

Sustainable Development Law & Policy

Volume 9

Issue 2 *Winter 2009: Climate Law Reporter 2009*

Article 1

Volume 9 Issue 2

Sustainable Development Law & Policy

Follow this and additional works at: <http://digitalcommons.wcl.american.edu/sdlp>



Part of the [Environmental Law Commons](#)

Recommended Citation

Sustainable Development Law & Policy, Winter 2009, 1-80.

This Entire Issue is brought to you for free and open access by the Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. It has been accepted for inclusion in Sustainable Development Law & Policy by an authorized administrator of Digital Commons @ American University Washington College of Law. For more information, please contact fbrown@wcl.american.edu.

SUSTAINABLE DEVELOPMENT LAW & POLICY



EXPLORING HOW TODAY'S DEVELOPMENT AFFECTS FUTURE GENERATIONS AROUND THE GLOBE

IN THIS ISSUE: CLIMATE LAW REPORTER

- 1 | EDITORS' NOTE *by Lisa Novins & Addie Haughey*
- 2 | AN OVERVIEW OF THIS ISSUE: CLIMATE CHANGE IN 2009
by Professor Perry Wallace
- 4 | RESOLVING THE CLIMATE WARS
by Dr. Alan D. Hecht
- 16 | ASSESSING THE CHALLENGES OF GEOLOGIC CARBON CAPTURE AND SEQUESTRATION: A CALIFORNIA
GUIDE TO THE COST OF REDUCING CO₂ EMISSIONS *by Les Lo Baugh & William L. Troutman*
- 23 | COULD LITIGATION HELP TORRES STRAIT ISLANDERS DEAL WITH CLIMATE IMPACTS?
by Dr. Donna Green & Kirsty Ruddock
- 31 | CASE STUDY: CLIMATE CHANGE ADAPTATION PLANNING GUIDANCE FOR LOCAL GOVERNMENTS
IN THE UNITED STATES *by Edna Sussman*
- 37 | PLANNING FOR ADAPTATION TO CLIMATE CHANGE: LANDMARK CASES FROM AUSTRALIA
by Jacqueline Peel & Lee Godden
- 43 | EUROPEAN UNION COHERENCE IN UNFCCC NEGOTIATIONS UNDER THE NEW TREATY OF LISBON
(REFORM TREATY) *by Stavros Afionis*
- 49 | CLIMATE CHANGE, ENERGY, AND SUSTAINABLE DEVELOPMENT IN SOUTH AFRICA: DEVELOPING THE
AFRICAN CONTINENT AT THE CROSSROADS *by Professor Edson L. Meyer & Dr. Kola O. Odeku*
- 54 | MONGOLIA: A CASE FOR ECONOMIC DIVERSIFICATION IN THE FACE OF A CHANGING CLIMATE
by Nathan Borgford-Parnell
- 57 | THE WORLD BANK CLEAN TECHNOLOGY FUND: FRIEND OR FOE TO THE UNFCCC? *by Addie Haughey*

<http://www.wcl.american.edu/org/sustainabledevelopment>

AMERICAN
UNIVERSITY

WASHINGTON COLLEGE of LAW

LAW
LAW

EDITORS' NOTE

The debate over both domestic and international climate policy continues to evolve each year, adapting to broader global politics and ever changing current events. Today, at the forefront of everyone's mind is the global financial crisis. In both the financial crisis and the climate crisis, the unknown factors are the most frightening. While the immediacy of the financial crisis impacts each of our lives, we must not forget the longer term and potentially much more severe and lasting impacts of the climate crisis. As Australian professor Ross Garnaut recently noted, the unprecedented "financial crisis—no matter how severe—will be short-lived and should not stand in the way of action on global climate change."

Perhaps it is because the world's global policy focus is on the financial industry that so many of our submissions focused instead on local, regional, and to a lesser degree, national climate issues. It is encouraging to see the real progress outlined in many of our articles—as one of our authors says, local and regional governments are, in some situations, particularly well poised to deal with climate adaptation measures.

While the 2009 Copenhagen climate negotiations are looming only months away, the global climate debate continues. The United States is finally beginning to not only to take steps towards reducing its own carbon dioxide ("CO₂") emissions but also is poised to reengage in the dialogue and move towards a post-Kyoto framework. This new energy and resolve is exemplified by President Obama's commitment, during his first address to a joint session of Congress, to placing a "market-based cap on carbon pollution" and driving domestic renewable energy production.

Despite other world events, it is most certainly time for all countries to engage in the global dialogue and seriously commit to binding CO₂ reductions. As this issue illustrates all too well, the potentially catastrophic effects of global warming are not only appearing in the data and statistics but also becoming visible in the daily lives of many people around the planet. And as we have heard all too many times, it is not those of us who are most responsible for the greenhouse gas ("GHG") emissions that are feeling the heat; it is those of us who have the fewest resources to adapt that are most severely impacted.

We hope you enjoy this fifth annual edition of *Sustainable Development Law & Policy's* ("SDLP's") Climate Law Reporter. In these five years, we have seen the discourse evolve. Five years ago, many still questioned whether to act. Today the debate is no longer whether or when to act; the debate is focused how and where to act. This issue covers a wide range of topics from addressing climate change in a human rights context to using legal tools to help Indigenous populations deal with the climate impacts for which they are not responsible.

FEATURES:

- 15 | POZNAŃ CLIMATE CONFERENCE 2008
by Kyle Ingram and Matt Irwin

- 22 | HUMAN RIGHTS AND CLIMATE CHANGE: SHIFTING THE BURDEN TO THE STATE?
by Anne Parsons

- 30 | IS THE ENDANGERED SPECIES ACT THE RIGHT PLACE TO SET U.S. CLIMATE CHANGE POLICY?
by Chris Logan

- 36 | WHAT HAPPENS IN VEGAS . . . NEEDS LEGISLATIVE BACKUP
by Urusla Kazarian

- 42 | DIRTY FUEL INCENTIVES IN THE BAILOUT BILL
by Rand Robins & Janet M. Hager

- 48 | CREATING A U.S. CARBON MARKET
by Alex Hoover

- 62 | LITIGATION UPDATE: *WINTER v. NRDC, INC.*
by Natalie Dillree

- 64 | BOOK REVIEW
SIX DEGREES: OUR FUTURE ON A HOTTER PLANET
by Mark Lynas
Reviewed by Matthew Padilla

As is evidenced by our diverse authors, we have become an important international venue in the global climate debate. We hope this issue of SDLP helps push the discourse beyond debate and towards action, because our future and our livelihoods depend on it.



Lisa Novins
EDITOR-IN-CHIEF



Addie Haughey
EDITOR-IN-CHIEF

AN OVERVIEW OF THIS ISSUE: CLIMATE CHANGE IN 2009

by Professor Perry Wallace*

“Climate change has long since ceased to be a scientific curiosity,” observes the recent United Nations Environment Programme’s *World Year Book 2009*.¹ Indeed, climate change is “the major, overriding environmental issue of our time, and the single greatest challenge facing decisionmakers at many levels.”² So powerful and overarching is this global phenomenon that its destructive potential comprises economic, health and safety, food production, security, and other dimensions. This includes such problems as: shifting weather patterns threatening food production; ice loss and thermal expansion creating rising sea levels that contaminate freshwater reserves and threaten catastrophic flooding; and warming atmospheres spreading pests to new terrain.

Moreover, successive assessments indicate that global warming, with its associated effects on climate, is a greater threat than predicted in earlier evaluations. Particularly disturbing are recent predictions that climate change will not evolve in a slow, linear pattern. In fact, we may have already reached certain important “tipping points,” which portend irreversible changes in major Earth systems and ecosystems. In response to these developments, governmental and private actors around the world have begun the monumental work of creating mitigative and adaptive mechanisms for this equally monumental problem.


Emerging at a pace that has accelerated with the similarly growing certainty about the reality and the effects of climate change, a comprehensive network of regulatory regimes is finally beginning to occur. At the international level, negotiations for a post-Kyoto Protocol climate treaty have already begun.³ Further, this activity reflects ongoing commitments of nations around the world to address climate change.

In the United States, in addition to earlier action by private actors and state and local governments, all branches of the federal government have now addressed climate change in some important way. The United States Supreme Court, in *Massachusetts v. Environmental Protection Agency*, held that greenhouse gases (“GHGs”) fit well within the Clean Air Act’s definition of “air pollutant” and that the federal Environmental Protection Agency possesses authority to regulate GHGs.⁵ Additionally, the U.S. Congress is also considering legislative proposals to address the subject. Finally, the turnaround by the American Executive Branch, from doubt and resistance toward acknowledgement and determination to address the problem, is perhaps the most significant development. President Obama’s vow to address climate change as a serious and urgent matter is widely seen as a key element in the quest for global consensus and action.

Nevertheless, these important developments portending positive action on climate change must be viewed against a background of both structural and current realities of a geopolitical and economic nature. Thus, while developed countries

of the North, the historic GHG emitters, are generally favorable toward taking assertive, binding action, developing countries of the South have raised concerns about many of the proposed models. One major concern of these latter countries holds that while they were not the culprits, they are the most adversely affected by climate change. Further, they possess insufficient economic and technological resources for taking action. Another concern, they argue, is that implementing such measures could stifle their continuing development. China and India, with the most prodigiously emerging economies today, are major actors in this debate.

Another major dynamic that will affect progress in addressing climate change is the state of the global economy. A seriously recessionary global economy only makes for scarce governmental and corporate resources, and this in turn places limits on the abilities of those key actors to embark upon the massive project of creating a new, carbon-constrained world. Further, significantly decreased energy demand has reduced the prices of oil and other traditional sources of energy, thus taking away a previous source of pressure (high energy prices) to explore alternative energy sources. Decreased production during this period has also had unfortunately negative effects on a burgeoning emissions trading market. Thus, lower production has led to decreased GHG emissions and thereby lowered demand for emissions credits. Emissions credit prices have dropped precipitously, and, as with other market drops in an ailing economy, confidence in the larger system has suffered.

Nevertheless, these challenges will at best only slow down or complicate the evolution of the global movement to control and manage climate change. The urgency of the threat is well-documented at this point in history, and public and private actors around the world have resolved to travel the path towards a carbon-constrained planet. The articles in this edition of SDLP well reflect that resolve. These articles report on particular developments in as diverse set of governments as Mongolia, Australia, the European Union, and the small island states. They also encompass a range of crucial aspects relative to building regulatory effectiveness and institutional capacity, such as strategy, policy, technology, legal tools, and financial mechanisms. Together, they present an impressive treatment of the current state of affairs in developments relative to climate change. 

Endnotes: An Overview of This Issue *continued on page 65*

* Perry Wallace is professor of law at American University, Washington College of Law. He specializes in Environmental Law, Corporate Law, and Finance. He is a member of the National Panel of Arbitrators, National Association of Securities Dealers Dispute Resolution, and has recently been elected to the Board of Directors of the Environmental Working Group.

ABOUT SDLP

Sustainable Development Law & Policy (ISSN 1552-3721) is a student-run initiative at American University Washington College of Law published three times each academic year, with occasional special editions and two annual foreign language translations. The journal publishes articles and essays that focus on reconciling the tensions between environmental sustainability, economic development, and human welfare. It embraces an interdisciplinary focus to provide a broad view of current legal, political, and social developments. Our mission is to serve as a valuable resource for practitioners, policy makers, and concerned citizens promoting sustainable development throughout the world.

Sustainable Development Law & Policy prints in accordance with the standards established by the Forest Stewardship Council (“FSC”) that are designed to eliminate habitat destruction, water pollution, displacement of indigenous peoples, and violence against people and wildlife that often accompanies logging. Achieving FSC Certification requires that every step of the printing process, from lumber gathering to transportation to printing to paper sorting, must comply with the chain of custody established by the FSC which runs a strict auditing system to maintain the integrity of their certification process.

Currently, FSC certification is one of four methods a publisher can employ to ensure its publications are being produced using the best practices. It is the method practiced by our printer, HBP, Inc. (FSC Chain-of-Custody Certification: SW-COC-002553).

To purchase back issues please contact William S. Hein & Co. at hol@wshein.com. To view current and past issues of the publication please visit our website at <http://www.wcl.american.edu/org/sdlp>. Current and past issues are also available online through HeinOnline, LexisNexis, Westlaw, vLex, and the H.W. Wilson Company. Please note that Volume I and Volume II, Issue 1 are published as *International and Comparative Environmental Law*.

Printed by HBP, Inc., Hagerstown, MD.

Editorial Staff:

Editors-in-Chief

Lisa Novins, Addie Haughey

Senior Editorial Board

Emily Alves, Mary J. Bortscheller, Michael Distefano, Scott Daniel Johnson, Rachel T. Kirby, Libby McCullough, Brittany Meyer, Matthew Padilla, Hena Schommer

Staff

Melissa Blue Sky, Megan Chapman, Mara Comé, Natalie Dillree, Michael Dreher, Lyndsay Gorton, Janet M. Hager, Nicola Harrison, Courtney Henson, Alex Hoover, James Hunter, Kyle Ingram, Matt Irwin, Ursula Kazarian, Amanda King, Anastasia Lewandoski, Chris Logan, Michael Lore, Blake M. Mensing, Nathan Borgford Parnell, Anne Parsons, Rand Robins, John Shackelford, Rowan Smith, Gretta Walters, Meti Zegeye

© *Sustainable Development Law & Policy*, 2009. All rights reserved.

American University is an equal opportunity affirmative action university.



RESOLVING THE CLIMATE WARS

by Dr. Alan D. Hecht*

Views expressed in this article are those of the author and do not necessarily reflect the views or policies of the EPA. Mention of trade names or commercial products does not constitute Agency endorsement or recommendations for use.

INTRODUCTION

From 2001 through 2008 the United States experienced a period of climate wars: politics vs. science, business vs. government, and states vs. the federal government. By early 2009 some of these conflicts started to move toward resolution through legal action, scientific advances, and shifts in business strategies. Decisions made today will determine whether a new era of climate protection begins or the climate cold wars continue. Business as usual is not in our nation's best interest and every effort must be made to end the period of continued infighting between business and government, federal-state conflicts, and denial of the root causes of climate change. This paper reviews several of the climate wars from 2001 to 2008, describes their historic context, and looks at lessons learned for the future.

ORIGIN OF THE CLIMATE WARS

For decades scientific uncertainty and the cost and regulatory approach of addressing global climate change have been at the root of the climate debate. When in 1983 the U.S. Environmental Protection Agency ("EPA") published a report evaluating the effectiveness of specific energy policies to reduce greenhouse emissions ("Can We Delay a Greenhouse Warming?"), responses from Congress, business, and federal agencies were highly polarized.¹ A sense of urgency among some Congressional leaders emerged in 1986. "Deeply disturbed" by the implications of published reports on carbon dioxide ("CO₂")-induced climate change, Senators Chafee, Stafford, Bentsen, Durenberger, Mitchell, Baucus, Leahy, and Gore began to pressure the White House to take action on climate change.

While the United States wavered on actions to address climate change, the United Nations Environment Programme ("UNEP") was committed to initiating international and domestic actions to reduce greenhouse gas ("GHG") emissions. UNEP had a clear sense of purpose and in 1985 called for a legal convention on climate change and began to lead international scientific efforts to establish the foundation for negotiating such an agreement. As discussed later, this effort had a major impact on the U.S. climate debate.

When candidate George H.W. Bush took office in 1988, he declared: "Those who think we're powerless to do anything about the greenhouse effect are forgetting about the White House effect. As President I intend to do something about it."² But President Bush may have underestimated the underlying economic

challenges. After EPA Administrator William Reilly briefed the cabinet on climate change and the prospect for an international climate convention, he reported to EPA officials³ what he had heard at the briefing. Despite growing agreement among climate modeling groups, White House chief of staff John Sununu declared that the climate models were fundamentally flawed and that the best atmospheric scientists had yet to become involved

in climate research. Office of Management and Budget director Richard Darman called the concept of a climate convention "clean air for the whole world." Council of Economic Advisors ("CEA") chairman Michael Boskin advised the president that an international treaty on climate change was a "bet-your-economy decision."

Listening to the above advice would scare anyone worried about destabilizing the U.S. economy. But, in the end, President Bush supported the creation of the Intergovernmental Panel on Climate Change ("IPCC") as a way to address the division among scientific viewpoints. Later he also supported the development of the Framework Convention on Climate Change ("FCCC") that in turn led to the development of the Kyoto Protocol.

In the 1990s and during the Clinton Administration similar debates over science and economics continued. During the subsequent Bush Administration (2001–2009) these debates became more of a series of wars between politics vs. science, business vs. government, and states vs. the federal government.

Decisions made today will determine whether a new era of climate protection begins or the climate cold wars continue.

*Dr. Alan D. Hecht is the Director for Sustainable Development, Office of Research and Development of the U.S. Environment Protection Agency ("EPA"). From 2001 to 2003 while on detail from EPA, Dr. Hecht served as Associate Director for Sustainability at the Council of Environmental Quality ("CEQ"). Previously he was director of the U.S. National Climate Program from 1982 to 1989 where he was instrumental in launching the Intergovernmental Panel on Climate Change ("IPCC").

My review of several of the confrontations during this period suggests a written or unwritten strategy aimed at:

- Avoiding new federal legislation and regulations. This meant not allowing CO₂ to be identified as a pollutant under the Clean Air Act or as an endangerment to human health. One approach used to prevent legislation was to emphasize the uncertainty in the science of climate change.
- Doing nothing to hamper economic growth. The sluggish economy didn't need extra burdens on business. Instead, federal actions promoted voluntary programs on climate change, many of which have helped to slow the growth of greenhouse gases.
- Doing nothing until China, India, and other developing countries commit to reduce GHG emissions. The United States walked away from both the intention of the 2002 UNFCCC and the Kyoto Protocol largely based on economic considerations.

At the beginning of 2009, many of the conflicts surrounding climate change are moving toward resolution and the time may be at hand to resolve long-standing conflicts over regulations and economic impacts and launch a new era of energy-climate policy. While legitimate policy differences remain, as evidenced by different approaches advanced by leading economists like Sir Nicholas Stern⁴ who argues for immediate action on climate change and William Nordhaus who proposes a modest and slower response,⁵ steps to resolve differences must be based on a different federal-business and federal-state-local government model. Business as usual is not in our nation's best interest.

This paper will examine several of the most significant recent climate wars and their historic roots and suggested future actions. Given the current economic recession, now more than ever new government and business partnerships and close cooperation with non-government conservation, environmental, and economic groups are needed to help the public understand the economic and social costs of dealing with climate change, stimulate the economy, create a broader energy portfolio, mitigate and adapt to climate change, and advance a new business and foreign policy agenda.

RESISTING GHG REGULATIONS: THE 2001 G-8 MEETING

During the 2000 presidential campaign, candidate George W. Bush promoted legislation to "require the mandatory reduction in U.S. of emissions of sulfur dioxide, nitrogen oxide, mercury and carbon dioxide from power plants."⁶ Many observers saw this as a significant departure from past history and were optimistic that a new era of climate change would begin.

Unfortunately, the campaign promise in 2000 was reversed in March 2001 following an international conference among the G-8 countries. The reversal, a surprise to the newly appointed EPA Administrator Christine Todd Whitman, was a clear indication of behind-the-scene concerns about energy policy, economics, and government regulations.

At a meeting of the G-8 industrial countries in Trieste, Italy, Governor Whitman announced that the United States was committed to regulation of GHG emissions. Whitman assured her counterparts that the United States wanted a mandatory cap on

Underlying the opposition to CO₂ regulation was the critical issue of the supposed economic impacts that would result from regulating CO₂ and who would pay for it.

CO₂ emissions. The Joint Communiqué expressed an international commitment to "take the lead by strengthening and implementing national programs and actions, to reduce greenhouse gas emissions, as well as to promote and disseminate environmentally sound technologies and practices and renewable energy sources."⁷

Unfortunately, Administrator Whitman was unaware of a behind-the-scenes effort led by Senators Chuck Hagel, Jesse Helms, Larry Craig, and

Pat Roberts to reverse this commitment. In a letter to the president, these senators made clear their view that the commitment was unwise. The letter attracted the attention of Vice President Cheney who, according to Barton Gellman, embarked on a plan to "walk the president away from his promise."⁸ Cheney's staff prepared a four-page memo "that would put the White House on record against the collective judgment of the world's climate scientists."⁹ The memo said Bush should be nudged toward the position that the "current state of scientific knowledge about causes of and solutions to global warming is inconclusive. Therefore it would be premature at this time for the president to propose any specific policy or approach aimed at addressing global warming."¹⁰

The President accepted this approach and signed a letter responding to the senators that was prepared by Cheney's staff and given to the President (by Cheney) without any consultation across the government, especially with Governor Whitman. In a White House press release the president said: "I do not believe, however, that the government should impose on power plants mandatory emissions reductions for carbon dioxide, which is not a 'pollutant' under the Clean Air Act."¹¹

Chief of Staff Josh Bolten ultimately assumed responsibility for the president's reversal, asserting that he had been in error: the intended designation for CO₂ was "emission" not "pollutant."¹² Underlying such a distinction was fear of establishing a legal basis for regulating CO₂. After Bolten's admission, Vice President Dick Cheney agreed, arguing that putting a cap on CO₂ "was bad energy policy."¹³

Underlying the opposition to CO₂ regulation was the critical issue of the supposed economic impacts that would result from regulating CO₂ and who would pay for it. The Bush administration's priority for economic growth was clearly evident in all policy actions. A key chapter of the *Economic Report of the President* submitted to Congress in 2002 focused on the cost of environmental regulations. Recognizing the significant achievement of the past decades in reducing the most obvious risks to health and the environment, the report states, "there is evidence that further improvements in air quality would improve health and reduce mortality, but these improvements might be extremely expensive."¹⁴

Risk and cost-benefits analyses were key factors driving public policy in 2001 through 2008. Regulating emissions that affect climate change was recognized as potentially very valuable but not as an immediate priority in light of the cost and questions about the potential risks. "We are uncertain about the effect of natural fluctuations on global warming. We do not know how much the climate could or will change in the future. We do not know how fast climate change will occur, or even how some of our actions could affect it. Finally, it is difficult to say with any certainty what constitutes a dangerous level of warming that must be avoided."¹⁵

Fearing the economic impact of any climate legislation, promoting scientific uncertainty and denying global warming became the operating plan for many business and government leaders.

