hold operators responsible.

However, holding polluters today liable for past emissions could be condemned as retrospective liability; 'emissions which were lawful in the past would be considered wrongful today'.¹⁹⁶ This would appear to be at odds with Article 13 of the Draft Articles which establishes that an act of a state is not a breach of international obligation unless the state is bound by that obligation when the act occurs.¹⁹⁷ A way to get around this, though, is to argue that the emission of greenhouse gases and the consequent climate change is a composite act which becomes wrongful after numerous emissions over time. The effect of this is that 'past emissions will only be subjected to a responsibility regime at the date when they become cumulatively wrongful'.¹⁹⁸ The fact that many greenhouse gas emissions occurred in the past, and that these accumulated emissions together have caused climate change, should therefore not necessarily limit the application of state liability.

VI. OBTAINING A REMEDY FOR CLIMATE CHANGE DAMAGE

Introduction

Having demonstrated that (in principle at least) it is possible to utilise state responsibility in the context of climate change, it is then necessary to identify the appropriate remedies. The *Chorzow Factory Case*¹⁹⁹ ruled that states responsible for breaches of international law are obliged to pay compensation to affected states. This principle has been codified in the Draft Articles and justifies the argument that where climate change damage occurs a remedy should follow. Where a victim state establishes that a defendant state has committed a wrongful act, the obligation on that state is to cease

194 *Convention on International Liability for Damage Caused by Space Objects*, opened for signature 29 March 1972, 961 UNTS 187 (entered into force in 1 September 1972).

195 *Vienna Convention on Civil Liability for Nuclear Damage* 1963, opened for signature 21 May 1963, 1063 UNTS 265 (entered into force 12 November 1977); *Convention on Supplementary Compensation for Nuclear Damage* 1977, opened for signature 12 December 1997, 36 ILM 1473.

196 Faure and Nollkaemper, above n 74, 171.

197 DASR art 13.

198 Faure and Nollkaemper, above n 74, 172.

199 Above n 83.

the act and make reparation for injury. Where liability is found, three functions are served: correction, prevention and reparation.²⁰⁰ However, the first issue of significance is that of jurisdiction, a problematic and potentially insurmountable hurdle for Tuvalu's hypothetical claim.

Jurisdictional Issues

For Tuvalu to successfully bring a claim against the United States in the ICJ, both states are required to recognise the jurisdiction of the Court. Article 34(1) of the *Statute of the International Court of Justice* states that the ICJ shall be open to State Parties to the Statute,²⁰¹ and article 93(1) of the *Charter of the United Nations* provides that all 192 members of the United Nations are *ipso facto* parties to the Statute.²⁰² While the United States is an original member of the United Nations, Tuvalu became a member on 5 September 2000²⁰³ with the specific aim of having greater standing to voice its concern about climate change in the international arena.

However, being a party to the *ICJ Statute* does not automatically correlate with the Court having jurisdiction over that state; the ICJ has jurisdiction only on the basis of consent. State parties to the ICJ may, under article 36(2), 'at any time declare that they recognize as compulsory *ipso facto* and without special agreement, in relation to any other State accepting the same obligation, the jurisdiction of the Court'.²⁰⁴ States that have done so have the right to then bring another state that has made an equivalent declaration before the Court. While Tuvalu has not submitted such a declaration, it may do so at any time. Although the United States accepted the jurisdiction of the ICJ from 1946–86, an unfavourable ruling in *Republic of Nicaragua v US* ('*The Nicaragua Case*')²⁰⁵ prompted the United States to withdraw from the court's general jurisdiction.²⁰⁶ Although the United States does accept jurisdiction regarding some treaties containing compromissory clauses, the FCCC contains no such clause. Even if the United States violates the objective of the FCCC, there is no binding dispute resolution and, unless the United States accepts the jurisdiction of the ICJ, Tuvalu will not be able to bring an interstate claim to the ICJ.

For this reason, Tuvalu may be encouraged to bring an action against a major greenhouse gas emitter which has issued a declaration recognising the jurisdiction of the ICJ.²⁰⁷ However, it will always be necessary to consider

200 See René Lefebvre, *Transboundary Environmental Interference and the Origin of State Liability* (1996) 1.

201 *Statute of the International Court of Justice* art 34(1).

202 *Charter of the United Nations* art 93(1).

203 United Nations, *List of Member States* (2009) Member States <<http://www.un.org/members/list.shtml>> at January 2009.

204 *Statute of the International Court of Justice* art 36(2).

205 *Republic of Nicaragua v US* [1954] ICJ Reports 32 ('*The Nicaragua Case*').

206 See Adam Liptak, *U.S. Cuts World Court's Jurisdiction* (2005) International Herald Tribune, March 11, <<http://www.iht.com/articles/2005/03/10/news/judge.php>> at December 2008.

