

Climate Change Litigation

**Analysing the law,
scientific evidence & impacts on the
environment, health & property**

Dr Joseph Smith
Professor David Shearman

PRESIDIAN
LEGAL PUBLICATIONS

2006

© Joseph Smith and David Shearman 2006
The moral rights of the authors have been asserted.

All rights reserved. No part of this publication may be reproduced other than as permitted by law. Copyright enquiries should be addressed to the Rights Officer of the publisher.

First published 2006.

Publisher details:

Head office - Level 3, 97 Pirie Street, Adelaide, South Australia, AUSTRALIA
Postal address - GPO Box 625, Adelaide SA 5001, AUSTRALIA
tel - 1300 66 13 96 (within Australia) +61 8 8278 5882 (international)
Chambers Corporation Pty Ltd t/a Presidian Legal Publications ABN 12 102 189 408
www.presidian.com.au

Presidian Legal Publications is an Australian legal publishing company. Established in 2002, we publish legal texts for lawyers, academics and business professionals in book, loose-leaf, CD and online formats. Our distribution is global. Our vision is to produce legal works of the highest professional and scholarly standards. We welcome manuscripts and publication proposals from prospective authors. Interested writers should see the 'authors' link on our website.

National Library of Australia
Cataloguing-in-Publication entry

Smith, Joseph, 1958- .
Climate change litigation: analysing the law, scientific
evidence & impacts on the environment, health & property.

Includes index.
ISBN 9780975725443.

ISBN 0 9757254 4 0.
1. Climatic changes. 2. Global warming. 3. Climatic
changes - Law and legislation. 4. Global warming - Law and
legislation. I. Shearman, David, 1937-. II. Title.

344.046

Disclaimer: Presidian Legal Publications has used its best endeavours to ensure that this publication is of the highest professional and scholarly standards. However, we do not warrant the accuracy or completeness of the materials contained within this book and to the extent permitted by law we exclude any and all liability for any form of loss or damage suffered by any person resulting from an act or omission done or omitted in reliance on the contents of, or any omission within, this publication. No person should rely on the contents, or any omission, of this publication without first obtaining advice from an appropriately qualified person and verifying relevant information with original sources, such as judgments and statutes. Opinions expressed in this work are those of the authors and not Presidian. URLs referred to in this book were current at the time of publication but they may not remain so in the future.

About the Authors

DR JOSEPH SMITH is a barrister and solicitor of the Supreme Court of South Australia. Dr Smith's research for this work was supported by the Australian National Health and Medical Research Council in view of the major public health issues posed by global warming.

PROFESSOR DAVID SHEARMAN is Emeritus Professor of Medicine, University of Adelaide, and a Visiting Research Fellow at the University's Department of Geography and Environmental Sciences and Law School. Professor Shearman was an Assessor for the Intergovernmental Panel on Climate Change Third Assessment Report and will be an Assessor for the Panel's Fourth Assessment Report. Professor Shearman has been a Visiting Associate Professor at Yale University and is currently Secretary of Doctors for the Environment Australia (www.dea.org.au), an organisation which aims to address health issues arising from damage to the environment. The organisation is a member of the International Society of Doctors for the Environment which pursues the same aim worldwide. Professor Shearman is also a former President of the Conservation Council of South Australia.

Table of Contents

<i>Table of Cases</i>	<i>ix</i>
<i>Table of Reports, Studies & Scientific Statements</i>	<i>xiii</i>
<i>Forewords</i>	<i>xv</i>
<i>Preface</i>	<i>xxi</i>

Chapter 1 - An Introduction to Climate Change Litigation..... 1

1. Introduction.....	3
a. Global warming.....	3
b. Harm caused by global climatic change: sources for litigation.....	5
c. Holding entities liable for global warming: a far-fetched idea? ..	11
d. Aims of litigation	12
e. Public law vs. private law actions	13
2. Potential Parties.....	13
a. Plaintiffs: individuals, public interest groups & governments.....	14
<i>Case study: environmental refugees</i>	15
b. Defendants: governments & corporations.....	17
<i>Case Study: United States</i>	19
<i>Case Study: Australia</i>	20
3. The Broader Picture Behind Climate Change: Poor Global Health ..	21
a. Declining ecological health of the planet.....	22
i. Report of UN, World Bank & World Resources Institute.....	24
ii. Report of UN Environment Programme	25
iii. Assessment commissioned by UN Secretary-General	26
iv. Other works.....	28
b. Linking ecological health to human health	29