PROMOTING SCIENTIFIC UNCERTAINTY: CHALLENGING THE 2001 AND 2007 IPCC ASSESSMENTS

The Intergovernmental Panel on Climate Change ("IPCC") has become the world's preeminent scientific body assessing the impacts of and proposing options for responding to climate change. A key element of its 2001 assessment was its statement on the growing evidence for human-induced climate change.¹⁶ And one specific diagram—later termed the "hockey stick"—was ultimately to cause considerable angst among policy makers. What is the IPCC? What are its assessments? And how does this relate to domestic energy policy?

In 1985 UNEP, in cooperation with other international organizations and non-government organizations, organized a conference and prepared a scientific assessment of the impacts of climate change.¹⁷ UNEP Executive Director Moustafa Tolba sent the report to then Secretary of State George Schultz urging the United States to take appropriate policy actions on climate change and to launch negotiations on a climate convention. The State Department passed the letter to the National Climate Program Office ("NCPO") and its senior interagency policy board to draft a response. (The NCPO, created within NOAA by Congress as a coordinating body among all federal agencies, was mandated to develop a climate action plan. From 1982 to 1989 I was the director of NCPO, which was later replaced by the interagency Global Change Research Program.)

The NCPO policy board, which included all relevant federal agencies, vigorously debated the merit of the report. The U.S. Department of Energy ("DOE") representative argued that it was inadequate, in part because it had no government sanction. DOE vocally insisted on a government-led international scientific assessment. At the same time, EPA and the Department of State representatives supported the idea of a convention on climate change and suggested that perhaps it was timely for governments to prepare an international scientific assessment, especially in light of conflicting scientific evidence. During the debate, I offered a consensus proposal where the United States would support an international government-led scientific assessment and would agree to international negotiations if the seriousness of the problem were affirmed. For different reasons, each agency agreed to the proposal. At a time when it was difficult to get interagency agreement on any action, there was agreement around the concept of an international scientific assessment.

The action of the NCPO Policy Board eventually led to the U.S. proposal for "an intergovernmental mechanism" to conduct a government-led, scientific assessment of the climate change issue.¹⁸ This "mechanism" later became the IPCC, which continues today as the preeminent global scientific court on climate change. In the end, the IPCC report confirmed the seriousness of the climate problem and triggered the beginning of negotiations for a climate convention.

Back to the climate wars—because of their relevance to policy, the 2001 and 2007 scientific assessments came under intense scrutiny. One figure in the 2001 report triggered particularly intense reaction. This report drew on data from a 1998 publication by Michael Mann, Raymond Bradley, and Malcolm Hughes that reconstructed temperature patterns over the past 1000 years ("MBH98").¹⁹ The controversial graph depicted a sharp rise in temperatures over the past 100 years, which the authors attributed to human activity. The graph, with its "hockey stick" pattern, was a key piece of supporting evidence in the 2001 IPCC report.

Mann, who has been an author of the IPCC report, testified before Congress in 2003 that: "It is the consensus of the climate research community that the anomalous warmth of the late 20th century cannot be explained by natural factors, but instead indicates significant anthropogenic, that is human influences."²⁰ Nevertheless the underlying scientific methods used by MBH98 were criticized by other authors who challenged the evidence that the sharp rise in global temperature was being caused by human activities.²¹

The hockey stick became an element of the climate war when, in June 2003, Representative Joe Barton of Texas, the Republican chairman of the Committee on Energy and Commerce, requested that Mann provide responses to eight detailed questions related to his credentials and past work.²² The Subcommittee ultimately asked the National Academy of Science ("NAS") to review the issue, and NAS formed a committee of twelve scientists to assess the main areas of uncertainty, the principal methodologies used, any problems with these approaches, and how central the debate is to the state of scientific knowledge

on global climate change. In the end, the NAS report agreed that there were statistical shortcomings in the analysis but concluded that the conclusions were in fact correct.

Considering that the essence of the scientific process is peer review and reproduction of results, why was this an issue for a Congressional oversight subcommittee? Who or what was the real focus of this debate? Two objectives seemed to underlie this debate: to dispute any claim of human-induced climate change and hence any need for legislation; and to challenge the IPCC process and its current and future credibility by showing it relied on publishing flawed papers.

In 2001, the IPCC assessment scientists concluded that it was “likely” (which it defined as with a greater than sixty-six percent probability) that climate change was caused by human activities.²³ Six years later, the 2007 report raised the probability of human influences on climate to “very likely” (indicating a probability greater than ninety percent) and detectable in observational records.²⁴ This stronger conclusion reflected a great deal of scientific progress made over the intervening years, both in direct observations of the impacts of climate change, and in computer modeling. Nearly all scientists have concluded that current trends could not be explained without including human-related increases in greenhouse gases. While the 2007 report strengthened the consensus among most scientists and governments, a number of critics argue either that the report was too conservative or too alarming.

Using scientific uncertainty to undermine support for climate legislation was further advanced by reliance on an obscure law known as the Federal Data Quality Act (“FDQA”).

REGULATING SCIENCE BY LAWSUITS ON DATA QUALITY

FDQA, a little-known rider to the 2001 Consolidated Appropriations Act, directed the director of the Office of Management and Budget (“OMB”) to issue government-wide guidelines that “provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies.”²⁵ The law requires that any scientific document issued by the government include clearly supportable data and any uncertainties related to the topic. It was approved without any congressional hearings. Many businesses supported the Act as a means to reign in regulation perceived to be unsupported by science. Environmentalists criticized its passage and predicted it would be used to stop regulations aimed at protecting public health and the environment.

The first lawsuit to be filed under the FDQA asked the government to cease dissemination of the 2000 *U.S. National Assessment of the Potential Consequences of Climate Variability and Change*. The 2003 suit filed by the Competitive Enterprise Institute (“CEI”) against President Bush asked the federal courts to order the White House Office of Science Technology and Policy (“OSTP”) to withdraw the assessment report. The suit asserted that data in the Assessment was derived from “demonstrably inaccurate computer models, and dissemination of historical

temperature data that it modified to inaccurately omit the occurrence of recognized climatic periods. This Act prohibits Defendant from disseminating data failing to meet its standards.”²⁶ The CEI claimed that the assessment failed to meet the DQA’s scientific standards for objectivity and utility, because two of the models used “are incapable of providing reliable predictions.”²⁷

Understanding this morass requires some history. In 1990, Congress enacted the Global Change Research Act that required the preparation of national climate assessments.²⁸ The Act established the United States Global Change Research Program with the aim of understanding and responding to global change, including the cumulative effects of human activities and natural processes on the environment, to promote discussions toward international protocols in global change research, and for other purposes. The Act requires “on a periodic basis (not less frequently than every 4 years)” the preparation of an assessment report to the President and Congress that among other things “analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity,” and “analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years.”²⁹

The National Assessment Synthesis Team (“NAST”) a federal advisory committee, consisting of experts from government, universities, industry, and non-governmental organizations prepared the first of these assessments completing it in late 2000. Using results from two different climate models, the team developed two different but plausible scenarios of future climate change and evaluated their environmental impacts.

Considering the potential impact of climate change on the United States, NAST leader Michael MacCracken’s staff sent the report to every state governor. Ironic as it may be, then Texas Governor George Bush responded, “Thank you for your letter and the enclosed copies of your assessment about the potential consequences to the U.S. of a climate change. I appreciate the work that went into preparing this information.”³⁰

The 2000 Assessment Report, completed before the enactment of the FDQA, became the foundation for the U.S. annual report to the UN on climate change required under the 2002 UNFCCC. The third U.S. report in 2002, based on the 2000 assessment report, concluded: “Greenhouse gases are accumulating in Earth’s atmosphere as a result of human activities, causing global mean temperature and subsurface ocean temperatures to rise. While the changes observed over the last several decades are likely due mostly to human activities, we cannot rule out that some significant part is also a reflection of natural variability.”³¹

This conclusion, which seemed at odds with federal policy, prompted *The New York Times* science writer Andrew Revkin to report (June 3, 2002) “[i]n a stark shift for the Bush administration, the United States has sent a climate report to the United Nations detailing specific and far-reaching effects that it says global warming will inflict on the American environment. In the report, the administration for the first time mostly blames human

actions for recent global warming. It says the main culprit is the burning of fossil fuels that send heat-trapping greenhouse gases into the atmosphere.”³²

Perhaps recognizing that the U.S. Report to the UN interpreted in this manner was setting a foundation for possible future regulatory action, President Bush dismissed the U.S. report by saying it had been put “out by the bureaucracy.”³³ Recognizing the potential legal implications of the U.S. Report, the rationale for the CEI lawsuit becomes clearer. On August 6, 2003, CEI filed a lawsuit against the Administration to invalidate the 2000 National Assessment of the Potential Consequences of Climate Variability and Change that formed the basis for many of the conclusions in the Climate Action Report.

Amid Congressional investigations of possible White House promotion of the initiation of the lawsuit, the lawsuit was ultimately withdrawn after the White House Office of Science and Technology Policy (“OSTP”) acknowledged that the National Assessment on Climate Change had not been subjected to the FDQA guidelines.

The use of the FDQA as a tool in the war on science is not over. In August 2008 the U.S. Chamber of Commerce asked the government to withdraw the Second National Climate Report that argued that it is “likely that there has been a substantial human contribution to surface temperature increases in North America.”³⁴ The Chamber argued that the report contained unpublished data that made it difficult to assess its scientific reliability. The Bush Administration settled the dispute by inserting a disclaimer that the National Report was not subject to FDQA guidelines.

The war on science is likely to continue, but specific actions could go a long way toward restoring the independence and integrity of scientific assessment by rescinding the FDQA and any executive orders that provide political oversight of science, such as the controversial Executive Order 13422, which requires that “[f]ederal agencies should promulgate only such regulations as are required by law, are necessary to interpret the law, or are made necessary by compelling public need, such as material failures of private markets to protect or improve the health and safety of the public, the environment, or the well-being of the American people. In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating.” On February 4, 2009, President Obama repealed EO 13422.³⁵

Peer review—not lawsuits—is the underlying framework for evaluating science. This traditional process allows critical examination of new ideas and theories and forces scientists to

defend their work. One critical element of peer review needed for policy makers is estimating scientific uncertainty. Translating science into policy is well illustrated by the IPCC. While the IPCC reports are designed to reflect scientific consensus, an IPCC *policy summary* is a document prepared for policy makers. Reflecting governments’ concerns, the IPCC process was designed to allow governments to review and approve a summary for policy makers while being faithful to the underlying science. Although a good deal of climate change science is fundamental physics, a large portion of the impacts of climate change reflects modeling that may include uncertainties in extent and timing.

Although the negotiations and approval of the policy summaries by governments can be torturous, the IPCC process has been successful in both preserving integrity and forging consensus among governments and scientists. This process underscores that there is some discretion in how scientists and policy makers can communicate the significance and the need for action. The situation was less clear in 2003 when EPA was finalizing its first *Draft Report on the Environment* (“RoE”).

EDITING EPA’S 2006 DRAFT REPORT ON THE ENVIRONMENT

The EPA *RoE*, launched in 2001 by Governor Whitman aimed to give the public a snapshot of the quality of the U.S. environment and to establish a set of indicators or metrics to measure improvements (or declines) over time. One contentious issue was the chapter on climate change. Initially, the Chairman of the White House Council on Environmental Quality (“CEQ”) argued that such a chapter was not needed since so many other climate reports were available. It was later recognized that an EPA *RoE* without a chapter on climate change would not be credible.

The interagency review of the chapter on climate change was heated. (From October 2002 to June 2003 while on detail as CEQ Associate Director for Sustainable Development, I was given the task of helping resolve interagency disagreements.) Flagging the chapter’s section on climate change, White House staff noted: “This section should be thoroughly reviewed for content and usefulness of that content. The section ‘What are the contributions to climate change . . .’ is not balanced and virtually ignores any mention of natural variability If this cannot be balanced, it needs to be removed.” Office of Management and Budget staff commented to CEQ Chief of Staff Philip Cooney on March 4, 2003, “Phil, I don’t know whether you have reviewed the Climate Section of the EPA report, but I think you and Jim [Connaughton] need to focus on it before it goes final.

The war on science is likely to continue, but specific actions could go a long way toward restoring the independence and integrity of scientific assessment.

Even though the information is generally not new, I suspect this will generate negative press coverage.”³⁶

While the review was underway, CEQ’s chief of staff was promoting a new paper by Willie Soon and Sally Baliunas that contradicted published accounts of historic climate trends. The Soon-Baliunas paper asserted that it was an authoritative review of the literature and concluded: “that the 20th century is probably not the warmest nor a uniquely extreme climatic period of the last millennium.”³⁷ Shortly thereafter, thirteen of the authors of papers cited by Soon and Baliunas refuted the Soon-Baliunas interpretation of their work and contradicted “thousands of papers that go into a document like the IPCC report.”³⁸

Four versions of the *RoE* climate change chapter went back and forth between CEQ and EPA, which was finally instructed to take the changes or leave it. On May 23, 2003, after several days of internal EPA discussions, EPA Administrator Whitman yanked the chapter from the report. This war is one of several described in the House Oversight Committee’s review of science editing. Two years later on June 8, 2005, a similar incident of heavy CEQ editing of a NOAA report was described in *The New York Times*. On March 19, 2007, Chairman Connaughton and Chief of Staff Cooney of CEQ testified before Congress and defended their editing as necessary to make the final report consistent with published literature. The hearing highlighted the role of policy-makers distorting or asserting their own interpretation of scientific results. In the IPCC policy-makers summary that governments negotiate, all scientists must agree with the changes thus preventing any government from distorting the results.

The hearing failed to invite the one key witness whose judgment ultimately decided the fate of the report. In the end it was the EPA administrator (and former Republican governor of New Jersey) who decided that the revised chapter should not be included. Administrator Whitman said in effect that the chapter—as edited—would diminish EPA’s credibility as an environmental agency. EPA staff advised Whitman that the benefits of removing the chapter “were that it would provide little content for attacks on EPA’s science and that it may be the only way to meet White House and EPA needs.”³⁹

STATES VS. FEDERAL GOVERNMENT: A SUPREME COURT DECISION

In 1999 the International Center for Technology Assessment, the Sierra Club, Greenpeace, and other environmental groups petitioned the EPA to regulate and set limits for CO₂ and other GHGs emitted from new motor vehicles, arguing that such action was EPA’s duty under Section 202 of the Clean Air Act. The petitioning groups’ central argument was that CO₂ was a pollutant and that its impact on global warming was negatively affecting human health and the environment. EPA failed to respond to the petition within three years, leading to a lawsuit brought by the environmental groups in 2002.⁴⁰

Subsequently, Massachusetts, Connecticut, and Maine filed a petition in June 2003 arguing that by failing to regulate CO₂ EPA was violating its mandatory duty under Section 108 of the

Clean Air Act. EPA denied the petition arguing that the Clean Air Act did not authorize the agency to issue mandatory regulations to address global warming, and that even if the EPA did have such authority, the agency believed it would be neither “effective or appropriate” to establish GHG emissions standards for motor vehicles at this time.⁴¹

After EPA denied the petition to regulate CO₂, a coalition of twelve states led by Massachusetts; the cities of New York, Washington, DC, and Baltimore; and thirteen environmental groups filed appeals in the U.S. Court of Appeals for the District of Columbia in October 2003.⁴² The three-judge panel faced three issues: the standing of the petitioners, EPA’s authority to regulate GHG emissions, and the agency’s decision not to establish GHG standards for new vehicles. On July 15, 2005, the court of appeals issued three opinions in the case. Two of the judges agreed, although on differing grounds, to let stand EPA’s position that it lacked the requisite authority. However Judge David Tatel issued a lengthy dissent, agreeing with the Massachusetts position on all grounds. Following the petitioners’ request, the Supreme Court granted a *writ of certiorari* directing the Appeals Court to forward the case record for its review; The Supreme Court heard arguments on November 29, 2006.

Two important criteria are required to have standing to sue the federal government: that at least one petitioner must be able to show injury from an actual or imminent action traceable to a federal agency and that the injury is one that a court can address.⁴³ Hence the real underlying issue was whether the impacts of climate change on a state serve as justification for a suit in federal court. A positive finding on this question would mean any state could petition the federal government for national action.⁴⁴

The Supreme Court decision affirmed that, “The harms associated with climate change are serious and well recognized.”⁴⁵ Massachusetts declared that its harm includes prospective loss of coastline that would be caused by the rise in sea level resulting from global warming. Because EPA “does not dispute the existence of a causal connection between man-made gas emissions and global warming,” and “EPA’s refusal to regulate such emissions ‘contributes’ to Massachusetts’ injuries,” the Plaintiffs satisfied the traceability requirements.⁴⁶

Writing for the Court, Justice John Paul Stevens summarized three important holdings: (1) As quasi-sovereigns, states are entitled to an elevated level of deference on standing issues; (2) CO₂ and other GHGs are “air pollutants”; and (3) EPA’s reasons for not regulating GHG emissions were insufficient.⁴⁷ Four justices dissented (Roberts, Scalia, Thomas, and Alito), arguing that states did not have any special rights of status and that nothing the Court could do would address the injuries complained of because “any decrease in emissions here will be overwhelmed many times over by emissions increases elsewhere in the world.”⁴⁸

In his assessment, Justice Stevens quoted climate scientist Michael MacCracken who argued that the harms associated with climate change are serious and well recognized. Also citing a National Research Council assessment, which EPA itself regards as an “objective and independent assessment of the relevant

science,” a number of environmental changes that have already inflicted significant harms were identified, including:

... the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years [and] petitioners allege that this only hints at the environmental damage yet to come. According to the climate scientist MacCracken, “qualified scientific experts involved in climate change research” have reached a “strong consensus” that global warming threatens (among other things) a precipitate rise in sea levels by the end of the century, and severe and irreversible changes to natural ecosystems.⁴⁹

The Court’s decision changed the legal and political landscape. President Bush issued an Executive Order in May 2007 that directed EPA and the Departments of Transportation, Energy, and Agriculture to coordinate in developing possible regulatory actions to address emissions from mobile sources contributing to global climate change.⁵⁰ This is a complicated process requiring that the EPA assert that the carbon emissions endanger public health and welfare under the Clean Air Act. While it might seem that this federal-state battle is over, that is not the case. Battles between federal agencies, again reflecting economic concerns, were clearly evident in an agency public comment on the proposed greenhouse gas rulemaking under the Clean Air Act. Comments received from the Secretaries of Energy, Agriculture, Commerce, and Transportation—underscoring economic concerns—noted:

The EPA staff now has prepared a draft suggesting the Clean Air Act can be both workable and effective for addressing global climate change by regulating emissions from stationary and mobile sources of virtually every kind. Our agencies have serious concerns with this suggestion because it does not fairly recognize the enormous—and we believe insurmountable—burdens, difficulties and costs and likely limited benefits of using the Clean Air Act to regulate GHG emissions.⁵¹

Consequently OMB advised EPA Administrator Johnson that: “The issues raised during interagency review are so significant that we have been unable to reach interagency consensus in a timely way, and as a result, this draft cannot be considered Administration policy.”⁵² EPA action to implement the Supreme Court decision has been deferred to the new Administration.⁵³

RESOLVING THE CLIMATE WAR

The climate wars of the past decades between business and government and between federal and state governments have inhibited the convergence of four critical factors needed to address climate change: (1) advances in science and technology; (2) effective application of government regulations and policies; (3) adoption of green business practices; and (4) new foreign policy initiatives. Overcoming these conflicts requires a different government and business approach. Federal interactions with business should include GHG regulations, market incentives,

and collaborative programs; cooperation with state and local governments should focus on promoting alternate energy systems and mitigation and adaptation to climate change; and new foreign policies should highlight the need for an energy-climate economy, especially with China.

The use of science as a tool in fueling the climate wars must end. Scientific consensus on human-induced climate change is now stronger than ever and efforts to undermine, edit, or otherwise discredit scientific reports should end. The focus should be on the value of science in helping decision-makers make the right decisions. Now more than ever the interface of physical and behavior science and economics will be needed to rebuild the economy and move society toward more sustainable energy systems. Anticipating the importance of this goal, the 1998 House Committee on Science argued in the report *Unlocking Our Future*:

While acknowledging the continuing need for science and engineering in national security, health, and the economy, the challenges we face today cause us to propose that the scientific and engineering enterprise ought to move towards center stage in a fourth role: that of helping society make good decisions. We believe this role for science will take on increasing importance, particularly as we face difficult decisions related to the environment.⁵⁴

Preparing for the presidential election in 2008, dozens of organizations prepared hundreds of recommendations for action by the new Administration. Overall all of these actions should be judged on how well they advance a consensus among business and government and end the climate wars of the past decades. Three strategic directions for future actions stand out and are detailed below.