207 See International Court of Justice, *Declarations Recognizing the Jurisdiction of the Court as Compulsory* (2009) <<http://www.icj-cij.org/jurisdiction/index.php?p1=5&p2=1&p3=3&PHPSSESSIONID=c091d31c68f812375860e1bdc361ff4c>> at January 2009.

the terms of these declarations. Under the United Kingdom's declaration of 5 July 2004, for example, the state accepts the compulsory jurisdiction of the ICJ other than in relation to:

any dispute in respect of which any other Party to the dispute has accepted the compulsory jurisdiction of the International Court of Justice only in relation to or for the purpose of the dispute; or where the acceptance of the Court's compulsory jurisdiction on behalf of any other Party to the dispute was deposited or ratified less than twelve months prior to the filing of the application bringing the dispute before the Court.²⁰⁸

Australia's declaration of 22 March 2002 contains a similar clause, also including a twelve-month time limit.²⁰⁹ The existence of such a provision would preclude Tuvalu from making a declaration recognising ICJ jurisdiction solely for the purposes of bringing a claim against the United Kingdom or Australia; Tuvalu would need to issue a declaration and then wait at least twelve months before embarking on a claim. However, it is worth noting that Canada's declaration of 10 May 1994 contains no such limiting provision, thus rendering Canada a more feasible defendant in the short-term.²¹⁰ It is also necessary to emphasise that, although Tuvalu would be limited by such provisions in declarations regarding ICJ jurisdiction, other states vulnerable to climate change impacts such as the Philippines,²¹¹ which recognised the jurisdiction of the ICJ in 1972,²¹² will not face the same hurdle.

At this stage, the United States has made no indication of intention to issue a declaration recognising ICJ jurisdiction; it is therefore also unlikely that the United States would voluntarily submit itself to any case dealing with climate change damage under the 'special agreement' option in article 36(1) of the ICJ Statute. However, seeking an advisory opinion from the ICJ concerning the actions of major polluters and their impacts on Tuvalu remains a real option.²¹³

The Nature of Potential Claims

Despite these clear jurisdictional problems, it remains beneficial to consider the potential claims and remedies which would be available supposing that both Tuvalu and the United States did recognise the jurisdiction of the ICJ. Several avenues for a state victim of change can be adduced from this article. If a claim were brought against a state for breaching the FCCC or its Kyoto obligations, then the claim would be for damages as a result of a treaty breach. Such a claim would be made in the ICJ, though jurisdiction is likely to be an issue. One option would be to argue that a state has suffered climate change damage as a result of one particular state's breach of the Protocol. Such a claim would require proof that the damage occurred during the period in which the defendant state should have been complying with the Protocol,

208 Ibid Declaration of the United Kingdom 5 July 2004, art 1(iii).

209 Ibid Declaration of Australia 22 March 2002, para (c).

210 Ibid Declaration of Canada 10 May 1994.

211 See Aida M Jose and Nathaniel A Cruz, 'Climate Change Impacts and Responses in the Philippines: Water Resources' (1999) 12 *Climate Research* 77.

212 Declaration of the Philippines, 18 January 1972, above n 217.

213 This is outside the scope of this article, but for support for such an alternative see Ian Fry, 'A nation on the edge of existence: Who pays to save Tuvalu?' (2007) 5 *Entwicklung & Ländlicher Raum* 22, 23.

as well as evidence that damage would not have occurred had the defendant state complied with their obligations. Therefore, a successful result would be highly unlikely. A more feasible claim would be to argue that a defendant state is liable for contribution to climate change, based on the period during which the state should have complied with the Kyoto Protocol.

However, for states like the United States, which are not parties to the Kyoto Protocol, a more appropriate claim would be based on a breach of the original FCCC.²¹⁴ Although it is outside the scope of this article, it is also necessary to note that where a breach of a treaty is established, the law of treaties may apply. This area of law runs distinct from, but in tandem with, state responsibility and may offer a number of alternative options.²¹⁵ Alternatively, a charge of not complying with the obligation to refrain from committing transboundary harm could be made. The appropriate standard of care would firstly need to be established. Davis suggests that in such a situation the most reasonable response would be that 'at the time when it was understood which domestic activities cause climate change, states should have put in place policies to stem these activities'.²¹⁶ Her conclusion is that a claim could be brought that the defendant state failed to implement policies that would have reduced activities which contribute to global warming.²¹⁷

Cessation

We can then turn to the legal consequences which would eventuate if a state were found responsible for climate change damage. This is an area in which the Draft Articles 'progressively develop'²¹⁸ as opposed to merely codify the law. Firstly, the original duty of performance persists (article 29). This means that the primary obligation not to breach the FCCC or to cause transboundary harm remains in force. However, a state found to have committed a wrongful act is also required to cease the act in accordance with article 30 of the Draft Articles:

The State responsible for the internationally wrongful act is under an obligation:

- (a) To cease that act, if it is continuing;
- (b) To offer appropriate assurances and guarantees of non-repetition, if circumstances so require.²¹⁹

Cessation is generally central to state responsibility claims, with states concerned to re-establish the original legal situation before the harm eventuated.²²⁰ However, the reduction of greenhouse gas emissions is not a task that can be achieved in a short period of time. This has led both Verheyen and Voigt to criticise the Draft Articles for failing to provide sufficient flexibility on how and when an activity should cease; cessation is

214 See discussion above at Section III, part B.

215 For comment in this area, see Scott Davidson, *The Law of Treaties* (2004).

216 Davis, above n 82, 68.

217 Ibid.

218 Verheyen, above n 62, 242, citing Dinah Shelton, 'Righting Wrongs: Reparations in the Articles on State Responsibility' (2002) 96 *American Journal of International Law* 833, 843.