Chapter 2 - Public Law Actions..... 35

1. Introduction.....	37
2. The Environment as a Global Public Good	37
a. Ethics & theory	37
b. Legal protection of commons: the public trust doctrine.....	42
3. International Environmental Law	44
a. The international legal system: an overview	45
b. Duties of states	47
c. Limitations.....	52
i. Standing.....	52
ii. Enforcement.....	52
iii. Non-ratification of treaties	53
iv. Jurisdiction of the International Court of Justice.....	53
v. Non-compliance due to competing interests	53
vi. Causation	54
d. Case law.....	54
4. Domestic Law.....	55
a. Administrative actions.....	55

b. Limitations.....	56
i. Standing.....	56
ii. Causation.....	59
c. Case law.....	59
i. Australia.....	59
A. <i>Australian Conservation Foundation v Minister for Planning</i> ..	59
B. <i>Wildlife Preservation Society of Qld v Min. for Environment & Heritage</i>	61
ii. United States.....	64
A. <i>Commonwealth of Massachusetts, et al v EPA</i>	64
B. <i>Friends of the Earth Inc et al v Peter Watson et al</i>	70
iii. Germany.....	73
5. Human Rights Law.....	73
a. Overview.....	73
b. Case law.....	74
6. Conclusion.....	76
Chapter 3 - Private Law Actions.....	77
1. Introduction.....	79
2. Causes of Action.....	80
a. Nuisance.....	80
b. Product liability.....	87
c. Negligence.....	92
d. Environmental statutes.....	97
e. Director liability for failure to assess climate change risks.....	99
3. Conclusion.....	103
Chapter 4 - Establishing Causation: Legal Requirements & Scientific Evidence.....	105
Introduction.....	107
PART A: Legal Tests & Standards of Probability.....	109
1. Legal Tests.....	109
a. Current assessments: the common-sense approach.....	109
b. Review of a suggested probabilistic approach.....	111
2. Assessing probability of causation in multiple cause cases.....	113
PART B: Scientific Evidence (Consensus & Scepticism).....	118
1. Global Warming Science.....	118
2. Climate Modelling.....	130
a. Atmospheric modelling techniques.....	130
b. Methodological criticisms of sceptics.....	132
i. Theoretical inadequacy of computer models.....	133
ii. Complexity of climate precludes reliable modelling.....	135
iii. Concept of global temperature.....	137
3. Linking Global Warming to Specific Regional Climate Change.....	139
Chapter 5 - Assessing the Harm: Global Warming Impacts on Human Health.....	145
1. Introduction.....	147

2. Harm to Human Health	150
a. Methodology of assessing impact	151
b. Specific health effects	154
i. Heat related deaths	154
ii. Extreme weather events & natural disasters	155
iii. Cardiovascular & respiratory illnesses from pollution	155
iv. Diseases transmitted by vector species	156
A. Malaria	159
B. Other mosquito-borne diseases	160
C. Rodent-borne diseases	161
v. Water related deaths & diseases	161
vi. Population vulnerabilities	161
3. Conclusion	164
Chapter 6 - Litigation or Partnership? Risk, Governance & Policy	
Issues	167
1. Introduction	169
2. Litigation Risks	170
3. Disclosure Requirements	172
4. Accountability to Shareholders	174
5. Preparedness for Possible Future Regulation	174
6. Insurance Premiums & Insurability	175
7. Conclusion	176
Index	177

FOREWORDS

The overwhelming majority of scientific and political opinion now recognizes that global warming is a reality and that the enhanced greenhouse effect is a result of human activities. Informed opinions differ on the full nature and extent of the climate change challenge and the best manner in which to tackle the issue.

Within political and non-political fora many arguments for and against different approaches to mitigating and adapting to climate change are being discussed. Some argue with vigor in support of the use of international law, with different scholars supporting either the Kyoto Protocol or a new improved global instrument. Others argue strongly that a voluntary approach coupled with the development and use of better technology is the way forward.

Litigation is increasingly being utilized or considered as a means of bringing about major change. Over recent years we have seen litigation used as a means to force climate change to be adequately addressed in decision making and to seek to hold those responsible for greenhouse gas emissions accountable for the impacts of their past and future actions.

Litigation can be pursued in different fora and for different ends. At an international level action is being taken or contemplated to enforce obligations found in global and regional treaties and customary law. Such actions have their origins in environmental and human rights law and both face considerable hurdles. They are most likely to be pursued as a means of publicly highlighting the nature of the challenge ahead and pushing for changes to current policy approaches rather than as a means of achieving any substantive, enforceable remedies.

At a domestic level many avenues are being explored, through both public law and private law actions. Such suits seek to make use of long-standing common law actions such as the law of nuisance and the application of the public trust doctrine, while others seek to enforce more contemporary statutory laws dealing with environmental impact assessment, environmental protection, land use planning, product liability and corporations. Each action differs in its approach and faces slightly different legal obstacles.