NEW BUSINESS AND GOVERNMENT APPROACHES ON REGULATING GREENHOUSE GAS EMISSIONS

Effective national climate regulations and policies are needed to mitigate GHG emissions. A key challenge for the new administration will be to launch a new era of government-industry partnerships.

Historically, industry has met every new proposed environmental or health regulation with declarations of impending economic disaster. In remarks following EPA’s creation in 1970 the director of the U.S. Chamber of Commerce warned of the potential collapse of entire industries from pollution regulations.⁵⁵ Given the current economic crisis in the auto sector, it is ironic to recall Lee Iacocca’s 1972 prediction (quoted by Thomas Friedman) that, “If EPA does not suspend the catalytic converter rule, it will cause Ford to shut down and would result in reduction of GDP by \$17 billion, increase unemployment by 800,000, and decrease tax receipts of \$5 billion all levels of government.”⁵⁶ U.S. electric utilities claimed that the cost of meeting the 1990 Clean Air Act would reach \$4–5 billion per year. But by 1996, utilities were actually saving \$150 million per year due to the act. When EPA announced a phase-out of substances that damage the ozone layer, many industries claimed that alternative

substances did not exist or were too expensive. In 1993, automobile manufacturers warned that regulation of chlorofluorocarbons (“CFCs”) would increase the price of new cars by up to \$1,200. Just four years later, the industry admitted that costs of following the new rules had declined to as little as \$40.⁵⁷ More recently, studies by Roland Hwang and Matt Peak (as quoted by Thomas Friedman) “found that the target industries dramatically and consistently overestimate the costs that regulations would impose on them and dramatically underestimate the innovation they would inspire.”⁵⁸

In all of these cases the costs of complying with environmental regulations were far lower than industry—and even government—estimated that they would be. More recently a second perspective on regulations has emerged emphasizing potential economic advantages. General Electric’s (“GE’s”) 2005 “ecomagination” initiative launched the notion that “green is green.”⁵⁹ The GE initiative is part of a broader greening of industry as demonstrated by interviews with dozens of key industrial leaders⁶⁰ and a convergence of government and business policies moving toward more sustainable behavior.⁶¹ For example, GE is one of a number of large companies that for the first time are energetically advocating national legislation to address GHG emissions.⁶²

The formation of the U.S. Climate Action Partnership (“USCAP”) and its proposal for GHG controls further illustrate the change of some company attitudes. USCAP members include dozens of the world’s largest companies who now argue for a mandatory cap-and-trade program and market based incentives.⁶³

Broader support from industry for the USCAP’s business approach will depend on exactly how GHG regulations are formulated and implemented. Many companies will want credit for their past carbon-reducing actions, many others will be looking for incentives before moving forward and many will want equitable economic impacts across all business sectors. USCAP’s member support for mandatory approaches to GHG reduction is at odds with historic business models. Smart business strategies will be needed to achieve that goal.

The costs of GHG reductions—and who will bear them—have always been a concern for policy makers. In 2002, the Bush administration saw an economy with a meager 1.6% growth rate in GDP as the nation struggled to recover from bursting of the high tech bubble and the 9/11 attacks. Even by 2007 the U.S. GDP growth rate was only 2.2%. In response to declining housing markets, GDP growth projections of just 1.9% per year prevailed in 2007. Today in 2009, with the U.S. and international economies adjusting to financial collapse in many financial sectors, any scheme for taxing or capping carbon emissions will need to include energy-economic models such as those envisioned by green business advocates. But despite a significant downturn in the economy, the time is right to launch a new era of government-business cooperation whereby GHG regulations and green energy initiatives both stimulate the economy while reducing GHG emissions, and protect human health and ecosystems for ecological services.

The new government-business strategy must include advancing new technologies, setting carbon limits, facilitating implementation of other new regulations, and creating new incentives for industry. Corporations must put aside tired refrains of resisting federal regulations as inherently anti-business. Strong federal support to regulate existing GHG emissions and to support Research & Development on new technologies to reduce GHG emissions is essential. Incentives to do both can enhance economic competitiveness and protect the environment. Both government and business must see the role of environmental regulations in a new light recognizing the fallacies of past actions. Both government and business, with support from non-government organizations and the public, must agree on the sense of urgency and work together to implement a new business strategy.

Given today’s economic downturn, former CEA chair Michael Boskin’s comment (cited earlier) that an international treaty on climate change was a “bet-your-economy decision” might in fact be right if viewed as a step toward economic recovery and the launching of a new era of a green economy.

FEDERAL-STATE COOPERATION ON REDUCING GHG AND ADAPTING TO CLIMATE CHANGE

States and cities have been in the lead in developing policies to reduce GHG. Past federal-state conflicts need to end and new partnerships developed.

Worldwide power generation is the largest GHG emitter generating nearly 10 billion tons of CO₂ per year.⁶⁴ With over 8,000 power plants (out of more than 50,000 globally), the U.S. accounts for about 2.8 billion tons of CO₂ annually—about 25% of worldwide emissions.⁶⁵ The U.S. power plants that produce the most CO₂ are all coal-fired and are located in the states with the largest GHG emissions (including the top five of Texas, Pennsylvania, Ohio, Illinois, and Indiana).⁶⁶ These states (and many others), through the use of renewable portfolio standards (“RPS”), are on the front lines in efforts to reduce GHG emissions.

Around the country many states are requiring utilities to provide specific amounts of power from renewable energy sources. Twenty-three states and the District of Columbia established RPSs by mid-2007.⁶⁷ By the same time, forty-seven states were engaged in state or regional energy planning, forty-one had established standards to allow rooftop solar systems and other distributed-generation technology to connect to the electric grid, ten had created energy-efficiency portfolio standards, and sixteen had implemented public benefit funds to support clean energy programs.⁶⁸ According to a Pew Center review of state RPS programs, while these standards range from modest to ambitious, “the use of renewable energy does deliver significant GHG reductions. For instance, Texas is expected to avoid 3.3 million tons of CO₂ emissions annually with its RPS, which requires 2000 megawatts of new renewable generation by 2009. Increasing a state’s use of renewable energy brings other benefits as well, including job creation, energy security, and cleaner air.”⁶⁹

Public and investor support for renewable energy is growing as is evident by the 2007 \$32 billion buyout of the Texas power company TXU Corp. by private equity firms Kohlberg Kravis Roberts & Co. (“KKR”) and the Texas Pacific Group. TXU had been battling environmentalists and others who had been working to prevent the company from more than doubling its fleet of coal-fired power plants in Texas. Opponents to the expansion claimed the new plants would drastically increase emissions of sulfur dioxide, nitrogen oxides, mercury, and carbon dioxide. As part of their plan to purchase Texas electricity provider TXU Corp., Texas Pacific Group and KKR have agreed to terminate the applications for eight of TXU’s eleven proposed coal plants in Texas and will adopt a platform of initiatives that will significantly reduce the company’s environmental impact in Texas.⁷⁰

Federal-state cooperation must build on two key factors: passing appropriate legislation and policies to coordinate and reduce GHG emission and developing strategies needed to adapt to climate change.

A short time after the TXU buyout, Kansas became the first state to reject a coal-fired power plant solely because of potential impacts of climate change. Since then, the state has become ground zero for a nationwide battle pitting environmental concerns against powerful economic and political interests. Kansas now faces legal actions to reverse this decision.⁷¹

Initiation of RPS programs is not the only way that states are seeking to reduce GHG emissions and expand economic development. Many states have petitioned the federal government for action on transportation fuel standards. On the basis of federal Clean Air Act provisions that allow California, subject to EPA approval, to set anti-pollution standards stricter than those of the federal government, the state petitioned EPA for a Clean Air Act waiver so that it could require stricter automobile regulations for carbon emissions. In December 2007, after the passage of federal legislation establishing national automotive fuel efficiency at 35 mpg, EPA denied the California petition.⁷² California and other states plan to appeal the EPA decision; more legal battles are likely in 2009 and beyond.

Other actions by California underscore the business side of GHG reductions. Because of its early commitment to energy efficiency and renewable energy, California expected to develop nearly 95,600 new jobs and \$21 billion in investment to manufacture the components of renewable energy systems.⁷³ While such forecasts may be delayed by the current economic crises, they are nonetheless inevitable as the economy rebounds. Cities (in the United States and around the world) are also leading efforts to reduce GHG emissions. Members of the C-40 group of the world’s largest cities are committed to tackling climate change and have committed to investing over \$1 billion to finance energy-saving measures in municipal buildings.⁷⁴

Looking ahead, federal-state cooperation must build on two key factors: (1) passing appropriate legislation and policies to coordinate and reduce GHG emission and (2) developing strategies needed to adapt to climate change. These city and state actions highlight shifting environmental and economic base that

is pushing the United States toward “a *de facto* national RPS through a tapestry of state-based programs.”⁷⁵ These state actions are challenging the federal government to find constructive and supportive ways to help. It is therefore not surprising that the bipartisan Presidential Climate Action Project has recommended the creation of “a federal-state partnership with \$1 billion annual in grants to states and communities to implement climate action plans, reform utility rates to encourage energy efficiency, and adapt to climate

change.⁷⁶ Anticipating the need for federal-state cooperation, a new think tank has been launched at Georgetown University’s Law Center to develop policies and positions and recommendations related to state-federal issues.

Federal-state partnerships must also focus on giving state and local leaders the information they need to anticipate and adapt to impacts of climate change. A better understanding of regional and local impacts of climate change is critical for effective decision-making. Given the projected IPCC business as usual scenarios for CO₂ emissions and recognizing how long it might take to implement new mitigation strategies to reduce GHG emissions, adaptation may be the most immediate need to avoid potential serious impacts. Recognizing this, the National Research Council (“NRC”) in 2007 evaluated the many federal climate assessments and emphasized the need for better understanding of local impacts, better communication of scientific results, and more focus on social science issues.⁷⁷

These are important conclusions and should impact the scope and direction of federal research programs. As the NRC evaluation noted, “only \$25 million to \$30 million of CCSP’s [U.S. Climate Change Science Program] \$1.7 billion annual budget is devoted to such research.”⁷⁸ “In addition, few social scientists are in leadership positions at the participating federal agencies, making it difficult for CCSP to increase emphasis in this area or to establish links with the academic social science community.”⁷⁹

The NRC report recognized the importance of communicating scientific results to decision makers and urged a closer examination of the impact of climate change at regional and local scales.⁸⁰ “More accurate models, better regional observations, and the development of impact scenarios will be required

to improve predictions of how climate change will affect smaller spatial scales.”⁸¹ The preparation by CCSP of twenty-one separate assessment reports prompted Pew Center Director Eileen Claussen to note that everything is fragmented “so we never get a clear picture.”⁸² Anticipating the extra financial burden on states, cities, and the general population necessary to regulate greenhouse emissions, decision makers at all levels are going to need a clear understanding of potential impacts.⁸³

One recent EPA study highlights the economic impact on states of anticipating and adapting to climate change. Mundane as it might be, wastewater-collection systems or combined sewer systems (“CSSs”) are major systems designed to collect municipal wastewater and storm water runoff. These systems are prevalent in older cities, particularly in the Midwest, the Great Lakes, and the eastern United States. These systems can overflow if they lack adequate capacity to transport the combined volume of municipal wastewater and storm water during extreme or frequent storm events, resulting in combined sewer overflow (“CSO”) events. Current regulatory standards allow for four CSO incidents per year.⁸⁴ With predicted enhanced precipitation patterns in the Great Lakes, this number of overflow events is likely to be exceeded. This is important because today states face the issues of how to strategically invest billions of dollars into developing more robust and sustainable urban water and wastewater systems. The answer is clearly related to developing an integrated urban sustainability approach that includes climate-change scenarios. EPA is currently assessing how such climate change can impact future urban water and wastewater systems. This kind of analysis is essential to help decision makers at state and local levels make better decisions. The above example underscores the impact of climate changes at state and local levels and highlights the need for a major infusion of research to better quantify potential impacts and the most appropriate adaptation measures.

INTERNATIONAL COOPERATION AND A NEW UNITED STATES-CHINA PARTNERSHIP

Overcoming historical barriers between developed and developing countries will require new ways of identifying those barriers and proposing solutions. The timing may be right for a U.S.–China initiative targeting specific reductions of GHG emissions. Such a bilateral agreement would change the international landscape for climate negotiations.

The negotiations that led to the Framework Convention on Climate Change in 1992 were tortuous, as the developing nations blamed the rich nations for the existing problems and demanded compensation. But in the end an agreement was reached based on the principle of differential responsibilities among nations: each country would act according to its own needs but industrial countries would do more than developing ones. The Kyoto Protocol set binding GHG emission reductions targets for thirty-seven industrialized countries and the European Community. These targets averaged five percent below 1990 levels over the five-year period 2008–2012. Arguing that China, India, and other critical emitters should make firm commitments as well

as the more industrialized countries, the United States did not sign the protocol, contributing to a stalemate that still exists. In a 2008 policy paper, China reiterated its position that developed nations have done the most damage to the planet historically and should therefore bear the most responsibility.⁸⁵ Recognizing that its reliance on coal for energy makes GHG emission reductions especially difficult, China argues for the transfer to developing nations of high-technology equipment for reducing GHG emissions.

While its economy today is in turmoil, China is expected to possess the world’s largest economy by 2050, followed by the EU, the United States, and India.⁸⁶ As economic forces drive a good deal of the climate debate, it is clear that the United States and Chinese economies will shape future international agreements. China already surpasses the United States as the greatest GHG emitter.⁸⁷ Since more than fifty percent of global GHG emissions are produced by the United States, China, and the EU—with another fifteen percent coming from Russia, India, and Japan—these countries can effectively determine future global energy and climate policies.

Although the United States and other industrialized countries bear historic responsibility for existing GHG concentrations, as Joshua Bushy notes, China “will be increasingly fingered as a climate culprit in the future,” potentially creating a common interest between the United States and China in avoiding global condemnation as “climate villains. Today’s economic and environmental stresses present an opportunity for mutually reinforcing, positive outcomes if the United States and China help each other tackle immediate environmental problems and longer-term GHG emissions. A creative U.S.-China energy and security policy could benefit both countries.”⁸⁸

China’s leaders know that their nation’s current path is not sustainable and are keenly aware of the need to advance science and technology and to develop a green economy. China recognizes the public health benefits of reducing GHGs and air pollutants (such as sulfur dioxide, nitrogen oxides and fine particles). Citing data obtained from Chinese officials, Elizabeth Economy and Kenneth Lieberthal report that environmental degradation and pollution cost the Chinese economy the equivalent of ten percent of its GDP annually—as much as US\$36 billion from lack of water to run factories, US\$13 billion from the degradation of health impact of acid rain, and US\$6 billion from the spread of desert regions.⁸⁹

It is also apparent to China’s leaders that the impacts of climate change within China could exacerbate internal political and social stresses and hence tend to undermine the nation’s political stability.⁹⁰ Not only is China in transition from being a developing to becoming a developed nation, but it is also moving from a centrally directed economy to one strongly driven by market forces. In the words of Economy and Lieberthal, Chinese officials have the daunting task of shifting “from a planned socialist economy to an entrepreneurial market economy while maintaining one-party rule.”⁹¹

For the United States, a bilateral agreement with China could serve to foster other cooperative actions among developed

and developing nations while helping to avoid potential trade and other economic conflicts. But if not handled wisely, climate change could be a source of serious U.S.-China conflict. Joshua Busby has pointed to relevant strategic issues: “A climate bill currently before Congress would allow the president, if he or she deems a country’s climate efforts to be inadequate, to impose tariff-like fees on carbon-intensive imports such as steel beginning in 2019. Such legislation, if passed, would probably be used against China, adding to existing frictions over trade, intellectual property, and the level of China’s currency.”⁹²

Given the available benefits for both the United States and China, what strategy would best serve the United States? Jonathan Wiener has recently argued that the United States should appeal to China’s national interest as the best way forward in advancing a new partnership.⁹³ Wiener argues that demanding that China fulfill a perceived moral obligation to limit its GHG emissions would be ineffective, and that the United States would be wiser to emphasize China’s own interests—the possibility of reducing climate change damages to itself and its allies, securing public health benefits from reducing air pollution, and avoiding domestic political upheaval that may be associated with extreme climate events.⁹⁴

A new U.S.-China partnership should therefore first focus on actions and new technologies that address a broad range of gases and pollutants that are both short-lived (days to weeks) and long-lived (years and decades) in the atmosphere and of gases that will likely contribute to greenhouse warming. Different GHGs impact the environment in different manners: for example, the impact of methane on global warming is 62 times the impact of CO₂ and that of nitrous oxide is 116 times that of CO₂. Regulating these gases must therefore be a crucial aspect of any climate change strategy, especially for China. Based on data in EPA’s *Global Anthropogenic Emissions of Non-CO₂ Greenhouse Gases* report, in 2005, China’s estimated anthropogenic methane emissions ranked first in the world. Approximately twenty-five percent of its anthropogenic methane emissions—209.9 MMTCO₂E—come from agriculture (manure management), coal mines, landfills, and natural gas and oil systems.⁹⁵ China is also the world’s biggest emitter of sulfur dioxide. According to China’s own data, coal and oil-fired power stations were responsible for twenty-five million tons sulfide dioxide that it discharged in 2005, contributing to acid rain that affected a third of the country.⁹⁶

Wiener suggests that these considerations point to an ongoing shift in Chinese climate policy and to the possibility that an international climate treaty could offer positive incentives to engage China in cooperative action. The United States thus has an opportunity and an imperative to engage China in what Wiener describes as “effective action on climate change through realist persuasion—appeal to global and national interests, and global and national net benefits.”⁹⁷ In political and environmental terms, a new U.S.–China initiative with objectives of developing and testing new technologies to control a wide range of pollutants and GHGs could advance new alternate technologies, sharing the economic costs and benefits of a

new strategy for climate and energy. With both countries poised to invest hundreds billions in economic recovery, the timing is right for mutually re-enforcing efforts on promoting green infrastructure.

CONCLUSIONS

Future GHG emission and climate change scenarios are not optimistic. Global emissions of carbon dioxide grew at a rate of about 1.4% per year in the 1992 to 2002 time period. Recent data show an acceleration of emission: 3.3% in the 2000 to 2006 period. China’s major expansion of its coal-fired power generation capacity has been the key factor in this unexpected acceleration in growth rate. Looking ahead it is impossible to have an effective global mitigation program without a serious commitment by the major economies like the United States and China.

If current emission trends continue at three percent per year for the next twenty-two years, the projected warming will yield a best-guess average warming, relative to 1990, of 1.8°C in 2050 and 4.4°C in 2100. Since it is too late to prevent substantial additional warming, the world community has no alternative other than to pursue both mitigation and adaptation approaches aggressively.

Effectively pursuing a mitigation and adaptation strategy requires resolution of past climate wars. Fortunately many if not all of the climate wars of the 2001–2008 period are moving toward resolution. To be sure, the cost and methods of reducing GHG emissions will continue to raise contentious questions, especially in the current stage of global financial and economic distress. However, a positive vision of the future is possible: it would include enhanced support for technology research and development, collaboration between government and business, cooperation among different levels of government, and foreign policy initiatives that combine environmental concerns and economic goals to build an innovative and resilient economy. By taking such actions and ending the climate wars, the United States can lead the way to protect the world’s environment and stimulate the global economy.



The author is grateful to Michael MacCracken, Rob Brenner, Frank Princiotto, Gordon Binder, Jonathan Wiener, and Edward Fallon for their helpful comments.