219 DASR art 30.

220 See *Case Concerning the Arrest Warrant of 11 April 2000 (Democratic Republic of the Congo v Belgium)* 41 ILM (2002) 536, 242.

simply established as an absolute obligation.²²¹ This is certainly a complex issue which turns on the nature of the obligation breached. While a state is required to demonstrate a causal relationship between the defendant state's activity and the damage to be entitled to reparations, the state can, without proving such a causal relationship, demand cessation so long as a breach of an international obligation can be established.²²²

Reparation

However, as the climate change regime does not include any reference to compensation for damage, victim states will most likely seek reparation. In the context of climate change, reparation refers to 'the implementation of measures that prevent residual damage, including the financing of concrete adaptation measures and monetary compensation for damage which has already occurred'.²²³ Under article 31 of the Draft Articles, in addition to cessation, a state is also required to make full reparation for any injury caused. The origins of this principle can be found in the *Chorzow Factory Case*. The relevant paragraph is worth quoting at length:

... reparation must as far as possible, wipe out all the consequences of an illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it – such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.²²⁴

Reparation is now dealt with in Chapter II of the Draft Articles. Articles 31 to 35 set out that reparation shall consist of restitution, compensation and satisfaction. In the context of climate change, restoration of the situation *ex ante* will likely be impossible. Where this is the case, compensation is due, covering any financially assessable damage that is not limited by causation.²²⁵ As Voigt explains, the more likely scenario would be that an injured state would be claiming financial resources to cover 'costs associated with material damage to environmental resources (pure environmental damage) and consequential damage to people and property (consequential environmental damage), including restoration'.²²⁶ Where restitution and compensation are inappropriate, satisfaction in the form of an apology is required.²²⁷

Vulnerable island states certainly face a huge financial burden in dealing with climate change damage. Even the United States will not be exempt; research reveals that a sea level rise of 0.5 metres by 2100 could cause impacts to United States coastal property of up to US\$150 billion.²²⁸ Tuvalu would need to demonstrate that climate change has caused substantial damage and

221 Voigt, above n 2, 18 ; Verheyen, above n 62, 242.

222 Verheyen, *ibid* 243.

223 *Ibid*.

224 *Chorzow Factory Case* [1927] PCIJ (ser A) No 9, 21, 47.

225 Verheyen, above n 62, 246.

226 Voigt, above n 2, 18.

227 DASR art 37.

228 Barton, above n 60, 86, referring to IPCC, *Impacts, Adaptation and Vulnerability*, above n 10, 365.

incurred significant costs. With a coastline of less than one metre above sea level, sea level rise is already eroding scarce land resources and increasing the salinity of groundwater: the consequence is that both freshwater and agricultural yields are decreasing.²²⁹

Article 36.2 of the Draft Articles states that compensation 'shall cover any financially assessable damage including loss of profits insofar as it is established'.²³⁰ This article may be invoked where damage has not already eventuated but is predicted by science. For example, where sea level rise is expected to cause significant erosion, buyers will take this into account before purchase.²³¹ Verheyen also suggests that where land is no longer productive because of, for example, flooding or drought, 'not only the loss in value of the land itself may be claimed, but [also] the economic loss associated with the inability to produce agricultural products'.²³² Although this would necessarily involve estimation, and damage determined too remote would not suffice, a court should not shy from awarding damages for loss of profit arising from future damage where appropriate: 'As long as a party is able to substantiate a claim, courts can either commission expert studies or, as is common practice in many domestic codes of civil procedure, provide an estimate of the damage themselves'.²³³

Allocation of Costs

This article does not purport to venture into any detailed discussion of the amount that Tuvalu or any other victim state may expect in damages, simply to highlight several issues which would be likely to arise in the allocation of costs. The underlying message is that, although environmental damage is difficult to quantify,²³⁴ this does not necessarily preclude compensation.

The Issue of Multiple Contributors to Climate Change

It is first necessary to consider how the fact that climate change damage is the result of multiple emitters affects responsibility.²³⁵ One potential argument is that a victim state would need to bring a claim against all possible defendants. However, in the 1992 *Nauru Case*,²³⁶ the ICJ permitted Nauru to challenge Australia only, despite the fact that New Zealand and the United Kingdom could also have been challenged. So long as the interests of a state which is not party to the dispute are not affected by the judgment, there is no requirement that every potential defendant must be challenged.²³⁷ The implications of this for greenhouse gas emissions are that 'each State's

229 Global Environment Facility, above n 45.

230 DASR art 36.

231 Verheyen, above n 62, 247.

232 Ibid.

233 Ibid.

234 See Section I, Part E above.

235 For comment on how various legal systems deal with the issue of multiple tortfeasors see, for example, John Noyes and Brian Smith, 'State Responsibility and the Principle of Joint and Several Liability' (1988) 13 *Yale Journal of International Law* 225, 237-8.

236 *Certain Phosphate Lands in Nauru (Nauru v Australia)* 1992 ICJ Reports 240.