A common challenge to all litigation is establishing legal causation due to the nature of the science and the facts of climate change. Actions seeking to have climate change taken into account in making land use planning and related decisions are less challenged in this regard, with the real issue being the extent to which such considerations should affect the ultimate decision. Having the necessary standing to bring the broad range of possible actions at international and domestic level varies and in some instances poses a significant limitation to pursuing legal action.

In the end, it is likely that a range of approaches to mitigating and adapting to climate change will continue to be pursued depending upon political and social imperatives, with each of them collectively contributing towards meeting desired objectives. Whatever one's opinion may be on the increasing use of climate change litigation to bring about change, the reality is that it is an option that will be utilized with increasing vigor to achieve desired ends.

Climate change litigation is complex. It involves interrelated legal and scientific issues and touches upon many different aspects of international and domestic law. This book provides a timely, well researched resource that will be of great value to anyone with an interest in the topic – be they a potential plaintiff, defendant, judge or observer in the gallery.

John Scanlon

Vice Chair, IUCN Commission on Environmental Law, Sydney
Past Director, IUCN Environmental Law Centre, Bonn

Climate change now looms as an enormous environmental, political and social challenge for humankind at large – almost certainly the largest such challenge since, at least, the end of the last global glaciation around 15,000 years ago. At that time, world temperature began a long upwards climb of around 6-7°C, spread over 4-5 millennia, but characterised by some hectic centuries-long swings in temperature. Today’s human-induced climate change is likely to be an order of magnitude faster than that earlier natural change.

This extraordinary phenomenon of global climate change is of our making, albeit mostly inadvertently. There is now no serious scientific dispute about the basic cause and process. Human-induced increases in the concentration of heat-trapping “greenhouse” gases in the lower atmosphere result in ... well, heat trapping. So, Earth’s surface gets warmer, just as we readers do when we add a second blanket to our beds.

In essence, our current economic activities and associated technologies, especially fossil fuel combustion, are amplifying the lower atmosphere’s natural “greenhouse effect” that keeps the Earth comfortably above freezing-point. These greenhouse gases comprise, principally, water vapour, carbon dioxide, and various other heat-trapping gases such as methane, nitrous oxide and human-made halocarbons.

During the twentieth century, world average surface temperature increased by approximately 0.6°C and around two-thirds of that warming has occurred since 1975. In its Third Assessment Report, of 2001, the UN’s Intergovernmental Panel on Climate Change stated: “There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.” Concurrently, there is mounting evidence that climate variability has increased in various regions of the world. This is now emerging as at least as great a concern about risks to infrastructure, social order and human health and survival as is the ongoing change in average climatic conditions.

By its very nature climate change entails great issues of inequity and, in more formal terms, potential legal liability. The main fault-lines of inequity are, first, between today’s high-income and low-income countries – the former have essentially initiated the global warming process while the latter are beginning to be disproportionately affected; second, between current and future generations; and, third, between the human species and all other species on Earth. Inevitably, on a more localised scale, there will be inequities

between rich and poor within populations, in terms of vulnerability to adverse health impacts – exposures to temperature extremes, to floods and landslides, to mosquitoes (housing quality, local surface water management, etc.) and to food shortages.

Climate change is part of a larger syndrome of global environmental changes – human-induced changes in the Earth System and its life-support systems. They are the result of an historically unprecedented situation. The aggregated environmental impact of human societies around the world (as a combined function of population size, economic activity and technology choices) is now so great that it is beginning to change the structures and workings of the planet, especially the biosphere.

The other main types of global environmental changes include stratospheric ozone depletion, biodiversity loss and changes, land and sea use changes, disruption of elemental cycles (e.g., nitrogen, sulphur and phosphorus), depletion of freshwater supplies, urbanisation and the global dissemination of persistent organic pollutants.

It is the distinctive, indeed ominous, global scale of these changes that represents an important difference from the many other familiar environmental concerns over localised toxicological or microbiological hazards. Climate change and these other changes signify that we have begun to live beyond Earth's vital capacity to supply, absorb and replenish. The world at large, especially in industrialised nations, is increasingly operating in "ecological deficit". Hence, there is an urgent need to understand, document and estimate the range of current and likely future consequences for human livelihoods, wellbeing and health.

In human health terms, the particular significance of these changes is that, increasingly, the health of human populations is influenced by changes from beyond the boundaries of that population's living space. Further, the likelihood of adverse inter-generational impacts on human health is greatly increased.