Endnotes: Resolving the Climate Wars
continued on page 65

POZNAŃ CLIMATE CONFERENCE 2008

by Kyle Ingram* & Matt Irwin**

The United Nations Climate Change Conference in Poznań, Poland (“Poznań Conference”) lasted from December 1–12, 2008. The Poznań Conference included the fourteenth Conference of the Parties (“COP 14”) to the UN Framework Convention on Climate Change (“UNFCCC”) and fourth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (“COP/MOP 4”).¹ The Conference was intended to be a significant milestone in global cooperation on climate change, marking the progress between the start of negotiations in Bali in 2007 and the conclusion of negotiations in Copenhagen in December 2009.² These negotiations are meant to develop a framework for the international community to combat climate change in the post-Kyoto Protocol world, as Kyoto expires in 2012.³ Commentators have given varying accounts of the degree to which the Poznań Conference solidified the chance for a successful climate agreement in Copenhagen. Some argue that the Poznań Conference was a productive point in the negotiation process, while others contend that it signified a failure of the developed world to take a serious step towards lowering greenhouse gas (“GHG”) emissions and cooperate with the developing world.⁴

ADAPTATION FUND

The Adaptation Fund negotiations are considered the only concrete achievement to come out of the Poznań Conference.⁵ The Adaptation Fund distributes money to poorer, developing countries for use to guard against the adverse effects of climate change.⁶ The Adaptation Fund has been considered a success because developing countries will have access to funds by the next year.⁷ However, at \$80 million the fund is currently too small to fully accomplish the imposing task of protecting poorer countries from the harmful environmental and economic impacts of climate change.⁸

To increase the size of the Fund, developing countries proposed that money should be added to the fund not only from the current two percent levy on carbon trading under the UN Clean Development Mechanism, but also other forms of carbon trading not currently covered by the Clean Development Mechanism.⁹ Developed and developing countries could not reach a compromise to increase funding sources for the Adaptation Fund at the Poznań Conference, so the issue remains for resolution in Copenhagen.¹⁰

TECHNOLOGY TRANSFER AND FINANCE

Delegates adopted the Global Environment Facility’s Poznań Strategic Programme on Technology Transfer for developing countries, which will be funded by €50 million from the UN Global Environmental Facility.¹¹ This program will increase the level of investment by leveraging private investments necessary for developing countries to implement both mitigation and adaptation technologies.¹² Without technology transfer programs such as this, the developing world would not be able to afford meaningful advances in meeting the climate change challenge.¹³

EMISSIONS REDUCTION AND DEFORESTATION

Parties came to Poznań with hopes of advancing the Reducing Emissions from Deforestation and Forest Degradation Plan, or REDD.¹⁴ Unfortunately, no official agreement on the subject was reached.¹⁵ There were, however, several promising statements made by individual countries regarding both emissions reduction and reducing deforestation. For example, Mexico agreed to cut emissions fifty percent below 2002 levels by 2050; Brazil promised a seventy percent cut in its annual deforestation rate by 2017; South Africa initiated a program to cap its carbon emissions by 2025, and the European Union said it will increase its commitment to cut GHG emissions from a twenty percent reduction to a thirty percent reduction by 2020 if a global agreement is reached.¹⁶

FOUNDATION FOR COPENHAGEN

Many important issues that could have been resolved in Poznań, including the division of responsibilities to cut GHG emissions between rich and poor nations, tropical deforestation, and sharing clean technology with developing countries, were left to be decided at the Copenhagen Conference of the Parties.¹⁷ Thus, the negotiations in Copenhagen will have no firm basis from Poznań to build upon. Despite the lack of concrete agreements or achievements resulting from the Poznań Conference, it remains vitally important to create a global commitment to combat climate change in Copenhagen later this year. The urgency of such an agreement can be best summarized by Amjad Abdulla, a delegate from the Maldives in Poznań, “We are really disappointed with the progress we are seeing in Poznań . . . We are drowning, and there is this huge gap in commitment.”¹⁸



Endnotes: Poznań Climate Conference 2008 *continued on page 67*

*Kyle Ingram is a J.D. candidate, May 2011, and **Matt Irwin is a J.D. candidate, May 2009, at American University, Washington College of Law.

ASSESSING THE CHALLENGES OF GEOLOGIC CARBON CAPTURE AND SEQUESTRATION:

A CALIFORNIA GUIDE TO THE COST OF REDUCING CO₂ EMISSIONS

by Les Lo Baugh* & William L. Troutman**

INTRODUCTION

Carbon capture and sequestration (“CCS”) is receiving new and intense focus globally, driven by climate change and potential economic benefits. At an energy symposium this past December, the Australian Government announced its \$100 million commitment to the Global Carbon Capture and Storage Institute.¹

In so doing, Australia noted that by 2030, global energy demand is estimated to rise by fifty-five percent, with emissions of sixty-two gigatons (“GT”) globally, thus emphasizing the need for an increase in CCS efforts worldwide.²

Echoing these sentiments, a number of research initiatives have begun in the United States, highlighted by the Regional Carbon Sequestration Partnerships, sponsored by the Department of Energy (“DOE”).³ President Barack Obama has also emphasized the need for CCS, including in his energy plan the intent to “instruct DOE to enter into public-private partnerships to develop 5 ‘first-of-a-kind’ commercial scale coal-fired plants with carbon capture and sequestration.”⁴ While this research is identifying effective technologies to make CCS a practical reality, it has not yet broached the legal and regulatory challenges associated with large-scale CCS projects to substantively reduce greenhouse gas (“GHG”) emissions.

That these questions remained unanswered reveals the complicated legal truths regarding CCS—any project must navigate a complicated web of state and federal property rights issues, address public safety concerns, and develop risk mitigation measures to ensure long-term efficacy. Thus far, no one in the United States has taken the lead to establish a legal and regulatory framework for CCS.

As one of the largest producers of carbon dioxide (“CO₂”) emissions in the United States, California is prominently positioned to lead the way in setting CCS precedents on a regional basis. Given California’s historical position on the vanguard of environmental issues, it is likely that its involvement in the CCS discussion will also have a formative effect on establishing the national legal and regulatory framework necessary for efficient, effective, and successful geologic CCS (“GCCS”).

Accordingly, this article considers the legal risks inherent in CCS projects through the lens of California law, focusing on GCCS.⁵ Because the law of GCCS is undeveloped, many of the considerations discussed are directly applicable to assessing legal risk in other jurisdictions. Ultimately, surveying the many issues that impact such risk may help eliminate barriers to large-

scale, commercially viable GCCS projects that are necessary to meaningfully reduce GHG emissions, regionally, nationally, and internationally.

First, the article provides a brief overview of the mechanics of GCCS. Then the article identifies and discusses one of the fundamentals to assessing GCCS risk—ownership. Next, it analyzes potential liabilities confronting

any GCCS project in California, drawing on legal principles that are readily analogous to other jurisdictions. Finally, it proposes some mechanisms to manage the risks associated with GCCS.

THE BASICS OF GEOLOGIC CARBON CAPTURE AND SEQUESTRATION

As the name implies, GCCS involves the capture and sequestration of CO₂ for hundreds, if not thousands, of years. Simply put, CO₂ must first be captured, pre-combustion, post-combustion, or by oxy-firing combustion.⁶ It then must be stored permanently (in contrast to enhanced oil recovery (“EOR”), in which CO₂ is not sequestered permanently).

Three basic forms of CCS exist: (1) terrestrial sequestration, involving trees, grasses, soils, or algae; (2) deep-sea sequestration, involving containment and dissolving in deep oceans; and (3) geologic CCS. GCCS utilizes underground reservoirs, such as depleted oil and gas fields, saline aquifers, and un-mineable coal seams. Research efforts thus far show that GCCS in saline formations has the greatest near-term potential to reduce GHG emissions, although the legal and regulatory challenges are

California is prominently positioned to lead the way in setting CCS precedents on a regional basis.

*Les Lo Baugh (llobaugh@fulbright.com) is the head of Fulbright & Jaworski L.L.P.’s West Coast Environmental Practice Group, based in Los Angeles. He advises clients on energy, environmental, and corporate matters. **William L. Troutman (wtroutman@fulbright.com) is an associate in the Environmental Practice Group of Fulbright & Jaworski L.L.P. in Los Angeles. His practice focuses on a wide range of environmental regulatory, transactional, and litigation matters.

great.⁷ However, geologic sequestration is not new. Millions of tons of CO₂ are injected each year. Projects such as Statoil at Sleipner, BP at In Salah, and the EnCana EOR project have been operating for years.

The process of GCCS begins with capturing CO₂ from fossil-fuel power plants, cement plants, petroleum refineries, etc.⁸ The gas stream is then scrubbed, resulting in virtually pure CO₂.⁹ It is then compressed and cooled to a supercritical state, during which it exhibits characteristics of both liquid and gas.¹⁰ Once supercritical, the CO₂ is transported to the injection site by truck (pipelines are expected once commercial projects get started).¹¹

Once at the injection site, the captured, purified, and compressed CO₂ is injected through wells into “pore space” deep below the surface of one or more cap rock formations.¹² Pore space consists of porous sedimentary rock layers, formed from sand, mud, or ancient shells, that allow the passage of fluids.¹³ Sedimentary rock occurs in layers, flanked by other layers of impermeable rock, such as mudstone and clay.¹⁴ These impermeable layers trap water, oil, and gas beneath and between them.¹⁵ Depths of between 3,000 and 15,000 feet are generally considered ideal for GCCS because pore space at that depth is often comprised of saline aquifers, containing ancient, trapped saltwater with high levels of dissolved solids.¹⁶ The water in these deep saline reservoirs is considered commercially “useless” because of its depth and contamination.¹⁷ In deep saline formations, it is theorized that supercritical CO₂ will flow as a distinct liquid on top, displacing and compressing the saline water below it.¹⁸ When injection ceases, scientific models predict that the CO₂ will remain hydro-dynamically trapped at the top of the aquifer by the cap rock or other impermeable layer, remaining in place for thousands of years.¹⁹

Estimates put the geologic storage capacity in saline formations in the United States at a vast 3,300 to 12,000 billion metric tons.²⁰ In California alone, DOE estimates the storage space in deep saline formations to be between 76 and 303 billion metric tons.²¹ To put this in perspective, California emits an estimated 104 million metric tons of CO₂ per year.²² Thus, the potential impact on reducing these emissions into the atmosphere is great—but not without legal challenges.

GCCS OWNERSHIP ISSUES

Because of the long-term nature of GCCS, ownership issues regarding real property interests and long-term liability are critical and unique, centered on the question of pore space.²³ In many regions, the law of ownership regarding subsurface mineral and water rights is well developed. However, no clear answers exist

as to the ownership of pore space.²⁴ This issue is slowly being addressed at the state level, as Wyoming, Texas, and Illinois have recently enacted statutory provisions regarding pore space and liability, but only for specific CCS purposes.²⁵ The application of the concept of the “negative rule of capture,” and its associated statutory provisions, are also untested in the GCCS context.²⁶

Because of the long-term nature of GCCS, ownership issues regarding real property interests and long-term liability are critical and unique, centered on the question of pore space.

In California, the surface owner generally owns the rights to property below the surface, “to the center of the earth, and above the surface to the heavens.”²⁷ Thus, if the surface and subsurface rights have not been severed, the pore space should remain with the surface owner. However, circumstances exist in which the perceived public interest is substantial and the potential property use is limited by practical considerations. For instance, airplanes enter airspace above property at a safe altitude without it constituting a trespass.

Access to navigable water and shorelines is treated similarly. As such, the public interest aspects of GCCS may affect ownership as GCCS becomes a more integral part of climate change solutions.

Similarly, the issue of ownership of pore space for CCS purposes has not been determined by either legislative action or express judicial decisions. The recent report and model rules released by the Interstate Oil & Gas Compact Commission, as well as numerous statements by various parties, including California state entities, have taken the position that the ownership of such pore space, particularly in saline formations as opposed to hydrocarbon formations, is undetermined.²⁸

While no California court has explicitly vested pore space ownership in the surface owner of a severed estate for CCS purposes, absent legislative action or “judicial activism,” it appears that the better argument is that pore space ownership resides with the surface owner and generally remains so even if mineral rights are severed. A surface owner who has conveyed its mineral rights and severed the estate,

own[s] nearly all rights in the land except for the exclusive right to drill for and produce oil, gas and other hydrocarbons. The owners of the mineral estate . . . typically hold only the very limited right . . . to drill and capture subsurface oil and gas, and the incidental rights necessary to accomplish this. Thus . . . the lessee generally obtains only a nonpossessory interest in real property to capture such substances, which is in the nature of an easement.²⁹

Accordingly, absent express language in the mineral grant, pore space ownership “should” likely remain with the surface

owner despite severance; however, the wording of the operative agreements must be evaluated to determine whether or not a broader conveyance occurred than is typical. This conclusion is supported by a number of cases in other jurisdictions addressing ownership of storage space for natural gas.³⁰ Gas storage cases in Texas, West Virginia, Oklahoma, Louisiana, and Michigan have all stated that the surface owner, and not a mineral rights holder, retains ownership of pore space.³¹ Nonetheless, even assuming a court of first instance applied the above logic to GCCS, a risk of tort liability remains on severed estates if the mineral rights are not also acquired prior to injection, as migrating or escaping CO₂ could allegedly interfere with the mineral rights, as discussed below.

RISKS OF OWNERSHIP AND OPERATION OF A CCS PROJECT IN CALIFORNIA

The focus of the experimental and pilot GCCS projects is the validation of the scientific models. While awaiting this validation, however, various risks must be evaluated. The first concern for a developer, for obvious reasons, is what happens if it is alleged that injected CO₂ does not remain sequestered in the manner expected. At the same time, a number of non-release legal risks also exist, even if captured CO₂ behaves as theorized. Whatever the cause, a GCCS project may encounter tort, nuisance, negligence, and/or strict liability claims. The more litigious the culture of the jurisdiction, the more likely such issues will be raised even in circumstances where GCCS performs to optimal expectations.

LIABILITY FROM RELEASE EVENTS

In most circumstances, these liabilities will likely result if there is unexpected behavior of captured CO₂, such as migration offsite from the saline injection reservoir into a linked adjacent subsurface saline reservoir, where the pore space is located within a larger saline reservoir that extends to other estates. Theoretically, in some circumstances, CO₂ could also migrate through new faults or fractures into an unlinked adjacent subsurface saline reservoir; an adjacent hydrocarbon or mineral formation; groundwater; other adjacent subsurface strata; or onto the surface itself.³²

If a GCCS site was not selected properly, theoretically, captured CO₂ might also react unexpectedly in the designated property, leading to potential liability if all surface and subsurface rights for the injection area had not been acquired. In those circumstances, CO₂ might migrate into other unacquired saline, hydrocarbon, or other mineral formations under the designated property. CO₂ might also migrate into other subsurface strata or groundwater stores under the designated property, or onto the unacquired surface at or near the injection point.³³

While all of these possibilities might result in allegations of liability, the area of greatest concern would likely be from allegations of migration into hydrocarbon or other mineral formations, groundwater,³⁴ and onto the surface,³⁵ rather than from migration within the deep saline aquifer under adjacent property. This is due to the likely absence of any provable legal damages resulting from a theoretical CO₂ migration, as discussed below.

If a release of CO₂ from the injection reservoir did occur for whatever reason, this could theoretically expose a GCCS project to allegations for trespass, nuisance, negligence, and strict liability for operation of an ultrahazardous activity. While no California court has addressed these issues for GCCS, analogues exist within other subject areas, as well as in other jurisdictions.

TRESPASS

Trespass is the “‘unauthorized entry’ onto the land of another,” regardless of motive.³⁶ A trespass may be permanent or continuing, with a continuing trespass constituting a series of separate injuries that can be discontinued or abated.³⁷ The classification as one or the other impacts statute of limitations issues, as well as potential damages amounts.³⁸

While no California court has addressed subsurface trespass in the GCCS context, when injecting waste fluids, “causing subsurface migration of fluids into a mineral estate without consent constitutes a trespass.”³⁹ However, courts may not hold CO₂ injection directly analogous to waste fluid injection, and migration into a saline aquifer may not be treated the same as a migration into a mineral estate. More importantly, as discussed below, because deep saline aquifers have no value for mineral extraction or groundwater use, courts may find no damages.

In the event damages are found, the general measure is that “‘which will compensate for all the detriment proximately caused thereby whether it could have been anticipated or not.’”⁴⁰ If a trespass is permanent, all past and future damages are recoverable in one action.⁴¹ In instances of trespass for subsurface migration of fluids into a mineral estate, a normal measure of damages for trespass is the reasonable rental value of the property during the course of the trespass.⁴² However, courts have flexibility and award the deterioration in the market value of the mineral estate, the costs of disposing of the substances causing the trespass, and the unjust enrichment enjoyed by the injector.⁴³

NUISANCE

Under California law, a nuisance is an interference with the use and enjoyment of a property right.⁴⁴ This interference must constitute unreasonable conduct that causes substantial harm.⁴⁵ As with trespass, a nuisance can be permanent or continuing.⁴⁶ If a nuisance is permanent, a party may only bring one action to recover all damages, including anticipated future damages.⁴⁷

A plaintiff may seek either injunctive relief or damages in connection with a nuisance.⁴⁸ The measure of damages, like those for trespass, is “‘the amount which will compensate for all the detriment proximately caused thereby, whether it could have been anticipated or not.’”⁴⁹ A plaintiff may recover damages for annoyance, discomfort, inconvenience, and mental suffering, even absent physical damage.⁵⁰ If a nuisance is intentional, a court may award punitive or exemplary damages.⁵¹ Damages may also consider diminution of the property value.⁵² If a nuisance is continuing and can be abated, a plaintiff may seek an injunction and damages accruing prior to the abatement. If the nuisance continues, a plaintiff may bring successive actions for additional damages, so long as any prior award of damages did not include anticipated future damages.⁵³

NEGLIGENCE

A party is liable in California for negligence for injuries caused by its failure to exercise reasonable care given the circumstances.⁵⁴ Damages can be compensatory to “[restore] the plaintiff as nearly as possible to his or her former position, or [give] some pecuniary equivalent,” as well as punitive.⁵⁵ Although the reasonable care standard is not judicially developed, it is expected that a court will consider the public benefit of sequestration in imposing a duty, in addition to the traditional negligence considerations of foreseeability, extent of harm, and causation.⁵⁶ This consideration will analyze the consequences to the public of the imposed duty, as well as the social utility of the activity.⁵⁷ The public policy aspects of CCS are in an evolutionary stage.

STRICT LIABILITY

Under California law, strict liability is imposed for ultrahazardous activities (“UHA”), defined as “certain activities [that] create such a serious risk of danger that it is justifiable to place liability for the loss on the person engaging in them, regardless of lack of culpability.”⁵⁸ Classification of UHAs differs from nuisance activities because UHAs are lawful and cannot be abated.⁵⁹ Strict liability for UHAs is limited only to harm within the scope of the abnormal risk created, and applies only to the class of persons exposed to the abnormal risk.⁶⁰

Because of these factors, a court must individually analyze the factual scenario for a claim to determine if the “risk created is so unusual, either because of its magnitude or because of the circumstances . . . as to justify the imposition of strict liability from the harm that results . . . even though it is carried on with all reasonable care.”⁶¹ Because strict liability is a theory of tort recovery, compensatory and punitive damages are the appropriate remedies, as applicable.⁶²

Thus, the question of GCCS as a UHA is unique to each project. GCCS by its nature does not appear to pose an abnormal risk. However, as is commonly said, “bad facts make bad law.” If unfortunate circumstances occurred, potential exists for the law to evolve in an unanticipated manner.

SELECT CONSIDERATIONS IMPACTING LIABILITY

Released CO₂: The Question of Damages

Although unexpected migration of CO₂ may technically constitute a tort, an open question exists as to proving damages. While no California court has directly addressed damages in CO₂ sequestration, courts have decided the issue in the context of subsurface injection of fluids, which has analogues in oil, gas, and hazardous waste injection case law, both in California and in other jurisdictions. Accordingly, if no identifiable damage exists, a claim for unauthorized subsurface migration may fail. In the controlling California case on subsurface migration, *Cassinis v. Union Oil Co. of California*, injected waste water ultimately migrated into plaintiff’s mineral estate, resulting in “widespread damage throughout a large oil, gas and mineral field.”⁶³ Because this injection interfered with plaintiff’s right to extract commodities, the court of appeals affirmed the trial

court’s award of rental value for the trespass—the market price for the cost of wastewater injection.⁶⁴

If courts adopt this reasoning, which seems most appropriate, no damages should exist absent interference with another’s mineral rights. Given that GCCS injects CO₂ into deep saline reservoirs, presumed to be devoid of any extractable minerals of value, the resulting encroachment within the saline reservoir on an adjoining estate should fail for lack of damages. Similarly, if the injected CO₂ migrates into unacquired strata on the acquired property containing no commodities, no damage should result.

These conclusions are consistent with the Ohio case *Chance v. BP Chemicals, Inc.*,⁶⁵ which establishes the precedent oft cited by GCCS prognosticators that no damage exists for subsurface migration of materials into adjacent landowners property absent a reasonable and foreseeable use of the subsurface by the adjacent landowner.⁶⁶

GCCS Permitting Probably Will Not Yield a Permit Shield Defense

Currently, the injection of CO₂ will require a permit under regulations promulgated pursuant to the Safe Drinking Water Act (“SDWA”).⁶⁷ The U.S. Environmental Protection Agency (“EPA”) has recently proposed a new class of well under SDWA (Class VI) and minimum technical criteria for injection of CO₂.⁶⁸ This new permit would require adherence to a number of regulations aimed at preventing CO₂-related contamination of underground drinking water.⁶⁹ This begs the question of whether permitting of GCCS projects will protect an operator from liability in the event of a release with a “permit shield.”⁷⁰ An examination of SDWA reveals that operators should expect no such defense, as SDWA does not contain the required specific language providing for a permit shield defense. Even if such a defense was clearly articulated in the statute, courts generally interpret permit shields to protect a permittee only from civil and criminal penalties assessed through a citizen suit or government action, and not common law claims such as trespass and nuisance.⁷¹

LIABILITIES FOR NON-RELEASE EVENTS

Unlike the risks of release of CO₂, these liabilities represent possible costs to a GCCS project before initiation and/or even if captured CO₂ remains sequestered as expected.

Environmental Permitting Challenges

In efforts to obtain appropriate permits and regulatory clearance on the state and federal level, a GCCS project may face significant and costly litigation before getting off of the ground. These costs most likely will come by way of challenges to permits required for compliance with SDWA and the National Environmental Policy Act (“NEPA”) on the federal level, the California Environmental Quality Action (“CEQA”) on the state level, and other local regulations.