237 Tol and Verheyen, above n 3, 1119, referring to the *Nicaragua Case (Republic of Nicaragua v US)* 1954 ICJ Reports 32.

independent behaviour can be judged, even though in practice, the sum of greenhouse gas emissions leading to increased concentrations of greenhouse gases in the atmosphere are causing the climate system to change'.²³⁸

This position is now incorporated into article 47(1) of the Draft Articles: 'Where several States are responsible for the same internationally wrongful act, the responsibility of each State may be invoked in relation to that act'.²³⁹ The difficulty is that this applies only to the situation where several states commit 'the same' act – not, as in the case of climate change, where 'several States independently commit acts that contribute to an indivisible harm',²⁴⁰ as Voigt explains. Although, in domestic law, the principle of joint or several liability could be engaged, in international law it remains unclear how multiple states should be treated where they individually contribute to harm. This has led former ILA Rapporteur Rauschnig to voice his concern that state responsibility could become a 'useless weapon against unlawful transfrontier pollution'.²⁴¹ Ultimately, one would hope that the apportionment of damages would be infused by considerations of equity and commonsense, and based on a consideration of the proportion of emissions for which a state is responsible. Faure and Nollkaemper promote the application of 'proportional liability', by which liability would be 'equal to the probability that the defendant states contributed to the climate change that damaged the victim state'.²⁴² This appears to be accepted by other commentators as the most appropriate means of allocating costs.²⁴³

Contribution to the Injury

It is also important to bear in mind that a claimant state may have contributed to the injury through its own greenhouse gas emissions. Article 39 of the Draft Articles regulates this area: 'In determination of reparation, account shall be taken of the contribution to the injury by willful or negligent action or omission of the injured State.' Damages received will be adjusted where willful contribution to the harm occurs. A state would therefore need to have acted negligently before the amount of compensation due would be affected by Article 39; '[T]he mere fact that emissions occur everywhere, including in the claimant State, will not reduce the compensation due'.²⁴⁴ Certainly where the claimant state is a small island state like Tuvalu, this principle is unlikely to affect the remedy.

The Global Environmental Facility

A quantification of compensation may, however, take into account recent funds allocated by the Global Environmental Facility (GEF). As the financial mechanism of the UNFCCC, the GEF allocates approximately US\$250

238 Tol and Verheyen, *ibid.*

239 DASR art 47(1).

240 Voigt, above n 2, 19.

241 International Law Association, *Rapport of the 64th conference (Rapporteur Rauschnig)* (1990) 298, cited in *ibid* 20.

242 Faure and Nollkaemper, above n 74, 77.

243 See also, for example, Voigt, above n 2, 20.

244 Verheyen, above n 62, 248, citing Report of the International Law Commission, above n 10, 275.

million dollars a year for projects dealing with energy efficiency, renewable energy and the development of sustainable transportation. It also manages the Least Developed Countries Fund and the Special Climate Change Fund.²⁴⁵ In August 2008, under its Least Developed Countries Fund, the GEF approved Tuvalu's application for a US\$3.0 million grant to assist the nation in dealing with climate change.²⁴⁶ A US\$0.6 million grant was also allocated for a project aimed at enhancing the ability of all levels of public administration to plan for and respond to climate change risks.²⁴⁷

However, commentators remain critical of the usefulness of the Least Developed Country Fund. Ian Fry, International Environment Officer for the Government of Tuvalu, for example, highlights the voluntary nature of the contributions to the fund and, unsurprisingly, the fact that the United States is yet to contribute.²⁴⁸ He concludes: 'It is evident that the polluters are not all that willing to pay'.²⁴⁹ Although this recent allocation of funding to Tuvalu is a promising step towards aiding Tuvalu with part-mitigation of future damage, the ability of such a voluntary mechanism to provide long-term solutions to damage faced is slim. If Tuvalu's future damages significantly exceed any funding provided, substantial losses will still eventuate and liability will remain unchanged.²⁵⁰

VII. LOOKING TO THE FUTURE

Summary of Findings Regarding State Responsibility for Climate Change Damage

It has been established that it is generally possible to use state responsibility as a vehicle to address climate change damage including reparation for harm. Where the climate change regime or the obligation to prevent transboundary damage are breached, legal consequences can arise whether or not the state intended to cause damage. Although emissions will often originate from private actors, they can nevertheless be attributable to the state where the state is responsible for regulating these activities.

Where a wrongful act can be proven, a state can demand cessation. Where a causal link can also be shown between the act and the injury sustained, the injured state can claim reparation; compensation will be most appropriate where restoration is impossible. Although science does not yet stretch to the establishment of specific causation, general causation can be proven given

245 Global Environment Facility, *Climate Change* (2007) <http://www.gefweb.org/interior_right.aspx?id=232> at November 2008.

246 As reported to the COP14 in Poznan, Poland, December 2008. See Makereta Komai, *Tuvalu Takes US\$3.1M From Latest GEF Funding* (2008), Newstin, December 3, <<http://fides.newstin.com/tag/us/91264553>> at January 2009.

247 Ibid.

248 15 donors have thus far pledged to the LDCF: Canada, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom – see Global Environment Facility, *Adaptation* (2007) <http://www.gefweb.org/interior_right.aspx?id=194> at January 2009.