The risks to human health are diverse. Some will occur sooner than others; some will vary by region and latitude. There are three simply-conceived categories of risks to health. There are direct impacts, easily foreseeable, arising from things such as increases in frequency and intensity of heat-waves and of weather disasters. The second, more complex, category involves climatic-environmental impacts on disease-mediating natural processes – such as by disturbances of ecosystems, mosquito populations and food yields. Via many such pathways, these disturbances of ecological and biological systems will have widespread human health consequences, particularly in regions with vulnerable populations. Less easy to quantify is the third category – that is, the sorts of adverse health consequences that flow from social, economic and demographic disruptions. The sorts of public health problems that ensue with displacement with environmental refugees are well known and will increasingly include conflict situations as natural environmental and ecological resources dwindle.

The recent experience with unusual extreme weather events raises interesting questions about the assessment of the climate change contribution to the event and any attendant liability for proportional contribution to the event

and to its impact.

The extraordinary heat-wave in Western Europe in August 2003 caused in excess of 30,000 deaths. British atmospheric physicists have concluded that the probability of that extreme event occurring had approximately doubled as a result of the underlying warming that has occurred in the last few decades. In their estimation, what was a one in 400-year event will become a one in four-year event by around 2050 in Europe. Since damage levels – well-known to the insurance industry – display an exponential upturn with increasing intensity of the external stressor (heat-wave, cyclone, etc.), perhaps a clear majority of the deaths around Europe during that sweltering 12-day period could be attributed to the amplification of impact by the underlying warming. This is a matter for researchers to yet grapple with.

Likewise, cyclones: are they increasing in intensity because of (at least in part) climate change? The scientific evidence suggests that probably they are. Hurricane Katrina, which devastated New Orleans in September 2005, attracted huge attention and generated considerable controversy. A key question raised was whether the ferocity of that cyclone reflected an input from climate change via the unusual warming of the surface waters in the Gulf of Mexico. Those sea-surface temperatures were 1-1.5°C above average at the time for the season. So – given the abovementioned type of damage function and the known critical threshold sea-surface temperature above which cyclone intensity increases rapidly – climate change almost certainly did contribute.

Again, the arithmetic is challenging, but must be done if scientific understanding is to increase and if estimates of ‘liability’ are to be made. Indeed, in both those examples, it is likely that the excess damage due to the climate change component actually accounted for a large part of the damage that actually occurred. The arithmetic is difficult and there are many statistical probability distributions to be considered before drawing a quantitative conclusion. In the case of New Orleans and Hurricane Katrina, a related question would be whether the impact might have been reduced if there had not been a long process of eliminating wetlands, changing shorelines, and re-engineering river flows. All of these things presumably made New Orleans even more vulnerable.

So, climate change looms as the Big One: an extraordinary challenge to civil society, one that will involve tensions, dispute, inequities and, inevitably, litigation. Hopefully in time (of which there is only a limited amount before we are well into the danger zone), it will involve clearer understanding of the nature of the problem, of the need for radical changes in economic and technological profile, of the indispensable role of supra-national governance, and of the realisation that this problem (and the associated global environmental problems) goes to the heart of “sustainability”. There is no point in seeming to “sustain” economic productivity if it continues to be done by ruining the planet’s natural capital and its life-supporting capacity.

Climatic fluctuations, both acute and longer-term, have caused hardship to many societies: economic disruption, physical hazards, disease, death and “collapse”. The demise of the Mayans and the West-Greenland Vikings was substantially due to climatic adversity that evolved over one to two centuries. The 1840s Irish Famine followed unusually cold and wet conditions. These

were dramatic, sometimes protracted, but always localised setbacks for human societies.

Today's risks, from global climate change, to social stability, human wellbeing and population health signify that we are changing a fundamental part of the planet's life-support system. Indeed, the anticipated increases in adverse health impacts from climate change threaten attainment of the UN Millennium Development Goals. This underscores why population health must be recognised as a primary criterion of sustainability. The global abatement of greenhouse gas emissions would, in population health terms, represent true "primary prevention" – the elimination of the external environmental hazard.

The language of cause, risk, hazard, responsibility, inequity and so on inevitably raises the sorts of issues, questions and proposals that are at the heart of this text. The book has broad compass and seeks an admirable integration of scientific knowledge, ideas, social principles and legal processes.

Professor Anthony McMichael

Director, National Centre for Epidemiology & Population Health, ANU (Canberra) and co-author of the World Health Organization's *Climate Change and Human Health: Risks and Responses*

PREFACE

This book seeks to provide a detailed overview and analysis of the legal and scientific issues at the core of climate change litigation. Following a familiar pattern experienced in other mass tort lawsuits, such as chemical pollutant, asbestos and smoking cases, climate change litigation raises a myriad of complex and challenging legal and scientific issues.