It is difficult to predict the form of a challenge to a GCCS project’s SDWA permitting, as EPA issued proposed rules for GCCS that have not yet been finalized (discussed above). In the interim, a challenge to a GCCS permit could come pursuant to

a formal EPA guidance document issued to EPA staff and all EPA Regions covering issuance of permits for geologic sequestration under the existing SDWA regulations for underground injection.⁷² While it is arguable that noncompliance with such a document could support some action by EPA, it is unlikely that a private party could avail itself of noncompliance with the guidance documents.⁷³

The more likely challenge to a CO₂ injection permit would come directly from NEPA claims in federal court and CEQA claims in state court. This is a particularly perilous aspect of the process, as the analysis of the environmental impact of the injection plan will come under public scrutiny for the first time when the Environmental Impact Statement (“EIS”), under NEPA, or the Environmental Impact Report (“EIR”), under CEQA, is prepared. Given the developing nature of GCCS, a project may be particularly vulnerable, especially in litigious jurisdictions, during the EIS/EIR process in the event that a litigious private party or environmental group desires to slow or prevent the development of GCCS technology and projects.⁷⁴ These costs and/or delays are certainly possible even if an operator meticulously adheres to NEPA or CEQA requirements, such as the adequate discussion of alternatives and cumulative impacts, and avoidance of project segmentation.

Similarly, it is not unusual for the construction of a well to require a permit pursuant to county or city ordinances. For instance, under the Police Powers provisions of the California State Constitution and in other jurisdictions, local agencies may require permit conditions that have a reasonable relationship to the purpose of the permit.⁷⁵ Thus, methods of construction, as long as they are consistent with the requirements of the State Department of Gas, Oil & Geothermal Resources, may be part of the local permit. A challenge to these permits would also likely come under CEQA.

Geologic Sequestration and Injection Versus Allegedly Induced Seismic Activity

A number of reported instances of seismic activity induced by large scale human activities exist, such as underground nuclear explosions and construction projects.⁷⁶ Allegations of geothermal plant activity resulting in seismic activity during the 1990s in California did not apparently result in any financial awards to potential plaintiffs. In addition, in the 1960s some believed injected waste fluid triggered seismic activity in the Rocky Mountains, although this was not substantiated. However, this should not be viewed as a shield to such allegations in the future.

Although the depth of the target saline aquifer is generally substantially below the level of any seismic activity associated with the circumstances above, litigation risk exists because

California is subject to notable seismic activities and no nexus need be proven before litigation is commenced. While the frequency of seismic activity in California could provide opportunities for plaintiffs to allege a nexus between GCCS activities and any specific seismicity, the historic background of recurrent seismic activity in California may make it difficult for a plaintiff to establish causation. If litigated, the general concepts of tort liability discussed above would apply.

LOOKING FORWARD: THE NEED FOR CERTAINTY

At a minimum, this survey of California law shows that given the unknowns, the question of litigation over a project is one of “when” and “on what grounds.” However, many potential GCCS operators may not view themselves as pioneers.

While prudent contracting and operations, along with adequate insurance, typically reduce risk exposure, the long time horizon of sequestration poses unique liabilities and responsibilities that industry and current legal systems appear ill-equipped to address. But the chorus of government, industry, and environmental voices emphasizing GCCS as a climate change solu-

tion seems to argue that allowing a protracted period for courts to develop the applicable law is inconsistent with the public interest. Notably, the recently proposed Emergency Economic Stabilization Act, which contains the Energy Improvement and Extension Act, began forcing these issues by providing GCCS tax incentives and requiring the Secretary of the Treasury, in conjunction with EPA, to establish regulations setting security measures to ensure CO₂ remains sequestered.⁷⁷ This first step hopefully will evolve into a substantial and expeditious resolution of these issues. Nevertheless, a number of precedents may provide a conceptual basis to address the unique issues of sequestration including post-operational issues.


Programs like the Acute Orphan Well Account, the Hazardous and Idle-Deserted Well Abatement Fund, and the Methane Gas Hazards Reduction Assistance programs may prove as stepping stones to addressing GCCS liability over the expected timeline, but they do not provide a shared solution when the injector, operator, or owner of the stored substance is financially viable.⁷⁸ These programs also only involve discovery of releases during the operational life of a project. Further, they do not cut off an operator’s liability after well closure.

Other precedents may serve as more useful models, including the Price Anderson Nuclear Industries Indemnity Act and the National Flood Insurance Program. The former is similar to an industry liability pooling plan.⁷⁹ On the other hand, the latter guarantees insurance to at-risk communities.⁸⁰ Similarly, many GCCS commentators have called for government assumption of monitoring and liability after a reasonable time, such as 10 years following the end of injections.⁸¹

A GCCS project may encounter tort, nuisance, negligence, and/or strict liability claims.

Another important matter for consideration is granting operators some form of eminent domain, similar to grants by the Federal Energy Regulatory Commission or state public utility commissions for gas pipelines.⁸² This would presumably require new federal or state legislation, but would greatly reduce liability risks, project costs, and expedite development of GCCS (the lack of such power when it comes to alternative energy power lines is an analogous failure of the legal system to adapt to changing needs). Of course, much of the concern would dissipate if the migration of CO₂ is treated similarly to the state's basis for water regulation and air traffic—that is, absent some reasonable expectation of use or actual damage, no claim lies for a property owner.

CONCLUSION

In light of the enormous potential for GCCS to be a useful tool in the battle against climate change, thoughtful but expeditious resolution of these issues is clearly in the public interest, both nationally and internationally. Unfortunately, legislative gridlock and political partisanship have too often been part of recent legislative processes. However, the generally accepted need to aggressively address the continued massive infusion of CO₂ into our atmosphere should provide focus and incentives to our leaders. Given the need to address GCCS and its associated legal obstacles, one can only hope lawmakers move faster than hydro-dynamically trapped CO₂. 

Endnotes: Assessing the Challenges of Geologic Carbon Capture and Sequestration

¹ See generally Michael Sheldrick, Global Carbon Capture and Storage Institute, Australian Government, Remarks at the IEF-IFP Symposium on the Role of Technology in the Petroleum Sector in Enhancing Global Energy Security (Dec. 15, 2008), available at <http://www2.iefs.org.sa/Events/Documents/Michael%20Sheldrick.pdf> (last visited Feb. 21, 2009).

² *Id.*

³ E.g., OFFICE OF FOSSIL ENERGY NAT'L ENERGY TECH. LAB., U.S. DEP'T OF ENERGY, CARBON SEQUESTRATION ATLAS OF THE UNITED STATES AND CANADA (2008), available at http://www.netl.doe.gov/technologies/carbon_seq/refshelf/atlasII/atlasII.pdf (last visited Feb. 21, 2009).

⁴ Obama Biden, Barack Obama and Joe Biden: New Energy for America 6, available at http://www.barackobama.com/pdf/factsheet_energy_speech_080308.pdf (last visited Feb. 21, 2009).

⁵ As set forth in this discussion, this article focuses on GCCS because of the vast storage reservoirs in the United States.

⁶ D.J. DILLON ET AL., THE BABCOCK & WILCOX CO., OXY-COMBUSTION PROCESS FOR CO₂ CAPTURE FROM ADVANCED SUPERCRITICAL PF AND NGSS POWER PLANT 1 (2005), <http://uregina.ca/ghgt7/PDF/papers/peer/145.pdf> (oxy-firing combustion, or simply oxy-combustion, is the process by which a fossil fuel is combusted with near pure oxygen and recycled flue gas, CO₂, or water/steam to produce a flue gas consisting essentially of CO₂ and water. This flue gas is seen a potential means of disposing of combustion related CO₂ because the flue gas is not diluted with nitrogen, as when conventional air is used for firing, and therefore can be disposed of with less downstream processing).

⁷ As discussed *infra*, the United States has an estimated 3,300 to 12,000 billion metric tons of deep saline storage space, in contrast to an estimated 138,000 million metric tons of oil and gas reservoir storage space and 177,000 million metric tons of coal seam storage space. See OFFICE OF FOSSIL ENERGY NAT'L ENERGY TECH. LAB., *supra* note 3, at 139.

⁸ See, e.g., Jeffrey W. Moore, *The Potential Law of On-Shore Geologic Sequestration of CO₂ Captured from Coal-Fired Power Plants*, 28 ENERGY L.J. 443, 447 (2007); National Energy Technology Laboratory, U.S. Dep't of Energy, What is Carbon Capture?, http://www.netl.doe.gov/technologies/carbon_seq/FAQs/carbon-capture.html (last visited Feb. 21, 2009).

⁹ Moore, *supra* note 8, at 452.

¹⁰ *Id.*

¹¹ *Id.* at 447.

¹² *Id.* at 452-53.

¹³ *Id.* at 452.

¹⁴ *Id.* at 452-53.

¹⁵ Moore, *supra* note 8, at 453.

¹⁶ *Id.* at 452-53.

¹⁷ *Id.* at 453.

¹⁸ *Id.* at 454.

¹⁹ *Id.*

²⁰ OFFICE OF FOSSIL ENERGY NAT'L ENERGY TECH. LAB., *supra* note 3, at 20.

²¹ *Id.* at 138.

²² *Id.* at 139.

²³ Additional surface rights are necessary for the implementation of the project, including easements for pipelines, exploration, injection and other wells, utilities, and road access to the site.

²⁴ In some states, water is a "public resource," and it could be argued that the associated "pore space" is as well. However, case law in California focuses on the beneficial use of state waters—not saline containing dissolved solids in deep pore space that is unusable as water.

²⁵ See H.R. 89, 59th Leg., (Wyo. 2008) (vesting ownership of "all pore space in all strata below the surface lands and waters" of the state in the "owners of the surface above the strata"); see also S. 1461, 80th Leg. (Tex. 2007) (shielding a clean coal GCCS project from liability if properly permitted); S. 1704, 95th Leg. (Ill. 2007) (declaring that the state assumes all liability for GCCS, but only in relation to the FutureGen experimental clean coal project).

²⁶ Under this principle, similar to a party's right in some states to capture oil and gas migrating under her property from another's, one may by right inject substances that migrate under the property of others, even if it displaces other materials. See, e.g., Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture – An Oil and Gas Perspective*, 35 ENVTL. L. 899, 934-35 (2005).

²⁷ CAL. CIV. CODE §§ 659, 829 (1872); *Hinman v. Pac. Air Lines Transport Corp.*, 84 F.2d 755 (1936), *cert. denied*, 300 U.S. 654 (1937) (stating that a land owner's rights above and below land can be figuratively described as reaching the sky and the center of the earth; this analogy has no legal weight).

²⁸ See generally TASK FORCE ON CARBON CAPTURE AND GEOLOGIC STORAGE, U.S. DEP'T OF ENERGY INTERSTATE OIL AND GAS COMPACT COMM'N, *Storage of Carbon Dioxide in Geologic Structures: A Legal and Regulatory Guide for States and Provinces* (Sept. 25, 2007) [hereinafter TASK FORCE], available at <http://iogcc.publishpath.com/Websites/iogcc/PDFS/2008-CO2-Storage-Legal-and-Regulatory-Guide-for-States-Full-Report.pdf> (last visited Jan. 28, 2009).

²⁹ *Cassinus v. Union Oil Co. of Cal.*, 18 Cal. Rptr. 2d 574, 581 (Cal. Ct. App. 1993).

Endnotes: Assessing the Challenges of Geologic Carbon Capture and Sequestration *continued on page 67*

HUMAN RIGHTS AND CLIMATE CHANGE:

SHIFTING THE BURDEN TO THE STATE?

by Anne Parsons*

In March 2008, the United Nations Human Rights Council passed Resolution 7/23 requesting intergovernmental and international organizations to conduct “a detailed analytical study on the relationship between climate change and human rights.”¹ Resolution 7/23 is indicative of the recent global trend that incorporates a human rights framework in climate change mitigation and adaptation policies.²

Underlying the human rights approach to climate change is the notion that vulnerable populations that contributed little to the stocks of carbon emissions that cause global warming, should not have to bear the brunt of the burden in addressing global climate change.³ Correspondingly, protecting human rights will better enable individuals and communities to take steps to adapt on their own.⁴ Under a human rights framework, the state is traditionally the duty-bearer, and advocates of a rights-based approach to climate change urge governments to integrate climate change concerns into existing development policies and set minimum human rights thresholds around which new mitigation and adaptation policies can be developed.⁵ While the rights-based approach to climate change raises many useful methodological insights, it also raises a fundamental question: how will states that currently lack the resources or political will to fulfill basic human rights tackle the problem of climate change?

The essential hope of orienting climate policy around human rights is that this orientation will generate moral and legal force within the global climate change regime.⁶ To start, it distinguishes between “perpetrators” of climate change and “victims” of climate change.⁷ This framing of the relationship has two key advantages from a human rights perspective. First, it highlights litigation as a viable mechanism for holding reluctant-to-change developed nations accountable to their climate change commitments.⁸ Second, it also helps provide new impetus for wealthier nations to assist vulnerable states to adapt by providing resources and technology.⁹ For example, to date, few wealthy countries have met the agreed international aid target for adaptation funding, which currently stands at 0.7% of Gross Domestic Product.¹⁰ In contrast, one study estimated the financing needed for “immediate ‘climate proofing’” at between US\$1.1 billion and US\$2.2 billion for least developed countries.¹¹

At the national level, the logistics of implementing a rights-based climate change policy are tricky. A rights-based approach to climate change takes universally accepted human rights norms as minimum thresholds by which to gauge the effects of climate change and direct adaptation funding to where it is most needed.¹² At the same time, these thresholds ensure that the policies implemented by governments to address the effect of

climate change do not themselves infringe upon human rights.¹³ A recent total ban on charcoal in the West African country of Chad exemplifies the latter point: the government’s response to the pressing problem of deforestation has been widely criticized as overly harsh by the public and human rights activists alike.¹⁴ Paradoxically, then, a human rights approach to climate change may be hardest to implement in the countries that need it most.¹⁵ If a government of a resource-poor state faces a pressing environmental concern, the state’s only viable option within the human rights framework may be to appeal to the international community for aid.

Ultimately then, whether the human rights framework for climate change offers anything new to the states most vulnerable to climate change depends on those states’ ability to leverage this discourse in negotiations vis-à-vis the international community. This will require these states to invoke human rights discourses in new ways, since human rights have traditionally been concerned with the state-individual relationship.¹⁶ In the past, climate change negotiations have marginalized resource-poor countries in need of adaptation funding.¹⁷ Resource-poor states may be able to invoke procedural rights (right to participation, right to information) as a means of gaining access to these negotiations.¹⁸ Similarly, asserting the right to development may help developing nations articulate their concerns about the impacts of climate change on their ability to protect their citizens’ human rights.¹⁹ Integral to the human rights framework on climate change is the notion that powerful nations should recognize developing states’ right to actively participate in the development of a global strategy on climate change as both an ethical obligation and the only means of attaining a sustainable solution.



Endnotes:

¹ H.R.C. Res. 7/23, ¶ 15, U.N. Doc. A/HRC/RES/7/23 (Mar. 28, 2008).

² See, e.g., Mary Robinson, *Climate Change Is An Issue of Human Rights*, THE INDEPENDENT (London), Dec. 10, 2008, <http://www.independent.co.uk/opinion/commentators/mary-robinson-climate-change-is-an-issue-of-human-rights-1059360.html> (last visited Feb. 26, 2009).

³ See *id.*

⁴ See Press Release, Office of the High Comm’r for Human Rights, The Human Rights Impact of Climate Change, U.N. Doc. DPI/2483 (Nov. 2007), available at <http://www.un.org/climatechange/pdfs/bali/ohchr-bali07-19.pdf> (last visited Feb. 17, 2009).

Endnotes: Human Rights and Climate Change *continued on page 68*

*Anne Parsons is a J.D. candidate, May 2011, at American University, Washington College of Law.

COULD LITIGATION HELP TORRES STRAIT ISLANDERS DEAL WITH CLIMATE IMPACTS?

by Dr. Donna Green* & Kirsty Ruddock**

INTRODUCTION

Over the last fifteen years, Torres Strait Islanders have successfully fought to obtain native title rights over their land. Some Islanders are now concerned that these rights may disappear due to the impacts of climate change. The very existence of *Ailan Kastom* (island custom) may be threatened if projected sea level rise in combination with extreme weather events increases the frequency or severity of inundation and necessitates relocation from the islands.

This paper explores the legal remedies that may assist Torres Strait Islanders in dealing with adaptation to climate change. We use the Torres Strait Islands as a case study to examine the question of whether it is possible to hold a party responsible for physical damage to Torres Strait Islands, and cultural damage to Islander society. The paper outlines several areas of law that could assist Torres Strait Islanders including native title law, human rights laws, tort laws, and environmental protection laws.

The paper begins by briefly identifying what is known about the biophysical impacts of climate change for the Torres Strait. These direct biophysical impacts and indirect effects from climate change are discussed in the context of pre-existing social and economic disadvantages found in these communities. We also address a variety of philosophical and legal questions regarding the fact that some Torres Strait communities suffer a disproportionate share of the consequences of climate change. As we discuss these issues we must keep in mind that environmental protection laws in many countries seek to ensure that people are held accountable for damage they cause to the environment. Should this be the case with greenhouse gas (“GHG”) emissions as it is with other pollutants? Is the rest of Australia obligated to assist communities in the Torres Strait to ensure their culture and way of life is preserved? What legal actions and alternatives are available to enable the Islanders to preserve their way of life and ensure adequate compensation for any harm from climate change effects? By considering a combination of legal strategies, as well as adaptative lifestyle responses including the possibility of relocation, we assess the ability of the Torres Strait community to react to impending climate change.

INTERNATIONAL CONTEXT

The Intergovernmental Panel on Climate Change (“IPCC”) has long acknowledged that Small Island States are disproportionately impacted by climate change due to their susceptibility to rising sea levels, storm surges, and their limited resources and infrastructure.¹ As a response to these challenges, and with international support, several small Pacific Island nations are currently engaging in anticipatory adaptation—from hard engineering strategies, e.g. building sea walls, to radical social upheaval planning, e.g. international emigration.² Questions of equity surrounding who should pay for these costs remain due to the recognition of Pacific Island Nations’ minimal current, and virtually non-existent past, GHG emissions. The polluter pays principle suggests that costs of adaptation should not exclusively be borne by these countries.³

Similar concerns are now being raised about how climate change will affect the lives of people living on remote, low-lying Australian islands in the Torres Strait. As part of the wealthy, industrialized nation Australia, the situation of these islands is different than

most Small Island States. There are, however, many parallels between the widely reported concerns of Pacific Islanders about loss of land and sovereignty due to climate impacts combined with natural variability and changing land use, and those of the Torres Strait. For the first time, in 2007, the impacts of climate change on Islanders were specifically noted in the IPCC’s Fourth Assessment Report.⁴

CASE STUDY: THE TORRES STRAIT REGION

The Torres Strait region encompasses about forty-eight thousand square kilometers of open sea, comprised of a shallow

Small Island States are disproportionately impacted by climate change due to their susceptibility to rising sea levels.

*Dr. Donna Green is a researcher at the Climate Change Research Centre, University of New South Wales, Australia. Her research focuses on human-environment interactions, specifically on social and economic vulnerability, adaptation, and risk. She leads the *Sharingknowledge.net.au* program that uses Indigenous and non-Indigenous knowledge to understand climate impacts on remote communities in northern Australia. **Kirsty Ruddock is the Principal Solicitor of the Environmental Defender’s Office, New South Wales. The Environmental Defender’s Office is a community legal center that specializes in public interest environmental law.

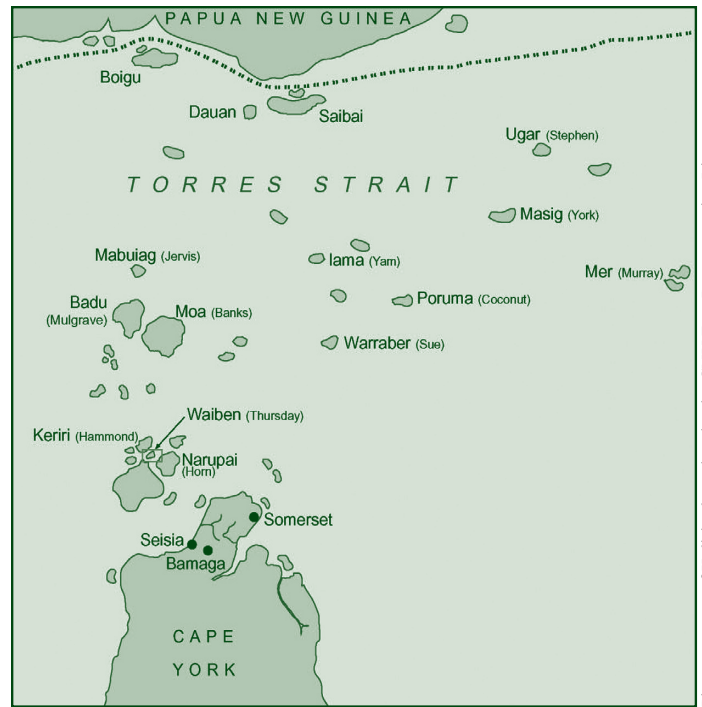
continental shelf between Papua New Guinea and mainland Australia. Torres Strait Islanders are the lesser known of the two Indigenous Australian people. The majority of Islanders live on mainland Australia, however, approximately eight thousand people still live on seventeen of the over 150 islands in the Torres Strait region.⁵ There is significant inter-island cultural difference, demonstrated by language and cultural practices varying across the islands. Islander culture, or *Ailan Kastom*, refers to a distinctive Torres Strait Islander culture and way of life, incorporating together traditional elements of Islander beliefs with Christianity. This unique culture permeates all aspects of island life and is recognized by State and Commonwealth agencies through enshrinement in the *Torres Strait Islander Land Act 1991 (Queensl.)*.⁶

Although the impacts of climate change are already being felt across Australia, the legal responsibilities for climate change are not as clear. At present, there are no Australian laws that specifically deal with protecting communities from climate change impacts.⁷ The policy response in Australia to climate change has not yet addressed issues of responsibility and protection, instead mostly focusing on designing an emissions trading system.⁸

Australia's policy response has also ignored the need for climate justice. Principles of climate justice redefine climate change from a scientific issue to one of human rights and environmental justice. The principles include the concept of "ecological debt" which focuses on redressing inequalities of wealth, power, and access to the earth's resources.⁹ In Australia, climate justice initiatives aim to ensure that Indigenous Australians, who are traditionally more vulnerable members of society, are protected from the impacts of climate change.¹⁰

Public interest litigation has always played a key role in ensuring that citizens are heard and their rights are protected. The Torres Strait has a proud tradition of public interest litigation, being the home of Eddie Mabo, whose case in the High Court brought about the recognition of native title and the *Native Title Act 1993 (Cth)*.¹¹

One way of ensuring that policymakers become aware of the need to protect the rights and interests of Torres Strait Islanders is to use the law to highlight these issues and to seek to hold both governments and corporations responsible for their contribution to climate impacts felt there. Litigation can focus public attention on a particular issue through media exposure, and encourage society to debate public values and the need to protect our environment.¹² Even unsuccessful cases can expose weaknesses in the law and highlight the need for law reform and the development of the law, allowing subsequent cases to build on the legal arguments and scientific evidence presented.¹³



Map of Torres Strait Islands.