249 Fry, above n 213, 23.

250 See a similar discussion by Barton, above n 60, 86, with regards to a hypothetical example concerning Palau and Canada.

the almost unanimous acceptance that climate change is real and caused by humans. A balance of probabilities standard is the most likely and most appropriate standard to apply in the context of climate change damage. If this were accepted by an international tribunal, then science as it currently stands should be advanced enough to establish a sufficient standard of correlation between human emissions and climate change.²⁵¹

Although there are many contributing factors to greenhouse gas emissions and the consequent damage, it is accepted in international law that ‘it matters not how many links there may be in the chain of causation’ connecting the wrongful act with the damage ‘provided there is no break in the chain’.²⁵² International tribunals will likely only hold states responsible for proximate and foreseeable causes of their actions; compensation will be denied where consequences are too remote.²⁵³ However, as Voigt suggests, the necessity of proving proximity does not seem to provide any additional requirement in the case of climate change; ‘all greenhouse gases are equally “proximate” to the resulting chain of causation leading to “climate change damages”’.²⁵⁴

It is, therefore, unlikely that a claim relating to climate change damage would be dismissed on the basis of insufficient scientific evidence to prove causation. As such, although climate change is a global issue, it would theoretically be possible to attribute impacts to specific emitters. In doing so, the precautionary principle has a role to play. Faure and Nollkaemper suggest that not taking adequate measures to reduce the risks of climate change could be considered a breach of the precautionary principle or of ‘the obligation to refrain from harmful activities, as interpreted by the precautionary principle’.²⁵⁵ The alternative is that once a wrongful act has been found, the principle can be relevant for determining how much compensation should be paid, therefore altering the traditional requirement of foreseeability.²⁵⁶ There is no clear rule in international law on how to apportion damages where multiple contributors to the injury exist. However, it is submitted that an equitable proportional liability approach is appropriate. Where this is the case, ‘uncertainty over causation should not necessarily exclude state liability for climate change’.²⁵⁷

Although Tuvalu could then theoretically bring a claim based on state responsibility against the United States, there are clear hurdles to cross, particularly regarding causation and the jurisdiction of the ICJ. The result of such a claim would also be largely unpredictable given the lack of precedent on how to apportion damages in this area. The climate change regime as it currently stands goes a long way towards preventing climate change, but does not sufficiently deal with the issue of damage; its purpose is to prevent the phenomenon of climate change as a whole, rather than compensate

251 Barton, *ibid* 83.

252 Voigt, above n 2, referring to *War Risks Insurance Premium Claims*, Award of 1923, VII RIAA (1956) 29.

253 *Ibid*.

254 *Ibid*.

255 Faure and Nollkaemper, above n 74, 159.

256 *Ibid*.

257 *Ibid* 164.

specific damage. Therefore, reliance on case-by-case international litigation based on the existing climate change regime will be insufficient to effectively deal with the issue of climate change damage. It is appropriate, then, to survey alternative avenues that may be more appropriate mechanisms to deal with climate change damage in the future, though it is recognised that not all would be of specific benefit to Tuvalu and other state victims of climate change.

Alternative Multilateral Environmental Agreements

Given that the FCCC is aimed more at preventing climate change damage as a whole, as opposed to compensating individual victims or states, it may be that claims based on alternative multilateral environmental agreements offer a better chance of success. For example, Tuvalu may be able to base a climate change claim on violations of agreements such as the *United Nations Convention on the Law of the Sea*,²⁵⁸ and the *Straddling Fish Stocks Agreement*.²⁵⁹ Already minor changes in sea temperature can cause the migration of stocks and affect coastal states' fishing economies. As Tol and Verheyen argue: 'Both the migration of fish stocks to areas outside a country's EEZ and coral bleaching and other detrimental impacts on the marine environment could qualify as transboundary environmental damage and give rise to compensation claims'.²⁶⁰ The codification of the transboundary pollution principle in Article 3 of the *Convention on Biological Diversity* could therefore also give rise to a claim, particularly given the Convention is among the most widely-ratified international environmental agreements in the world.²⁶¹

An International Civil Liability Regime

An alternative is an international civil liability regime. Although no current civil liability regime exists that can be directly applied to climate change, the concept has been utilised before in relation to numerous environmental issues, including controversial issues like biosafety.²⁶² Recent environmental liability regimes include the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*,²⁶³ the 2003 *Joint Liability Protocol* to the 1992 *UNCED Convention on the*

258 *The United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('UNCLOS').

259 *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1992 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, opened for signature 4 December 1995, 2167 UNTS 3 (entered into force 11 December 2001).

260 Tol and Verheyen, above n 3, 1116.

261 *Convention on Biological Diversity*, opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993) art 3.

262 *Cartagena Protocol on Biosafety to the Convention on Biological Diversity*, opened for signature 15 May 2000, 39 ILM 1027 (2000) (entered into force 11 September 2003) article 27.

263 *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, opened for signature 22 March 1989 1673 UNTS 126 (entered into force May 5, 1992).

Protection and Use of Transboundary Watercourses,²⁶⁴ and the *Protocol on Environmental Protection to the Antarctic Treaty*.²⁶⁵ These treaties traditionally adopt strict liability so as to channel liability to the operator of the dangerous activity. The 2006 *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm*²⁶⁶ adopt a framework which mirrors such civil liability regimes.

An international civil liability regime can be a useful tool where private actors are largely responsible for damages. Verheyen emphasises that the fact that liability conventions already exist further provides evidence that such schemes aimed at providing compensation to victims or private entities ‘can function as a dual system of private and State liability’.²⁶⁷ However, any future regime would need to satisfy both major polluters and victims. It would be unlikely that Tuvalu would receive sufficient and specific enough aid from such a scheme.