The book focuses on causes of action and defences available to litigants, scientific evidence supporting global warming and types of damage being caused by climate change which could lead to litigation, with a particular focus on harms to human health. Legal analysis of causes of action is primarily based on international laws in the context of their application to, and national legal systems operating within, the United States and Australia. These countries, as well as corporations within them, are likely to be primary targets of plaintiffs in view of the fact that they are both major greenhouse gas-emitting nations that have not ratified the *Kyoto Protocol to the United Nations Framework Convention on Climate Change*.¹ Many of the legal causes of action discussed are, of course, directly relevant to other common law countries, such as the United Kingdom, Canada and New Zealand. It is hoped that readers in non-common law countries will also find the issues discussed in this book of relevance to their legal systems. Owing to the vast array of issues that will arise in climate change cases brought in various jurisdictions around the world, it was not possible to address each of them in this text. Consequently, some legal issues, such as those relating to jurisdiction, apportionment of damages, contribution between tortfeasors, conflict of laws and remedies, remain outside the scope of this book.

Chapter One of the text sets the scene of climate change litigation by providing an overview of the global warming and broader environmental crisis with which plaintiffs are concerned. Various types of harm to the environment, human health and property – for which legal redress could be sought – are mapped out and potential litigants identified. Chapters Two and Three analyse legal causes of action and defences potentially available to litigants based on both public law and private law actions and review the limited, but growing, number of climate change cases from around the world that have sought to pave the way for future litigation.

Chapter Four shifts the text's focus onto one of the major obstacles that plaintiffs will need to overcome in climate change suits: establishing legal causation. The chapter reviews the scientific evidence and considers what standards should be applied in assessing such evidence in view of the complexities surrounding climate change. In relation to causation, a plaintiff will need to establish that the harm complained of arose from global warming and that global warming was caused in part by the defendant. The latter part

1 The Kyoto Protocol commits ratifying countries to reducing their emissions of carbon dioxide and five other greenhouse gases. This text does not seek to address the legal aspects of the Kyoto Protocol. This has been the subject of other texts: see, eg., D. Freestone and C. Streck (eds.), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (Oxford University Press, Oxford, 2005).

of this argument necessarily entails proving that climate change is, at least all or in part, due to anthropogenic (ie. human-induced) causes rather than natural climatic variability. Major scientific works in the field, which represent current scientific consensus on the causes of global climate change and the impact that human-induced change is having on the planet, are explained and reviewed. These include the core reports of three working groups of the Intergovernmental Panel on Climate Change (IPCC), as well as more recent scientific reports which imply that the causative link between anthropogenic climate change and environmental damage may be even more direct than that suggested by the IPCC reports. The arguments of those who dispute the fact that global warming is occurring (often referred to as “global warming sceptics”) are, naturally, of interest to defendants of climate change suits. Two primary arguments of global warming sceptics are reviewed and critiqued; namely, those revolving around global warming scepticism (ie. that global warming is not occurring) and natural climatic change (ie. if global warming is occurring, it is caused through natural variability in temperatures rather than human causes).

Chapter Five continues the focus on scientific evidence and looks in detail at what harms to public health global warming is predicted to cause, this being a major type of damage for which plaintiffs could seek compensation.

Chapter Six again shifts the focus of the book, this time by considering some of the wider commercial, governance and legal issues that the threat of litigation poses for organisations as well as examples of how these issues are being addressed by governments and companies around the world.

As far as the authors are aware, this book is the first to seek to analyse climate change litigation in a comprehensive manner, but certainly won't be the last. A primary goal of the book is to encourage cross-fertilisation amongst lawyers and scientists in this developing field of litigation. It is also hoped that the text will spark thought, and continue discussion, amongst the legal, business and political communities not only about legal matters associated with global warming but also the broader social, political and economic issues it raises and how these should be addressed.

The authors are grateful for the reviews, comments and assistance of Dr Paul Babie, Professor Graeme Hugo, Margaret Minney, Joanna Rillo, Saxon Smith and Dr Nigel Stocks. Dr Joseph Smith is grateful to the National Health and Medical Research Council (NHMRC) for its scholarship funds. A large proportion of NHMRC funds support laboratory research. The NHMRC's support for a legal text exploring avenues at law for addressing climate change indicates that global warming is on the agenda as a major public health issue and needs to be tackled through a range of methods. Dr Joseph Smith is also thankful for the generous institutional assistance of the Law School of the University of Adelaide.