Photo courtesy of Kelisi released under the GNU Free Documentation License.

Although to date there have been no Australian cases that have sought to address climate change by holding governments

Principles of climate justice redefine climate change from a scientific issue to one of human rights and environmental justice.

and corporations responsible for their climate impacts, there are a number of different laws explored below that could assist if Torres Strait Islanders wished to pursue the matter.¹⁴ The types of laws that could be used fall into two broad categories: laws that are aimed at protecting human rights like the *Native Title Act 1993 (Cth)* and laws that are directed at finding persons liable for damage to the environment, such as tort laws and specific environmental statutes. Before these options are

discussed in more detail, we briefly outline the projected climate impacts for the region.

BIOPHYSICAL IMPACTS IN THE TORRES STRAIT

No published research has yet specifically focused on biophysical climate impacts in the Torres Strait.¹⁵ Some climate change projections have, however, been calculated for a wider area encompassing the region.¹⁶ These reports project increases in average temperature, relative to the climate of 1990 for the Cape York region of Queensland, of 0.5–1.2°C by 2030 and 1.0–4.2°C by 2070. The average dry-season rainfall for this region is projected to decrease by 1–6% by 2030 and by 2–23% by 2070. The average wet-season rainfall is projected to increase by 0–4% by 2030 and by 1–13% by 2070.¹⁷ However, it is

possible that these ranges may underestimate the magnitudes of likely changes.

Increasing sea surface temperature threatens corals, with regular coral bleaching anticipated just south of the Torres Strait, in the Great Barrier Marine Park, within one to two decades.¹⁸ The average global sea level rise indicates increases of up to seventy-nine centimeters by 2100, with regional variation adding five centimeters to this global average.¹⁹

Changes in the intensity and frequency of weather and climate extremes (rather than average changes) are likely to be a major concern for the Torres Strait. However, there are limited climate extremes data available for the region for validating climate models. Future projections for Australia as a whole show that changes in temperature and precipitation extremes, such as heat waves and rainfall intensity, will increase.²⁰ In the north-east of Australia, tropical cyclones tend to center south of the Torres Strait Islands (around latitudes of 14°–15°C south), in the Gulf of Carpentaria and off the northern Queensland mainland coast. However, even low intensity, relatively distant cyclones or tropical lows in the Gulf of Carpentaria can cause problems when they occur in conjunction with the season of prevailing northwest winds, during January and February, and at high tide.

INDIRECT IMPACTS AND CULTURAL DAMAGE

Climate impacts, such as more extreme weather or an increase in the intensity of storm tides, are likely to result in the need for more maintenance of basic infrastructure, including roads, culverts, jetties, airstrips, water piping, fencing, and sea walls.²¹ Such maintenance is more difficult and expensive for island communities than for less remote communities on the Australian mainland, particularly due to extra transportation costs and time involved with bringing all hardware into the Torres Strait by barge or air. Finding these additional resources is extremely difficult with numerous reports detailing the existing extreme socio-economic disadvantage in the region.²²

Climate change will also likely impact surface and ground water resources, making resource management in the dry season difficult. In the past, many islands depended on fresh water lenses to provide drinking water, but high demand for water (particularly since the introduction of reticulated sewage systems) has caused supply problems for many islands.²³ Rainwater tanks and large lined dams are used to trap and store water for use in the dry season on all islands with many islands already reaching the limits of their drinking water supply and relying on mobile or permanent desalination plants to meet demand.²⁴

Climate change also affects plant and animal biodiversity. Beach and mangrove areas are important habitats and nurseries for several significant species of marine animals. With increasing sea surface temperatures and ocean acidification, the viability of sea grass beds, which are important feeding grounds for turtles and dugongs and a nursery area for prawns and tropical rock lobster, is an area of significant concern.²⁵ Many animals including turtles, dugongs, crocodiles, stingrays, and sharks have a significant cultural role for many Islanders. However, any major impacts on the lifecycles of these animals would reduce

the availability of a nutritious source of fresh food for many coastal communities that traditionally hunt these animals.²⁶

It is likely that changes in natural systems will cause economic, social, and psychological damage, especially if these impacts affect totemic fauna, e.g. turtle and dugong, other important seafood, e.g. crayfish and turtle, or culturally important flora, e.g. Wongai and almond trees. Such problems are likely to add to difficulties of Islanders attempting to revive traditional gardening practices.²⁷

For many Torres Strait Islanders, a connection with their island—a place of ancestry, identity, language, livelihood, and community connection—is the largest determinant of their individual and community “health.” Therefore, biophysical changes affecting the “health” of natural ecosystems are likely to also impact human systems: both individuals’ physical and psychological well-being, as well as the “health” of a community’s cultural cohesion. The impacts of more extreme weather events on sacred sites have not been researched to date, despite the expressed concern of several Torres Strait Islander elders and leaders that such impacts would have serious negative psychological effects.²⁸

WHO IS LIABLE FOR CLIMATE CHANGE?

There are a number of legal responses that Islanders could use to protect their rights and interests from the impacts of climate change using the common law of torts, or by bringing claims under specific statutes that protect the environment, native title, and human rights. As climate change litigation is a new phenomenon, only time will tell whether any of these areas of law could be successfully used to address their concerns.

HUMAN RIGHTS LAWS

As the scientific evidence indicates, climate change threatens the lives, health, culture, and livelihood of many Small Island States and low-lying coastal communities. It is therefore necessary to consider how human rights laws may provide protection to these communities. There are three types of laws that could be of assistance: native title, discrimination, or international human rights laws.

Native Title

Native title is recognized as an important form of customary land law for Indigenous Australians. The *Native Title Act 1993 (Cth)* (“NT Act”) provides for the protection and recognition of native title.²⁹ Native title rights are particularly important to the Torres Strait Islanders. Not only did the Mabo decision establish those rights, but *all* communities in the Torres Strait have their native title rights and interests legally recognized.³⁰ Of the thirty-nine native title determinations made in Queensland as of July 2007, twenty-six are related to Torres Strait communities.³¹ This is the opposite situation to most mainland Indigenous communities which are still fighting in the Courts to have their native title rights recognized.³² Such claims can take ten to fifteen years to finalize.³³ Those who hold exclusive determinations of native title, such as the Traditional Owners of the Mer Island group, obtain the right to control and manage land, similar to freehold

landowners. The High Court recently extended exclusive native title rights to the inter-tidal zone in the Northern Territory.³⁴

One of the real risks posed by climate change is that sea level rise or other storm events may impact and damage land held by Torres Strait Islanders under the NT Act, as well as the rights over the sea and inter-tidal zones. Native title cannot be extinguished except in accordance with the NT Act so the question is whether the NT Act effectively protects Torres Strait Islander's land rights from the impacts of climate change. There is an argument that sea level rise is an "act" in the sense contemplated by and protected under the legislation. Relevantly, section 226 of the NT Act defines "acts that affect native title" to include not only positive acts such as the making of legislation or granting of a license, but the "creation, variation, extension, renewal, or extinguishment of any interest in relation to land or waters." Sea level rise will extinguish certain rights and interests over land because it will be inundated.

The question will be whether the flooding of land will be interpreted as an "act." The act is not one undertaken by the Australian Government, but rather by those producing GHG emissions. Yet, insufficient action by the Australian Government to mitigate the impacts of those gases on Torres Strait Islanders native title rights could arguably be an "act."

One other option available to native title holders is to bring a compensation claim for the impacts of climate change on extinguishing or impairing their native title rights. The NT Act provides for a regime to award compensation to traditional owners for the impairment of their native title rights over an area of land or water.³⁵ It could be argued that the failure to take steps to mitigate climate change means that the Commonwealth and Queensland Governments, in particular, have contributed to the extinguishment or impairment of native title rights.

To date, there have been no successful compensation claims under the NT Act. This is partly because native title must be proved before an application for compensation can be determined under the NT Act, and native title is difficult to prove.³⁶ Compensation can be no more than what would result from a compulsory acquisition and enshrines the concept of "just terms."³⁷ Compensation would be based on market value plus any amount to reflect the cultural value of the land. In the case of the Torres Strait, the market values could be considerable. Therefore, Torres Strait Islanders could lodge claims for compensation on the basis of the extinguishment of their rights as a result of climate change, which could result in significant compensation payments.

Discrimination Laws

Traditionally climate change has been viewed as an environmental, rather than a human rights issue. However there is an increasing recognition that climate change has severe human rights implications and is worsening poverty and vulnerability in communities least responsible for the problem.³⁸ In the absence of a bill or charter of rights in Australia, Australia's current human rights laws do not provide adequate protection to Torres Strait Islanders faced with damage to their culture and possible relocation as a result of climate change.³⁹

In 2005, the Inuit, who are the Indigenous inhabitants of the Arctic region of North America and Greenland, brought a petition to the Inter American Commission of Human Rights ("IACHR").⁴⁰ The petition requested IACHR's assistance in obtaining relief from human rights violations resulting from the impacts of climate change caused by the acts and omissions of the United States. In particular, the petition argued that the United States had violated a number of rights set out in the American Declaration of the Rights and Duties of Man,⁴¹ International Convention on Civil and Political Rights ("ICCPR"),⁴² and International Covenant on Economic, Social and Cultural Rights ("ICESCR").⁴³ Climate change is impacting and will continue to impact the Inuit people's right to enjoy their traditional lands, to maintain their cultural property, as well as their rights to health and life, residence, the inviolability of their home, and right to means of subsistence.⁴⁴ The petition has yet to be determined but it shows that international human rights are being violated by climate change and litigation is serving to highlight these issues.⁴⁵

It is possible that Torres Strait Islanders could similarly bring their complaints to United Nations bodies. In particular, the UN Human Rights Committee ("UNHRC") can receive individual complaints and actively investigate and rule upon those complaints.⁴⁶ Some commentators have argued that this system is the oldest, most utilized, and most authoritative within the UN regime.⁴⁷ While the UN Human Rights Committee cannot make binding decisions, its recommendations can highlight the problem and place moral and political pressure on Governments to act.⁴⁸

Torres Strait Islanders may be able to utilize the power of the UNHRC and argue before the Committee that the right to life (article 6), freedom of movement and choice of residence (article 12), and prohibition of interference with privacy, family, and home (article 17) of the International Convention on Civil and Political Rights have been breached. International tribunals have previously recognized the link between environmental health and the right to life.⁴⁹ Similarly, international tribunals have recognized that harm to the environment from pollution can impact the right to home and family life.⁵⁰ In particular, Torres Islanders, parallel to the Inuits, could argue that climate

There are a number of legal responses that Islanders could use to protect their rights and interests from the impacts of climate change.

change threatens the life and health of Torres Strait Islanders. The potential impacts are more than mosquito-borne illnesses and water quality issues in the islands; they also pose risks to basic island infrastructure such as roads, wharves, airstrips, and buildings.⁵¹

Furthermore, the right to freedom of movement in article 12 of the ICCPR also covers the situation of internally displaced persons who are forced to move or are restricted by environmental issues.⁵² This may be an argument that could be used under Australian law to protect Torres Strait Islanders from being forcibly relocated. In *Kruger v. Commonwealth*, Justice Gaudron gave some support to the concept of the right to freedom of movement under Australian law. The Justice found that freedom of movement was part of the implied political communications under the that could restrict state powers, and on this basis laws restricting the freedom of movement of Aboriginal people, with no lawful purpose of protecting Aboriginal persons, were invalid.⁵³ Any laws or policies that are developed to relocate Torres Strait Islanders affected by climate change will need to be carefully considered to ensure they do not infringe on such protections.

Before lodging a communication with the UN Human Rights Committee, an individual must have exhausted all of the domestic remedies available to deal with the breach of the ICCPR.⁵⁴ Although violation of the ICCPR may be used as evidence of violation of domestic law, in this case, there are no domestic remedies within Australia to address these breaches of the ICCPR. Consequently, it would be possible for Torres Strait Islanders to lodge such a complaint directly with the UNHRC at any time.

However, domestic law may be used as a tool to address the fact that climate change will have a disproportionate impact on Torres Strait communities and other Indigenous communities in Northern Australia. Obviously climate change is not directly targeting these communities but is indirectly doing so. It is arguable that the Government's failure to act to prevent the impact of climate change on these communities is indirectly discriminatory. In particular, Australia's failure to date to commit to strict emission targets is impacting disproportionately on these communities.

Australia has in place laws to protect persons against indirect discrimination on the basis of their race.⁵⁵ These laws prohibit policies or rules that put at a disadvantage people of a particular race, color, descent, or national or ethnic origin more than people of another race, color, descent, or national or ethnic origin. Cases have often highlighted provisions that are "fair in form and intention but discriminatory in impact and outcome,"⁵⁶ for example, provisions that are race neutral but affect a particular group disproportionately. Again, the issue here is that the problem relates to inaction rather than, in many cases, direct actions. Arguably the failure of Governments to introduce strong laws to reduce GHG emissions is indirectly discriminatory, but proving this at law may be more difficult.

TORT LAWS

Traditionally, tort laws are aimed at redressing harms to individuals and their property caused by the actions of others. These laws could be used by individuals to bring actions against large GHG emitters or Governments. Indigenous communities in the United States have commenced bringing cases for physical damage to their homes and culture as a result of climate change.⁵⁷

Public Nuisance

To date most of the climate change litigation in the United States has used the tort of public nuisance. No such cases have been commenced in Australia. Nuisance focuses on interference with the right to use and enjoy land.⁵⁸ Public nuisance is defined as an unlawful act, the effect of which is to endanger the life, health, property, or comfort of the public at large.⁵⁹ It is a defense to an action of public nuisance that the actions are an inevitable consequence of the conduct of work that is authorized by a statute and therefore reasonable, and reasonable steps have been taken to prevent the nuisance. It is no defense to a nuisance action based on pollution for the polluter to prove that the environment was already polluted from another source or that the polluter's individual actions were not the sole cause of the nuisance.⁶⁰ Public nuisance is better suited to climate change actions than negligence because causation issues are likely to be less complex.

Two relevant nuisance actions have recently been considered in the United States. In *Connecticut v. American Electric Power Co.*⁶¹ the plaintiffs sought broad forms of judicial relief from the court to abate the "public nuisance" of "global warming" including holding the defendants liable for creating and contributing to a public nuisance and requiring the defendants to abate its contribution to the nuisance through a cap on its carbon dioxide emissions and then reduce them by a specified percentage each year for at least a decade. The plaintiffs argued that U.S. residents faced injuries to public health (heat deaths and respiratory illnesses), increased smog levels, damage to coastal resources from rising sea levels, increases in droughts and flooding, and widespread loss of species and biodiversity as a result of the defendants' actions.⁶² The state of California also sued a number of automobile manufacturers for public nuisance, seeking monetary damages in connection with global warming.⁶³

Both cases were dismissed by the District Court and are currently on appeal.⁶⁴ The Courts viewed the climate change argument as based on non-justiciable political questions with implications for the U.S. economy, foreign relations, and national security, partly due to the extensive nature of the remedies sought in this case. In *Kivalina v. Exxon Mobil*, the Native Inuit village of Kivalina has commenced a public nuisance action as well as a conspiracy case against nine oil companies, fourteen power companies, and a coal company for damages it is suffering from the melting Arctic ice.⁶⁵ At the time of writing, the case has yet to be heard.

Negligence

The most common tort is that of negligence. The essence of negligence is that there has been a failure to take reasonable care to prevent injury to others.⁶⁶ To establish a case of negligence, a litigant has to prove that the defendant owed them a duty of care; that the duty of care was breached; and the breach was the cause of their loss or damage.⁶⁷

The scientific evidence suggests that some damage is already occurring to parts of the Torres Strait, and despite adequate observational records in this region, it is reasonable to consider that slow onset sea level rise will play an ever increasing role in raising the frequency of inundations on low-lying islands in the future. As noted *supra*, more frequent inundations from storm tides may also result if there is an increase in the incidence or frequency of tropical cyclones. Some scientists are suggesting that they may soon be able to judge the role climate change is playing in these extreme weather events.⁶⁸

There is an argument that Governments at all levels owe a duty of care to protect the land and culture of Torres Strait Islanders, by acting to prevent harm to communities from climate change, and are therefore liable for the damage to those communities.⁶⁹ The High Court in Australia has suggested that the degree of vulnerability of those who depend on the proper exercise by the authority of its power may be owed a duty of care.⁷⁰ If a duty of care could be established, it may also be possible to apply such an argument to large emitters of greenhouse gases.

The consensus among practitioners and academics seems to be that local Councils will owe a duty of care to landowners with regard to their consideration of individual development applications in coastal areas that are most at risk of climate change.⁷¹ The amalgamated Island Council will owe a duty of care to residents when considering development applications in the coastal zone, as they have extensive powers to control planning, knowledge of the impacts of climate change, and the community in which they work is extremely vulnerable to such events. There are provisions introduced in recent years to limit the scope of public authorities in negligence to circumstances where they are acting so unreasonably.⁷² Over time, as the impacts of climate change become more severe in some communities and areas, failure to prevent damage caused by climate change may come to be considered sufficiently unreasonable to overcome such a restriction.

The greatest obstacle to people seeking to establish negligence is the issue of causation. Even large GHG emitters can argue that they have not substantially or significantly contributed to the harm suffered by a plaintiff, and their emissions are just a very insignificant amount in comparison to current global and historical emissions. The decision of the U.S. Supreme Court in *Massachusetts v. EPA* accepted that incremental small steps from GHG emitters should still be regulated despite not being the only cause of these emissions in the global context.⁷³ In delivering the opinion of the Court, Justice Stevens stated: “[The EPA’s] argument rests on the erroneous assumption that

a small incremental step, because it is incremental, can never be attacked in a federal judicial forum. Yet accepting that premise would doom most challenges to regulatory action.”⁷⁴

However, the tests of causation will need to evolve to determine who is liable for climate change and will depend on developments in science enabling such predictions to occur, as well as the courts accepting that they should determine the issues, as opposed to Governments.⁷⁵ Some commentators have suggested a more suitable test for determining liability in negligence will be a test that asks “does climate change lead to a material increase in risk to persons?” instead of proving that it is a substantial factor in causing the damage.⁷⁶ Public interest cases about climate change impacts could be fundamental in bringing about developments in the law of negligence to provide remedies for the impacts of climate change. A comparison has been made to asbestos or tobacco litigation, suggesting that over time the law will provide remedies as the effects of climate change become more severe.⁷⁷

STATUTORY OFFENSES UNDER QUEENSLAND ENVIRONMENTAL PROTECTION LEGISLATION

In Queensland, the principal law dealing with environment protection is the *Environment Protection Act 1994* (“EP Act”).⁷⁸ In a recent paper, Dr. Chris McGrath discussed the potential for this legislation to be used by third parties to challenge major greenhouse polluters.⁷⁹ One of the advantages of the EP Act is that it has wide standing provisions that provide significant opportunities for people to bring proceedings in the Queensland Planning and Environment Court.⁸⁰ Usually parties can do so without facing the risks of an adverse costs order.⁸¹ The EP Act creates the offense of causing serious or material environmental harm. The notion of “environmental harm” is widely defined⁸² under the legislation and, although it has not been judicially tested, could foreseeably encompass the emission of greenhouse gases and consequential climate change.⁸³

The EP Act clarifies some of the complexities of causation by stating that environmental harm may be caused by an activity whether the harm “is a direct or indirect result of the activity,” or “results from the activity alone or from the combined effects of the activity and other activities or factors.”⁸⁴ Public interest litigation could be brought on behalf of Torres Strait communities against a corporation operating a number of coal-fired power stations in Queensland for contributing to greater storm tides in the Torres Strait. One of the main barriers to such a case would be that power stations operate under particular environmental authorities. If the court interpreted those authorities broadly they may find they cover all harms that result from power stations operations. It is also a defense to take all reasonable and practical measures to prevent or minimize environmental harm arising from any activity that causes or is likely to cause environmental harm.⁸⁵

CONCLUSION


Alongside the direct biophysical impacts, such as storm surge inundation, it is the myriad of multiple and concomitant

non-climate stresses—limited availability of drinking water, constraints on land available to build on, and the high costs of living—that will be exacerbated by climate impacts on many of the Torres Strait Islands over the next generations.