A Compensation Fund

Funds often seem like sensible solutions where causation difficulties make gaining compensation difficult. Examples of privately established funds include a fund for health damages caused by toxic emissions in Japan, a Dutch fund for damages caused by air pollutants and the United States CERCLA fund for the clean-up of toxic waste.²⁶⁸ Private emitters could contribute to a private fund which would compensate for climate change damage. The alternative is a public fund, such as the government-funded European Union Solidarity Fund to deal with catastrophic losses.²⁶⁹ Based on such examples, the Alliance of Small Island States promote an ‘internationally sourced pool of funds’ to insure the most vulnerable countries who cannot afford to insure themselves, plus ‘collective loss sharing mechanisms and international solidarity funds to address high impact events’.²⁷⁰ States have already begun designing national public funds to deal with extreme weather events, such as the Mexican FONDEM,²⁷¹ but such funds do not address the fact that developing nations like Tuvalu will be most affected by climate change and have the least financial resources available to set up such funds.

264 *Convention on the Protection and Use of Transboundary Watercourses*, opened for signature 17 March 1992, 1936 UNTS 269 (entered into force 6 October 1996).

265 *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998).

266 Discussed at Section V, Part F above. For commentary, see Caroline Foster, ‘The ILC Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities: Privatizing Risk?’ (2005) 14 *Review of European Community and International Environmental Law* 265, 266.

267 Verheyen, above n 62, 341.

268 *Ibid* 345.

269 Laurens Bouwer and Jeroen Aerts, ‘Financing Climate Change Adaptation’ (2006) 30 *Disasters* 1, 49.

270 United Nations Framework Convention on Climate Change, *Submission from AOSIS, Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention*, Fourth Workshop, Vienna, 27-31 August 2007.

271 World Bank, *Managing the Financial Impacts of Natural Disaster Losses in Mexico* (2000) cited in Verheyen, above n 62, 345.

Therefore, an international compensation fund is preferred as the most equitable option. Daniel Farber, for example, promotes an international compensation commission similar to the schemes dealing with terrorism, toxic torts and damage to natural resources:

The commission would receive claims from countries that have incurred adaptation expenses such as strengthening sea walls or providing alternative sources of ecosystem services to replace lost wetlands. The commission would determine which adaptation expenses were reasonable and would schedule them for compensation.²⁷²

Potentially the simplest means of implementing a fund for residual damage may be to incorporate it into the already existing climate regime. Required contributions could be based on shares of emissions, thereby also providing a mitigation incentive. However, this is likely to spark debate whether contributions should be based on current or historical shares of emissions; after all, many of the current impacts from climate change are as a result of historical emissions. For ease of implementation, it may alternatively be preferable to begin from now, and require that countries that fail to meet their emissions targets under the Kyoto Protocol pay a penalty into the fund.²⁷³ This is a viable option for Tuvalu, which could submit a claim to such a fund as opposed to an interstate claim to the ICJ. However, time is running out for Tuvalu; a fund would need to be established soon to be of any benefit. Before this can be done, the controversial issues of exact contributions, areas of compensation and thresholds of damage and restoration need to be addressed.

Human Rights and Environmental Law

As the overlap between environmental and human rights law is increasingly recognised, human rights forums and instruments may offer an alternative means of redress for victims of climate change damage.²⁷⁴ As Abate suggests, '[o]pportunities to raise environmental claims may exist within numerous international agreements including the United Nations' human rights bodies and treaties, the Rio Declaration and the World Conference for Human Rights'.²⁷⁵ The right to a healthy and clean environment is increasingly recognised in international human rights and environmental law and has been incorporated into a number of constitutional provisions. The *Stockholm Declaration*, for example, declared that 'both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic rights – even the right to life itself'.²⁷⁶ The *Rio Declaration* also states that '[h]uman

272 Farber, above n 12, 1608.

273 BBC News, *Japan Ratifies Kyoto Pact* (2002) <<http://news.bbc.co.uk/2/hi/asia-pacific/2024265.stm>> at November 2008.

274 See Caroline Dommen, 'How Human Rights Norms Can Contribute to Environmental Protection: Some Practical Possibilities Within the United Nations System' in Romina Picolotti and Jorge Daniel Taillant, *Linking Human Rights and the Environment* (2003) 105; Alan Boyle and Michael Anderson, *Human Rights Approaches to Environmental Protection* (1996).

275 Abate, above n 72, 20.

276 *Stockholm Declaration of the United Nations Conference on the Human Environment* UN Doc A/CONF.48/14 Rev. 1 (1972).

beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'.²⁷⁷ Such provisions represent 'an evolving recognition and growing consensus that environmental human rights will be the lens through which environmental protection disputes are viewed in this century'.²⁷⁸

This human rights path was recently attempted by the Inuit Circumpolar Conference, representing 150,000 people in northern Alaska, Canada, Russia and Greenland. In 2005, a claim was filed against the United States with the Inter-American Human Rights Commission based on an alleged breach of the right of indigenous peoples, the right to a healthy environment and the rights of people to freely dispose of their natural wealth and resources under the Inter-American Convention on Human Rights (IACHR).²⁷⁹ The claim was not considered by the Commission, as the Commission found the information received was not sufficient to permit a determination of whether a violation of the IACHR had occurred.²⁸⁰ Nevertheless, this claim received considerable attention in the media and has succeeded in highlighting the human rights implications of climate change damage. It is hoped that opportunities available within international human rights instruments may serve as an additional avenue for challenging governments that violate international human rights through their contribution to climate change. Again, while this would be an ultimately beneficial development for the phenomenon of climate change, this avenue will be of limited short-term benefit for victim states like Tuvalu that face immediate damage.