It is likely that the confluence of existing economic and social constraints with these additional climate impacts, in particular extreme weather events, will create the most vulnerability for low-lying island communities in the medium to long term. The lack of adaptive capacity and resources in these communities is likely to be one of the key factors in reducing their resilience to future climate impacts. In developing resilience-building activities, it is crucial that the socio-economic factors that have caused existing disadvantages in these communities be addressed. In the short term, built infrastructure such as roads, houses, water and electricity services, airstrips, and public buildings will need to be planned with “climate-proofing” in mind. In the longer term, new sources of money to pay for larger projects will need to be found.

Other Pacific islands are already dealing with the vexing issue of relocation by advancing long-term relocation strategies.⁸⁶ Some Islanders may want institutional support to understand the ramifications of different alternative options including

how to provide longer term “climate proofing” as well as planning for relocation off low-lying islands. Due to the expense of relocation and the impacts on culture in the entire Torres Strait region that would result even if only a couple of communities were to decide to relocate, significant forewarning is imperative to reduce associated cultural, social, and economic damage.

There are a number of ways that Torres Strait Islanders could exercise their legal rights to seek to address the impacts of climate change. Although they are unlikely to be able to mitigate projected impacts, they may serve as a potential source of additional funds either directly or indirectly. While any legal actions will be long and difficult under current laws, it is imperative that Governments at all levels begin to address and understand the issues they are facing and urgently develop strategies to protect Torres Strait Islanders’ rights and culture. 

Thanks to Justine Conaty and Jemilah Hallinan who assisted with the research and editing of the legal section of this article. While much insight to the scientific aspects of this paper was given by Lisa Alexander, John Church, Kathy McInnes, Neville Nicholls, and Neil White, any interpretations are the responsibility of the authors.

Endnotes: Could Litigation Help Torres Strait Islanders Deal with Climate Impacts?

¹ See generally N. MIMURA ET AL., CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (M.L. Parry et al. eds., Cambridge University Press 2007).

² See Samir Patel, *Climate Science: A Sinking Feeling*, 440 NATURE 734, 736 (2006); see also ABC NEWS, *Endangered Pacific Islet Facing Mass Relocation* (Jun. 5, 2008), available at <http://www.abc.net.au/news/stories/2008/06/05/2265671.htm> (last visited Feb. 6, 2009).

³ PAUL BAER ET AL., HEINRICH BÖLL FOUND., GREENHOUSE DEVELOPMENT RIGHTS FRAMEWORK: THE RIGHT TO DEVELOPMENT IN A CLIMATE CONSTRAINED WORLD (2008), available at <http://www.ecoequity.org/docs/TheGDRsFramework.pdf> (last visited Feb. 6, 2009).

⁴ King tides in 2005 and 2006 in the Torres Strait have highlighted the need to revisit short-term coastal protection and long-term relocation plans for up to two thousand Australians living on the central coral cays and north-west islands. Kevin Hennessy et al., *Australia and New Zealand, in* CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT: REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 523 (2007), available at <http://www.ipcc-wg2.org/> (last visited Feb. 6, 2009).

⁵ AUSTRALIAN BUREAU OF STATISTICS, THE HEALTH AND WELFARE OF AUSTRALIA’S ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES 244 (2005), available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4704.0/> (last visited Feb. 6, 2009).

⁶ “Generally the body of customs, traditions, observances and beliefs of Torres Strait Islanders or of a particular group of Torres Strait Islanders, and includes any such customs, traditions, observances and beliefs relating to particular persons, areas, objects or relationships.” Torres Strait Islander Land Act, 1991, § 2.02 1991 (Austl.).

⁷ Kate McCrossin, *A Critical Analysis Of The Extent To Which International Environmental Law Has Influenced Commonwealth Legislation And Policies And NSW Legislation With Respect To Climate Change*, 12 LOCAL GOVERNMENT L.J. 230, 233-234 (2007) (explaining that the Commonwealth has directly regulated GHG issues only in the Renewable Energy (Electricity) Act, 2000 (Austl), Energy Grants (Cleaner Fuels) Scheme Act, 2004 (Austl), Ozone Protection and Synthetic Greenhouse Gas Management Act, 1989 (Austl) and Energy Efficiency Opportunities Act, 2006 (Austl)).

⁸ See Chris McGrath, *Legal Liability For Climate Change In Queensland*, 13 QUEENSL. ENVTL. L. REP. 6, 9 (2007). See also DEPARTMENT OF CLIMATE CHANGE, CARBON POLLUTION REDUCTION SCHEME – AUSTRALIA’S LOW POLLUTION FUTURE (2008), available at <http://www.climatechange.gov.au/whitepaper/report/pubs/pdf/CPRSRReportvol1.zip> (last visited Feb. 6, 2009).

⁹ FRIENDS OF THE EARTH, CLIMATE JUSTICE: A FAIR SHARE OF THE ATMOSPHERE 4 (2006), available at <http://www.foe.org.au/resources/publications/climate-justice/A%20fair%20share%20of%20the%20Atmosphere.pdf> (last visited Feb. 6, 2009).

¹⁰ See, e.g., Australian Climate Justice Program, <http://www.cana.net.au/ACJP/> (last visited Feb. 10, 2009).

¹¹ See generally *Mabo v. Queensl. II* (1992) 175 C.L.R. 1 (Austl.).

¹² C.J. Preston, *The Role Of Public Interest Environmental Litigation*, 23 ENVIRONMENTAL AND PLANNING L. J. 337, 347 (2006).

¹³ J. SMITH & D. SHEARMAN, CLIMATE CHANGE LITIGATION 12 (Presidian 2006).

Endnotes: Could Litigation Help Torres Strait Islanders Deal with Climate Impacts? *continued on page 69*

IS THE ENDANGERED SPECIES ACT THE RIGHT PLACE TO SET U.S. CLIMATE CHANGE POLICY?

by Chris Logan*

The Endangered Species Act (“ESA”) was enacted in 1973 to prevent extinction of species caused by human impacts on natural ecosystems.¹ On December 11, 2008, the Bush Administration finalized a rule change to the ESA, which relieves the Department of the Interior of a duty to assess the impact of climate change on endangered species, and further allows federal agencies to bypass consultation with the Fish and Wildlife Service (“FWS”) or the National Marine Fisheries Service (“NMFS”) when determining whether federal actions might threaten protected species.²

Prior to the eleventh-hour rule changes, the ESA arguably allowed the consideration of climate change impacts during the consultation process with FWS and NMFS scientists to assess the potential threats to endangered species.³ Under the new rule, which took effect on January 15, 2009, federal agency actions no longer require scientific review if “the effects of such action [on a species] are manifested through global processes” and “are not capable of being measured or detected in a manner that permits meaningful evaluation.”⁴

The rule change has engendered fervent debate between those who believe that the ESA should not determine U.S. climate change policy and those who believe that the rule changes will further harm endangered species already threatened by global warming. In April 2008, President Bush stated that the ESA, the Clean Air Act, and the National Environmental Policy Act “were never meant to regulate global climate change.”⁵ Former Secretary of the Interior, Dick Kempthorne, echoed the president’s sentiment after listing the polar bear as a threatened species under the ESA, stating, “Listing the polar bear as threatened can reduce avoidable losses of polar bears. But it should not open the door to use the ESA to regulate greenhouse gas emissions The ESA is not the right tool to set U.S. climate policy.”⁶ The proponents of the change argue that investments in wind and solar energy and clean coal technology, instead of federal regulations, will foster greenhouse gas emissions reduction.⁷

Supporters of the amended ESA emphasize that the new rules are a narrow regulatory change which will provide clarity and certainty to a broad and ambiguous issue.⁸ Further, they contend that the new regulations give FWS and NMFS scientists the ability to focus their resources on evaluating projects that pose a greater risk of harm to endangered species instead of attempting to evaluate hard-to-measure threats such as climate change. In December 2008, the Washington Post editorialized, “Where Mr. Kempthorne got it right is in preventing the effects of ‘global processes’ ([or] climate change) from triggering consultation

‘because of the inability to separate out the effect of a specific Federal action from a multitude of other factors that contribute through global processes.’”⁹ Proponents of the ESA rule-change believe that the direct impact on endangered species by climate change cannot be measured in a “meaningful” way that shows that the federal agency actions are directly responsible for the adverse effects on all species.

On the other side, Congress and environmental groups have opposed the Bush Administration’s last minute amendments to the ESA, seeing it as a last ditch attempt to reduce ESA protections for species threatened by global warming. Bob Irvin, the Defenders of Wildlife Senior Vice President for Conservation Programs, argues that the new rule “means that consideration of the impacts of global warming is completely off limits,” calling it a narrow definition that will affect all listed species and further keep critical habitat from being protected from indirect effects resulting from federal actions.¹⁰ Environmentalists are specifically concerned about the new rule’s impact on the polar bear and other arctic species. Advocates construe the rule change as an admission by the Bush Administration that “greenhouse gas emissions are driving species like the polar bear to extinction.”¹¹ Many environmental groups see this as a final attempt by the Bush Administration to ensure that greenhouse gas emissions are not regulated or reduced.

The Obama Administration may be able to appease both sides of this debate. Passing a climate change statute to ensure that greenhouse gas emissions are reduced and regulated could eliminate the need to use the ESA as a vehicle for setting domestic climate change policy. Such a statute would provide the reductions sought by environmentalists through another channel thus allowing the ESA to continue protecting endangered species, as it has for over thirty years, safely distanced from the heated politics of climate change.



Endnotes:

As this article went to press, the Obama Administration was considering repealing the ESA rule change.

¹ Endangered Species Act of 1973, 16 U.S.C. § 1531 (2009).

² Interagency Cooperation Under the Endangered Species Act, Final Rule, 73 Fed. Reg. 76,272 (Dec. 16, 2008) (to be codified at 50 C.F.R. 402).

³ Endangered Species Act, *supra* note 1, § 1536.

Endnotes: Is the Endangered Species Act the Right Place to Set U.S. Climate Change Policy? *continued on page 70*

*Chris Logan is a J.D. candidate, May 2011, at American University, Washington College of Law.

CASE STUDY: CLIMATE CHANGE ADAPTATION PLANNING GUIDANCE FOR LOCAL GOVERNMENTS IN THE UNITED STATES

by Edna Sussman *

INTRODUCTION

“A hundred years after we are gone and forgotten, those who never heard of us will be living with the results of our actions.” — Oliver Wendell Holmes, U.S. Supreme Court Justice (1841–1935)

These words by Oliver Wendell Holmes, prophetic in light of the current threat to our planet, speak to the urgency of addressing climate change risks with both mitigation and adaptation measures for the benefit of unborn generations. An aggressive planning strategy designed with a broad scope to meet the needs of this century is required. The United States has a long tradition of long range national planning harking back to the 1808 *Gallatin Plan*, which envisioned selling federal lands to produce a society of independent farmers connected to thriving cities by a federally financed system of roads and canals (and later railroads) to form the United States’ productive society.¹ This vision dominated the nineteenth century. One hundred years later, in 1908, Theodore Roosevelt’s great conservation initiatives followed after the continent’s hasty development had laid waste to many of its natural resources. Theodore Roosevelt’s *New Nationalism* established a new emphasis on the common good in planning and launched an effort to protect forests, restrain flooding, minimize soil erosion, build dams for hydro power and irrigation, and create a navigable inland waterway system.² His vision ultimately culminated in the New Deal programs creating rural highways, dams, electrification, and the national highway system, ultimately funded under President Eisenhower.³

Another hundred years later, the 2008 centennial year came and went without a new national vision of such broad scope. The Obama Administration may forge a parallel and equally powerful new national vision and implementation program, of which the stimulus package enacted by Congress in February of 2009 may play a significant part. However, faced with relative inaction at the federal level and serious concerns about the dire impacts of climate change, state, local, and municipal governments across the country have embarked upon local planning efforts to address the looming crisis without awaiting federal guidance and action. The breadth of this local undertaking is exemplified by the commitment by over 900 U.S. mayors, who represent every state in the union, to strive in their own communities to meet or beat the Kyoto Protocol greenhouse gas (“GHG”) emission reduction target suggested for the United States—seven percent reduction from 1990 levels by 2012.⁴

This article will discuss concepts of adaptation to and mitigation of climate change in the context of these local initiatives. After introducing the concepts, it will focus on the adaptation initiative launched by the International Council for Local Environmental Initiatives—Local Governments for Sustainability (“ICLEI”) and the implementation of that initiative by Keene, New Hampshire, the first U.S. community to engage in and complete a comprehensive adaptation planning process. This article will also provide an overview of the seminal guidebook for U.S. communities planning for adaptation.⁵

ADAPTATION OR MITIGATION?

The principal focus of these local climate change initiatives to date has been on mitigation, which is the reduction of GHGs to avoid the most extreme projected climate change impacts. Communities have been slow to address adaptation, however, which focuses on building resiliency to the impacts of climate change.⁶ This is largely due to the fear that turning to adaptation measures would divert resources from the essential need to mitigate by reducing GHG emissions.⁷ However, as achievement of the requisite reduction in global GHGs remains elusive and as the scientific certainty grows and provides ever more cautionary predictions as to climate change impacts, communities are beginning to address adaptation along with mitigation. Moreover, many communities have concluded that rather than discouraging a commitment to mitigation, calling attention to adaptation can actually inspire a greater commitment to mitigation as the specter of future consequences is highlighted.⁸

Despite local communities’ hesitancy to embrace adaptation strategies, it has long been recognized as essential in countering the impacts of climate change and has been part of global climate commitments since the inception of the worldwide effort. For example, the 1992 United Nations Framework on Climate Change (“UNFCCC”), which the United States signed, included a commitment to formulate and implement “measures to mitigate climate change by addressing anthropogenic emissions . . . of all greenhouse gases . . . and measures to facilitate adequate adaptation to climate change.”⁹ Despite its early inclusion, adaptation remained the stepsister to the discussions about mitigation at the

*Edna Sussman, esussman@SussmanADR.com, is an experienced arbitrator and mediator and serves on the panels of many of the leading dispute resolution institutions as well as on court mediation panels. She has had extensive experience related to climate change law and policy and was appointed by Mayor Bloomberg to serve on the New York City Panel on Climate Change and by County Executive Andy Spano to chair the Business Sector Committee of the Westchester County, N.Y. Global Warming Task Force.

international climate change negotiations for many years. However, discussions as to how to address adaptation, particularly with respect to assistance to developing countries, which are likely to suffer the most severe damage, have become a central and ongoing part of the Kyoto negotiations.¹⁰

It is critical that adaptation planning commence now, as many of the measures necessary for adaptation require numerous years of planning and implementation and call for major shifts by governments, businesses, and the population at large.¹¹ Moreover, many of the required measures serve both mitigation and adaptation objectives. The co-benefits of both energy and water mitigation/adaptation strategies are readily apparent. For example, energy efficiency measures both mitigate GHGs by reducing energy demands and adapt by reducing the increased demand for electricity caused by projected warmer weather. Water conservation also mitigates by reducing energy demand for the electricity generation utilized in water distribution and adapts by reducing demand for projected scarce water resources.¹² As another example, green roofs mitigate GHGs as they reduce energy demand and adapt by addressing projected increased flooding and severe storm events by absorbing more water on site. In addition, many adaptation measures can be implemented today at minimal additional expense during initial construction when those same measures will cost considerably more to retrofit in the future.¹³ This is an important factor which should be considered in current decision making.

ICLEI AND KEENE, NEW HAMPSHIRE

A leader in guiding communities in their climate change efforts, ICLEI is working to foster adaptation planning. Founded in 1990, ICLEI is a membership association of local governments committed to advancing climate protection and sustainable development and includes nearly 1,000 cities world-wide, more than 500 of which are in the United States.¹⁴ In 2006, ICLEI members unanimously resolved to expand the organization's climate protection campaign from strictly climate change mitigation to also include climate adaptation. Accordingly, ICLEI launched its Climate Resilient Communities ("CRC") Program to assist local governments in enhancing community resiliency to the impacts and costs associated with projected climate change.¹⁵

The framework for adaptation work established by ICLEI is set forth in its adaptation milestones, a recommended series of steps for adaptation planning. The milestones are:

1. Conduct a Climate Resiliency Study
2. Prioritize Areas for Action and Set Goals



Photo courtesy of Jokermage, released under the GNU Free Documentation License.

New England covered bridge.

3. Develop a Climate Resilient Action Plan
4. Implement the Plan
5. Monitor and Reevaluate¹⁶

Keene, New Hampshire was an early participant in developing a climate action plan and has committed to meeting a GHG reduction goal of ten percent from 1990 levels by 2015. Keene was invited to be the pilot community for ICLEI's CRC program and was the first ICLEI CRC community to complete Milestone 3 with the release of its adaptation plan.¹⁷ The town of Keene was motivated to address adaptation as well as mitigation because it had been subjected to more frequent and more severe flooding and had already seen changes in annual snowfall, infestation of non-native plant and animal species, an increase in the total number of high index heat days, and more numerous poor air

quality days.¹⁸ Tourism, a major source of income in New Hampshire, relies on several sources—snow cover, fall foliage, and cold water fishing¹⁹—all of which would be adversely impacted by climate change. Health impact concerns were also a motivating factor.²⁰ Moreover, Keene was developing a new comprehensive plan and a new capital plan including stormwater and road infrastructure. The adaptation plan was to be incorporated into this planning process and used to make land use decisions to identify capital improvement projects, and to establish funding priorities.²¹

The effort, led and supported by the dedicated town planning staff, commenced with the creation of a CRC committee. Over the course of eighteen months the CRC committee met and began the process of identifying Keene's vulnerabilities

It is critical that adaptation planning commence now, as many of the measures necessary for adaptation require numerous years of planning and implementation.

to climate change. The committee concluded that the vulnerabilities could best be grouped into three main categories, which overlapped somewhat: (a) the built environment, which consists of man-made infrastructure such as buildings, transportation, and stormwater infrastructure; (b) the natural environment, which consists of naturally occurring resources such as wetlands, flora, and fauna; and (c) the social environment, which focuses on areas that impact human life such as the economy and public health.²² The committee found that it had difficulty strictly separating mitigation from adaptation measures and concluded that the best approach was “to build adaptive capacity” with a “strong mitigation component.”²³

The vulnerabilities identified in Keene are illustrative of the wide ranging impacts of climate change in all of the categories. For the built environment, not only were buildings identified as being at risk from flooding, but road flooding and uneven freeze thaw cycles could cause roads to buckle and bridges to become vulnerable to failure. These failures in the transportation infrastructure could leave people stranded in the event of an extreme weather event and make delivery of emergency services difficult, if not impossible. Flooding could compromise wastewater treatment plants, leading to the possibility of health related dangers. Energy systems could be disrupted in severe storm events, and with today’s reliance on cell phones, may leave members in the community without access to emergency notifications.²⁴

For the natural environment, the committee identified a number of areas that are vulnerable to the effects of climate change.²⁵ The committee found that wetlands are vulnerable to damage from intense storm events and drought; the degradation of wetlands would decrease the efficacy of these natural systems to assist in stormwater filtration and flood control.²⁶ Changes in temperature threaten the sugar maple and other species. Invasive species may drive out native plants causing dislocation of local animal species.²⁷ Moreover, the local food supply is threatened by drought. Accordingly, the committee advised self-reliance because other communities from which Keene imports much of its food will be affected by climate change and unable to continue supply.²⁸

For the social environment, the committee identified threats to the local economy, public health, and emergency services.²⁹ For instance, the threat to the sugar maple endangers the fall foliage that attracts so many tourist dollars and jeopardizes the source of traditional maple syrup.³⁰ The increase in winter temperatures will reduce snowfall causing a reduction in the number of tourists who come to the state for skiing.³¹ In addition, several public

health concerns were identified resulting from: (a) the increased number of poor air quality days; (b) the increased number of excessively hot days causing heat stress; (c) the introduction of new pests to the area bearing vector born diseases; and (d) flooding, which can impair potable water sources and leave stagnant water that breeds bacteria laden runoff.³² Climate change could also spike demands for various aspects of emergency services and overwhelm available personnel, especially when routes are blocked and communication systems compromised by extreme weather events.³³

After identifying vulnerabilities and goals and targets for each vulnerability, the CRC committee used a set of criteria to set priorities by examining: (a) the sectors impacted—local business, environment, or community; (b) potential influence—visibility and whether it supported existing initiatives; and (c) investment—availability of funding, the ease of implementation, the time sensitivity and the cost effectiveness.³⁴ The Keene Adaptation Opportunities Goals and Targets, released as part of the adaptation plan, lists multiple opportunities for adaptation for each category and identifies specific goals and action items designed to capture each “opportunity.”³⁵

Since the completion of its climate adaptation plan, Keene has launched a broad scale public visioning effort to engage the community in the development of its new comprehensive plan. The hope is that the comprehensive plan will be informed by the work completed by the CRC committee. Examples of action items already in the process of being implemented include the revision of the building code, the commencement of a major water infrastructure project that will consider climate change science in watershed modeling and the development of a food coop by a community group which will help address food security in the wake of a changing climate.³⁶ Keene is well on its way to beginning to meet the threat of climate change and foster adaptation measures.