Domestic Lawsuits

Ultimately, any option based on international law will face the difficulty of enforcement. States are not obliged to accept international adjudication,²⁸¹ and even if an international tribunal were to make an award, its enforcement will depend on the desire of the defendant state to pay. Domestic lawsuits requesting tighter regulation and compensation for damage based on tort or municipal statutes may be more appropriate, an alternative which is increasingly discussed in the literature and already surfacing in the courts.²⁸²

277 *Rio Declaration Rio Declaration on Environment and Development*, The United Nations Conference on Environment and Development, A/Conf.151/26 (Vol. 1) Chapter 1, Annex 1, Principle 1.

278 Abate, above n 68, 27.

279 *Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States*, submitted by Sheila Watt-Cloutier, with the support of the Inuit Circumpolar Conference, on behalf of all Inuit of the Arctic Regions of the United States and Canada <http://www.earthjustice.org/library/legal_docs/petition-to-the-inter-american-commission-on-human-rights-on-behalf-of-the-inuit-circumpolar-conference.pdf > at November 2008. For discussion, see Faure and Nollkamper, above n 78, 131; Donald Goldberg and Martin Wagner, 'Human Rights Litigation to Protect Peoples of the Arctic' 98 *American Society of International Law Proceedings* 227 (2004).

280 Ibid.

281 Compare with the mandatory adjudication scheme under UNCLOS.

282 See Grossman, above n 168, for a discussion of how tort based climate change lawsuits may be legally viable.

As Cullet suggests, tort claims may constitute an ‘effective mechanism to allow an injured rights holder to obtain monetary compensation for the negative consequences of environmental damage’.²⁸³

The significance of domestic climate change litigation in the United States is already apparent. In April 2007, the United States Supreme Court issued a landmark judgment in *Massachusetts v EPA*,²⁸⁴ a case which challenged the United States Environmental Protection Agency’s (EPA) denial of a petition requesting it regulate motor vehicles’ greenhouse gas emissions under the *Clean Air Act*.²⁸⁵ The finding that the EPA must provide better justification of its decision not to regulate vehicles’ emissions foreshadows that domestic courts are likely to be increasingly utilised in the context of climate change.²⁸⁶ Claims against companies that emit greenhouse gases are already mounting.²⁸⁷ American lawyer Stephen Susman, who recently led a campaign to stop the large utility TXU from building new coal plants in Texas, has suggested that domestic litigation has the potential to successfully rein in polluters, ‘particularly if political initiatives to control greenhouse gases become bogged down’.²⁸⁸

The advantage of domestic litigation is that courts have greater powers of enforcement than international tribunals even if jurisdiction is established. There remains the possibility that domestic courts could handle international disputes, where defendants are local nationals or have enough local assets to be within the court’s jurisdiction.²⁸⁹ Some scholars²⁹⁰ have suggested that foreign plaintiffs may be able to bring claims in US courts under the *Alien Tort Claims Act*²⁹¹ to seek redress for the impacts of climate change. The political independence of domestic courts may also permit ‘socially desirable decisions that the political system is unable to produce’,²⁹² and prompt legislative action.

However, there are also clear disadvantages of domestic litigation. As in tobacco litigation, given the massive financial resources of potential defendants, climate change suits are likely to be both expensive and time-consuming. In addition, courts can still only operate on a case-by-case basis

283 Cullet, above n 29, 109, referring to *Martin v Reynolds Metals Co* 342 P 2d 790 (Or 1959) (United States).

284 *Massachusetts v EPA* 127 S Ct 1438 (2007).

285 *Clean Air Act* 1963.

286 See also, for example, *Ned Comer et al Murphy Oil USA Inc et al*, No 05-CV-436LG, SD Miss, Southern Div.

287 See James Kanter, *Fighting climate change*, one law suit at a time (2007) International Herald Tribune, August 15 <<http://www.iht.com/articles/2007/08/15/business/greencol16.php>> at September 2008, but note that in Europe it will be more difficult for individuals to bring class action lawsuits than in the United States.

288 *Ibid*.

289 Farber, above n 12, 1648.

290 Abate, above n 68, 7, referring to Rosemary Reed, ‘Rising Seas and Disappearing Islands: Can Island Inhabitants Seek Redress Under the Alien Tort Claims Act?’ (2002) 11 *Pacific Rim Law and Policy Journal* 399; Elizabeth Hancock, ‘Red Dawn, Blue Thunder, Purple Rain: Corporate Risk of Liability for Global Climate Change and the SEC Disclosure Dilemma’ (2004-2005) 17 *Georgetown International Environmental Law Review* 233, 243.

291 *Alien Tort Claims Act* 1789 (US).

292 Farber, above n 12, 1649.

and cannot therefore provide any overarching solution for climate change damage. This is an option suited to individuals and companies rather than states. For Tuvalu, domestic litigation will not provide any redress.

Summary

The purpose of this section has not been to offer any exact blueprint for dealing with compensation for climate change damage, but to survey some potential ideas which serve to emphasise that the issue of compensation is not impossible. Although it is unclear whether any international compensation plan will be adopted, it remains beneficial to consider the rationale and goals of such a scheme. A variety of potential avenues have been outlined for dealing with climate change damage in the future, some of which have limited use for individual developing states like Tuvalu. The ultimate decision of which mechanism to adopt is likely to be driven by political decision makers, as opposed to courts or academics.²⁹³ Whichever scheme is eventually adopted, it is essential that states are willing participants and are involved in its negotiation. Any scheme needs to provide an incentive for both states and private actors, victims and polluters, and encourage potential victims to opt for adaptation over compensation. If this can be achieved, then both a preventive and compensatory role will be fulfilled.

CONCLUSION

Climate change is already causing serious damage at local, national and international levels. Reliable science clearly attests that we are experiencing its effects in temperature and rainfall patterns that affect biological systems and threaten human lives.²⁹⁴ This phenomenon is particularly challenging both because of the expected speed of change and the commitment required by states to reduce effects. However, international law has an integral role to play in responding to this problem.

Although articles 2 and 4.2 of the FCCC are important norms applicable to the law of state responsibility, they will be insufficient long-term guards against prevention of damage caused by major emitters of greenhouse gases. In fact, regulation of damage is a topic largely ignored by the FCCC and Kyoto Protocol. As such, it is unsurprising that vulnerable states like Tuvalu are increasingly looking to litigation in an international forum as a mechanism for trying to reduce the 'regulatory gap'²⁹⁵ between the political statements of industrialised nations and the reality of their pollution. As Roberts writes, 'Tuvalu is now regarded as a prime example of just how much damage climate change can do to a country'.²⁹⁶

States which incur climate change damage should be able to claim compensation from states that have contributed to climate change as an anthropogenic occurrence and therefore committed a wrongful act.²⁹⁷ Tuvalu

293 Ibid 1608.

294 See IPCC reports, above n 1. For commentary see Ken Alex, 'A Period of Consequences: Global Warming as Public Nuisance' (2007) 26 *Stanford Environmental Law Journal* 77, 78.

295 Ibid 334.

296 Roberts, above n 57.

297 Verheyen, above n 62, 335.

should therefore be able to bring a claim against the United States, or other states for their contribution to climate change.²⁹⁸ The basis of this claim can be found in customary international law, reinforced by declarations and international agreements, including the climate change regime. The previously widespread perception that environmental damage cannot be compensated is, therefore, wrong. As the International Law Commission has stated, 'environmental damage will often extend beyond that which can be readily quantified ... [but] is as a matter of principle no less real and compensable than damage to property'.²⁹⁹

Legal difficulties certainly remain. Establishing a sufficient causal link between injury suffered by the victim state and its inhabitants and the contributions of a specific defendant state to climate change is problematic, as is the apportionment of damage between multiple polluters, and the issue of how to deal with emissions which do not constitute wrongful acts.³⁰⁰ As Abate emphasises, 'in domestic and international forums, parties seeking to recover from the impacts of climate change will be plagued by problems of causation and proof'.³⁰¹ Although high profile interstate litigation has the potential to send a significant political message to major emitters, the problems of jurisdiction and enforcement, based on the consensual nature of international law, endure.

State responsibility is clearly not a cure for environmental problems. However, it remains an integral 'instrument of redress within the system of environmental protection',³⁰² and serves as an important element in the development of increased environmental consciousness amongst governments and individuals. As Voigt and Brownlie both argue, the continuing relevance and versatility of the rules of state responsibility should not be underestimated and should be used to 'enforce primary damage prevention duties'.³⁰³

Furthermore, as scientific research continues to develop, and consensus on the effects of greenhouse gases grows, the legal challenges faced by claimants are likely to diminish. However, several alternative longer-term solutions to climate change damage have also been outlined. The negotiation of a scheme covering both the costs of adaptation to the impacts of climate change and any claims for residual damage is ultimately desirable. As the effects of environmental damage become more apparent, the international system will also need to respond by strengthening the ties between environmental and human rights regimes,³⁰⁴ in reflection of the overlap between international environmental and international human rights law. In addition, although national law duties have not been dealt with by this article, in reality

298 See Davis, above n 82, 70, for similar findings on the Maldives.

299 Report of the International Law Commission, above n 10, 244.

300 Verheyen, above n 62, 335.

301 Abate, above n 68, 75. See also Andrew Strauss, 'The Legal Option: Suing the United States in International Forums for Global Warming Emissions' (2003) 33 *Environmental Law Reporter* 10185, 10191.

302 Karl Zemanek, 'State Responsibility and Liability' in Winfried Lang, Hanspeter Neuhold and Karl Zemanek, *Environmental Protection and International Law* (1991), 187.

303 Voigt, above n 2, 21. See also Ian Brownlie, *Principles of International Law* (6th ed, 2003), 189.

304 See Abate, above n 68, 76.

international and national law obligations will both need to be considered together in order to build a comprehensive response to dealing with climate change damage.

The projections of future sea level rise and increased extreme weather patterns raise complex issues between rich, industrialised nations and small, vulnerable states.³⁰⁵ Although determining a fair and efficient system of compensation for climate change poses numerous challenges,³⁰⁶ it is hoped that this article contributes to the legal debate regarding transboundary environmental damage and provides some assistance to states suffering from climate change. Insofar as damage has been sustained, claims against countries that are responsible are both possible and desirable.

305 Barton, above n 60, 87.

306 Farber, above n 12, 1606.