COMPREHENSIVE ADAPTATION GUIDANCE

King County, Washington, long a leader in climate change mitigation and adaptation activities, spearheaded a project in association with ICLEI and released *Preparing for Climate Change: Guidebook for Local Regional and State Governments* (“The Guidebook”), a comprehensive guidebook to assist communities in planning for adaptation.³⁷ The Guidebook is intended to provide a road map that will enable communities to tailor their adaptation plans to their unique circumstances as the impacts of climate change vary from locale to locale. It is at the

Energy efficiency measures both mitigate GHGs by reducing energy demands and adapt by reducing the increased demand for electricity caused by projected warmer weather.

local level that climate change impacts will be felt and at which they can be best understood. The Guidebook sets out a series of steps consistent with the ICLEI adaptation milestones and offers practical advice to maximize success in implementation.

The Guidebook identifies and offers advice on how to overcome the most common barriers to action on adaptation. Those who have attempted to launch an adaptation initiative will recognize many of these objections:

- “I don’t know how climate change will affect my community.”
- “Climate change action should happen at higher levels of government.”
- “I’ll deal with climate change when I see that it is happening.”
- “My community wants to focus only on reducing greenhouse gases.”
- “I’ll deal with climate change when you can tell me exactly what I need to plan for.”
- “I’ll wait until I see other communities planning for climate change.”
- “I don’t have time or money to deal with climate change right now.”
- “I don’t have the resources or political support to act.”
- “Our operations are based on historical statistics, not future modeling.”³⁸

The Guidebook further provides a detailed step-by-step review of the recommended process for adaptation planning:

- *Scope the Climate Change Impacts to Your Major Sectors:* This step calls for collecting information about how climate is expected to change in the region with attention to such factors as temperature, precipitation, storm events, and seasonal changes, including a range of possible scenarios and an analysis of the degree of confidence for each prediction. This effort culminates in a decision as to whether impacts are significant enough to begin preparing for climate change.³⁹
- *Build and Maintain Support to Prepare for Climate Change:* This step recognizes the importance of outreach in building and supporting the planning effort and the central role of recruiting committed individuals who can also play an important role in implementation after the plan is developed. It is recommended that a “champion” in government committed to the process be identified and that the involvement of the public sector, the private sector, non-profit organizations, and the media be sought and a preparedness message developed.⁴⁰

*Tourism, a major source
of income in
New Hampshire, relies on
several sources all
of which would be
adversely impacted by
climate change.*

- *Build Your Climate Change Preparedness Team:* This step recognizes the need to coordinate activities across departments and sectors and calls for identifying leaders and a working team to spearhead the effort.⁴¹
- *Identify Your Planning Areas and Sectors Relevant to Climate Change:* This step calls for developing an inventory of planning areas associated with built, natural and human, systems that are of significance to the community. These could include water supply, wastewater treatment, land use planning, energy supply, public health, roads and bridges, forestry, agriculture, biodiversity, recreation, business, and emergency response.⁴²
- *Conduct a Climate Change Vulnerability Assessment:* With this step the process of analyzing the sensitivity of each planning area or system to climate change begins with a determination of how significant the impact of climate change will be on each. The analysis includes, with respect to each planning area or system, an evaluation of the adaptive capacity, the ability to accommodate changes in climate with minimum disruption or minimum additional cost. This step concludes with an assessment of vulnerability, which combines the sensitivity and adaptability findings. Areas that are sensitive to climate change but less able to adapt are considered vulnerable.⁴³
- *Conduct a Climate Change Risk Assessment:* With this step a traditional risk assessment analysis is performed to prioritize action steps. Using the vulnerability assessment results, an analysis is conducted of the consequence of a climate

impact (such as the cost of a sea level rise). This is multiplied by the probability or likelihood that the projected impact will occur. As new data becomes available, the risk assessment may change over time, calling for a periodic reassessment.⁴⁴

- *Set Preparedness Goals and Develop Your Preparedness Plan:* This step calls for establishing a vision for a climate resilient community and guiding principles that will inform the process of setting preparedness goals in the priority planning areas. This step includes increasing public awareness, increasing technical capacity to prepare for climate impacts, developing systematic ways to include climate change considerations in planning decisions, increasing adaptive capacity, and strengthening community partnerships. Goals are set, recognizing that regular reevaluations will be necessary, and action steps are established and prioritized.⁴⁵
- *Implement Your Preparedness Plan:* Many action steps can be implemented through existing tools such as zoning regulations, building codes, public safety rules, taxes, and

tax incentives, as well as permitting, infrastructure development, emergency management powers, and education. Other new tools for implementation are to be explored.⁴⁶

- *Measure Your Progress and Update Your Plan:* The development of new resiliency measures is recommended to be used to assess progress. The results of these assessments and new information is to be used to modify assumptions and update the plan. Results should be shared in an open and transparent manner.⁴⁷

The Guidebook includes numerous checklists and charts, examples from communities around the world, and extensive resources. It is an indispensable tool for planning for adaptation.

CONCLUSION

As the years left to accomplish the level of GHG mitigation the scientists advise is necessary slip away without a clear path to achieving the requisite targets and as actual conditions indicate climate changes even more rapid and of greater magnitude than predicted, adaptation efforts will become an increasingly central aspect of planning.⁴⁸ While there are gaps in the data available to individual communities which impede more precise adaptation planning, communities are nonetheless beginning to consider adaptation measures in their planning decisions. Such progress on adaptation is both essential if communities are to be protected from harm and smart government as adaptation measures provide opportunities for job creation and foster energy security for the United States.



Endnotes: Case Study

¹ DONALD WILLIAM MEINIG, *THE SHAPING OF AMERICA* 317-25 (1993).

² Robert Fishman, *1808-1908-2008: National Planning for America*, in REGIONAL PLAN ASSOCIATION, *AMERICA 2050* at 6 (2007), available at <http://www.rpa.org/pdf/temp/America%202050%20Website/Fishman%20National%20Planning%20Final.pdf> (last visited Feb. 20, 2009).

³ *Id.* at 2.

⁴ Seattle Mayor Nickels, U.S. Mayors' Climate Protection Agreement, <http://www.seattle.gov/Mayor/Climate/> (last visited Feb. 20, 2009).

⁵ See generally HEINZ CENTER, *A SURVEY OF CLIMATE CHANGE ADAPTATION PLANNING* (2007), available at http://www.heinzcenter.org/publications/PDF/Adaptation_Report_October_10_2007.pdf (last visited Feb. 20, 2009) (discussing the various adaptation efforts from around the world). While focused on one U.S. geographic area and one climate change impact, the recent publication by the Environmental Protection Agency, in collaboration with the U.S. Geological Survey and the National Oceanic and Atmospheric Administration, is very instructive in its discussion of the impacts of sea-level rise and the multiple opportunities for governments and coastal communities to plan for and adapt to rising sea levels. See U.S. CLIMATE CHANGE SCIENCE PROGRAM, *SYNTHESIS AND ASSESSMENT PRODUCT 4.1, COASTAL SENSITIVITY TO SEA LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION* (2009), available at <http://downloads.climate-science.gov/sap/sap4-1/sap4-1-final-report-all.pdf> (last visited Feb. 20, 2009). BIZIKOVA ET AL., ENVIRONMENT CANADA AND UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, CANADIAN COMMUNITIES' GUIDEBOOK FOR ADAPTATION TO CLIMATE CHANGE (2008), available at <http://www.forestry.ubc.ca/LinkClick.aspx?fileticket=xsexCSatHjo%3d&tabid=2455&mid=5415&language=en-US> (last visited Mar. 2, 2009).

⁶ Roger Pielke, Jr. et al., *Lifting the Taboo on Adaptation*, 445 NATURE 8 (2007).

⁷ A.K. SNOVER ET AL., *CTR. FOR SCIENCE IN THE EARTH SYSTEM, PREPARING FOR CLIMATE CHANGE: GUIDEBOOK FOR LOCAL REGIONAL AND STATE GOVERNMENT* 10-11 (2007), available at <http://www.icleiusa.org/action-center/planning/adaptation-guidebook/> (last visited Feb. 20, 2009).

⁸ *Id.* at 11.

⁹ United Nations Framework Convention on Climate Change, art. 4(1)(b), opened for signature May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 164, 166, available at http://unfccc.int/essential_background/convention/background/items/1349.php (last visited Feb. 26, 2009).

¹⁰ UNFCCC, *Bali Action Plan*, Decision 1/CP.13, FCCC/CP/2007/6/Add.1 (Dec. 2007), available at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3> (last visited Feb. 20, 2009).

¹¹ *Id.*

¹² See generally U.S. DEP'T OF ENERGY, *ENERGY DEMANDS ON WATER RESOURCES, REPORT TO CONGRESS ON THE INTERDEPENDENCY OF ENERGY AND WATER* (2006), available at http://www.sandia.gov/energy-water/congress_report.htm (last visited Feb. 20, 2009) (discussing the linkage between energy and water);

World Economic Forum, *Thirsty Energy: Water and Energy in the 21st Century*, <http://www.weforum.org/pdf/ip/energy/energyvision2009.pdf> (last visited Feb. 20, 2009).

¹³ For example, a municipality planning a stormwater infrastructure improvement can include a larger sized culvert at minimal additional cost that will contain extreme weather events and avoid flooding damage to the community in the future. Building a replacement stormwater infrastructure in the future to deal with such flooding would cost much more than the installation of larger culverts now. See CITY OF KEENE, NEW HAMPSHIRE, *CLIMATE ADAPTATION ACTION PLAN SUMMARY REPORT 8*, available at http://www.ci.keene.nh.us/planning/Keene%20Summary_ICLEI_FINAL.pdf (last visited Feb. 20, 2009) (listing ideas to create a more sustainable stormwater infrastructure design).

¹⁴ ICLEI, *About ICLEI*, <http://www.icleiusa.org/about-iclei> (last visited Feb. 18, 2009).

¹⁵ ICLEI, *Introducing ICLEI's Climate Resilient Communities Program*, http://www.icleiusa.org/programs/climate/Climate_Adaptation (last visited Feb. 18, 2009).

¹⁶ ICLEI, *Five Milestone for Climate Adaptation Methodology*, http://www.icleiusa.org/programs/climate/Climate_Adaptation/five-milestones-for-climate-adaptation (last visited Feb. 18, 2009).

¹⁷ CITY OF KEENE, NEW HAMPSHIRE, *ADAPTING TO CLIMATE CHANGE: PLANNING A CLIMATE RESILIENT COMMUNITY* (2007), available at http://www.ci.keene.nh.us/planning/Keene%20Report_ICLEI_FINAL_v2.pdf (last visited Feb. 20, 2009).

¹⁸ *Id.* at 6.

¹⁹ *Id.* at 19-21.

²⁰ See *id.* at 22 (explaining that increased smog levels, poor quality air days, and high heat index days amplifies the risk cardiovascular and respiratory illnesses and vector-borne diseases).

²¹ *Id.* at 9.

²² *Id.* at 11.

²³ See CITY OF KEENE, *supra* note 17, at 12.

²⁴ *Id.* at 24-26.

²⁵ *Id.* at 27-29.

²⁶ *Id.* at 27.

²⁷ *Id.* at 28.

²⁸ See CITY OF KEENE, *supra* note 17, at 29.

²⁹ *Id.* at 29-30.

³⁰ *Id.* at 29.

³¹ *Id.*

Endnotes: Case Study continued on page 71

WHAT HAPPENS IN VEGAS. . . NEEDS LEGISLATIVE BACKUP

by Ursula Kazarian*


The U.S. Southwest currently faces a water crisis that experts have projected will only get worse, due to regional effects of climate change.¹ Nevada, the state with the fewest guaranteed water rights to the Colorado River,² has experienced unprecedented population growth in Las Vegas amidst an equally unprecedented economic boom over the past few decades.³ While its economy may currently be languishing,⁴ population forecasts still project a significant increase in demand in the next several decades,⁵ even as water sources are projected to diminish and even disappear.⁶ This article examines the current legislative and policy responses to climate change projections in the state of Nevada, and particularly the Las Vegas metropolitan area, concluding that such responses are in urgent need of development and expansion.

Federal climate change legislation has been introduced in previous years, but none has passed.⁷ State legislative action in the region to address the potential looming crisis has been slow to form.⁸ Unlike California, Arizona and Nevada, the two other Lower Basin states that share the same portion of Colorado River water resources with California, have not adopted their own climate change plans. Arizona, however, has published a Climate Action Plan⁹ and has launched the Southwestern Climate Initiative together with New Mexico.¹⁰ In contrast, Nevada's Climate Action Committee only just published its report to Governor Jim Gibbons in 2008, recommending in part that a state action plan be drafted.¹¹

Additionally, California and Arizona are active members of the Western Climate Initiative, a group of U.S. governors and Canadian premiers "created to identify, evaluate, and implement . . . ways to reduce greenhouse gas emissions" while Nevada is merely an observer state.¹² Nevada's Governor has, however, taken a more active role as a participating member of the Western Governors' Association ("WGA"), which has declared its intention to combat climate change by increasing energy efficiency and developing cleaner energy sources.¹³ WGA's effectiveness will be measured by its ability to translate policy positions to implementation strategies.

Fortunately, basic Nevada legislation does exist upon which more extensive climate change legislation could be built, including statutes encouraging renewable energy technologies as well as regulating a greenhouse gas registry to counter air pollution.¹⁴ In addition, Nevada has more traditional statutes outlining the state's responsibility in governing natural resources, including water planning. However, no overarching legislative framework currently exists that incorporates these various interests with climate change issues. Such a broad framework would be an immensely useful tool to address the various causes and effects of climate change.

While Nevada develops the legislative capacity to govern water planning in a projected climate of extreme drought, the Southern Nevada Water Authority ("SNWA") has taken an aggressive and proactive stance on finding new sources of water to satiate the needs of the Las Vegas metropolitan area. In 2008, SNWA chief Patricia Mulroy cited climate change impacts and lowered Colorado River water levels as impediments to a previously-considered system of water transfers employing desalination plants in California.¹⁵ One year later, Mulroy has proposed an even more extreme concept: to pipe floodwaters in to Nevada from the Mississippi River.¹⁶ The Mississippi proposal is in addition to another multimillion dollar project SNWA is currently studying to pipe water from rural Eastern Nevada to Las Vegas, which has drawn much criticism from ecologists and rural ranchers.¹⁷ The audacity of these ideas conveys the exigency of the situation and the seriousness with which officials are addressing future water supply. It will be interesting to see if such massive water pipeline proposals will be implemented in the future; and, if not, what long-term solutions will feed the growing water needs in Las Vegas and the rest of the Southwest.

The Nevada state government and water managers clearly realize the severity of projected climate change impacts on the local water supply. Plans for a network of water pipelines are currently underway to provide a solution to what could be an extreme water shortage for Las Vegas as well as the entire U.S. Southwest region. However, without a comprehensive legal and policy framework, such piecemeal projects will not address the implications of climate change. Such a framework is needed to ensure compliance with any future federal climate change legislation, and further would ensure efficient policy planning by linking the causes of global warming with responses to the effects of localized climate change. In a time of increasing uncertainty regarding future water supply exacerbated by climate change, Nevada cannot afford a timid response to local and regional climate projections. Only time will tell whether Las Vegas and other cities in the Southwest will effectively address these issues before the water supply runs out. 

Endnotes:

¹ *Lake Mead, Key Water Source for Southwestern US, Could Be Dry By 2021*, SCIENCE DAILY, Feb. 12, 2008, available at <http://www.sciencedaily.com/releases/2008/02/080212141424.htm> (last visited Feb. 27, 2009).

Endnotes: What Happens in Vegas . . . Needs Legislative Backup
continued on page 71

*Ursula Kazarian is a J.D. candidate, May 2009, at American University, Washington College of Law.

PLANNING FOR ADAPTATION TO CLIMATE CHANGE: LANDMARK CASES FROM AUSTRALIA

by Jacqueline Peel* & Lee Godden**

INTRODUCTION

With all attention fixed on the post-Kyoto negotiations for new greenhouse emissions targets it can be easy to overlook actions in the area of climate change adaptation. Indeed, adaptation is often regarded by environmentalists as an excuse for inaction on climate change that could exacerbate adverse environmental impacts.¹ While leading scientific bodies, like the Intergovernmental Panel on Climate Change (“IPCC”), agree on the urgent need for intervention to slow emissions in order to avoid “dangerous climate change,” research also confirms that some degree of climate change is inescapable.² Working alongside mitigation efforts, measures to adapt to the resulting environmental modifications are thus “both urgent and imperative.”³

Within many countries the momentum to adapt to climate change is growing. Australia is a prominent example in this regard, with the importance of adaptation efforts heightened by scientific reports predicting severe impacts on Australia’s many coastal cities with sea level rise.⁴ This article reviews two recent, landmark cases in Australia which show how the courts have supported adaptation to climate change through their interpretation of planning laws. These cases also reveal the scope for the international principles of sustainable development to be translated into legal measures that seek to better prepare coastal communities for the advent of climate change and its environmental impacts.

THE ADAPTATION IMPERATIVE

Australia, like the continental United States, occupies a vast area of territory covered by a diverse range of ecological systems. To some extent, the impact of climate change on this environment is discernible already: Australia has experienced major droughts, extreme water shortages, and faces widespread biodiversity loss.⁵ In the future, additional threats are likely to be posed to coastal cities and towns that face problems of erosion, ocean surge, increased storm severity, and flooding if sea levels rise significantly.⁶ In its latest assessment, the IPCC advises

that “[s]ea level rise under warming is inevitable” and will “continue for many centuries after [greenhouse] concentrations have stabilized.”⁷

Countries and regions with significant stretches of coastline and low-lying lands—such as Australia, the river delta areas of Southeast Asia, and the Indian subcontinent, as well as many parts of the United States—are very vulnerable to the effects of climate change-induced sea level rise.⁸ Although future warming and its likely effects may be reduced if an effective agreement on deep emissions cuts emerges from the current post-Kyoto negotiation process,⁹ it is becoming increasingly clear that climate change impacts cannot be entirely prevented. In this context, climate change mitigation, in the sense of “implementing policies to reduce [greenhouse gas] emissions and enhance sinks,” will not be sufficient to avert serious environmental damage. Instead

The impact of climate change is discernible already: Australia has experienced major droughts, extreme water shortages, and faces widespread biodiversity loss.

there is a need for adaptation “initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.”¹⁰

The potential for residential and other coastal development to be adversely affected by climate change has important ramifications for the associated responsibilities of planning authorities, which act as “the stewards of the coast.”¹¹ In Australia, planning is primarily the responsibility of state governments pursuant to state planning laws and policies, although decision-making on approvals for individual projects is generally delegated to local governments.¹² State governments may become directly involved

*Jacqueline Peel is an Associate Professor at the Melbourne Law School in Australia. Her expertise lies in the fields of domestic and international environmental law, risk assessment, and the precautionary principle. She has published extensively on these topics and also has an emerging research specialization in climate change law. **Lee Godden is a Professor at the Melbourne Law School. Lee’s widely published work focuses on issues of environmental and planning law, biodiversity and water law, and indigenous peoples’ participation in environmental management. Together with Associate Professor Peel she holds a major Australian research grant (2009–2011) to investigate a regulatory framework for responding effectively to climate change.

in the environmental assessment and approval of development proposals, as may the federal government in the case of major projects (e.g. a large-scale coastal residential development)¹³ and/or ones with a likelihood of significant environmental impact.¹⁴ State governments also have responsibility for coastal management and planning under various pieces of legislation.¹⁵

Over the longer-term, if planning authorities in coastal regions ignore the imperative of adapting to climate change they may face the risk of civil liability for developments approved without adequate regard for future impacts like flooding or land erosion.¹⁶ One leading Australian commentator describes the threat of litigation against local governments in such circumstances as “increasingly more real.”¹⁷ Indeed, local governments may be particularly vulnerable to litigation brought by property owners affected by climate change as these bodies will generally be easier to identify and link to the harm suffered than the entities whose pollution contributed to particular impacts.¹⁸ In light of this, “the only sensible strategy for local governments is to start incorporating climate change considerations into a wide range of their decisions and activities.”¹⁹

CLIMATE CHANGE ADAPTATION AND PLANNING LAW

Compared with greenhouse emissions mitigation that tends to be a focus of national and international regulation, climate change adaptation is a topic naturally suited to consideration at a more local level. For a start, the benefits of adaptation measures tend to be quite localized (e.g. construction of a sea wall or levee to reduce coastal erosion at a given beach with rising sea levels). In addition, high levels of variability in the manifestation of impacts across different areas, even within the same country or region, militate in favor of tailored, local responses. As a consequence, local and state governments have been at the forefront of climate change adaptation in Australia,²⁰ as well as in other jurisdictions.²¹ In turn, local decision-making and policy development with respect to climate change adaptation are beginning to generate institutional and organizational change outside the government sector amongst development agencies, property developers, financiers, and insurers.

At the level of local government in Australia, many municipal councils around the country have introduced, or are in the process of formulating, planning measures and development conditions designed to ensure adaptation to climate change impacts. These planning measures target a range of potential impacts, from rising sea levels and increased coastal erosion, to a greater frequency of cyclones and bushfires.²² Such measures may limit, quite substantially in some cases, the capacity of property owners to develop their land as they wish.

For instance, the Redland Shire Council operating on the northeast coast of Australia in the State of Queensland has included a provision in its Strategic Plan that makes the “consideration of sea level changes which may result from changes in

climatic conditions” a relevant decision-making factor for proposed urban development.²³ On this basis, the Council has imposed conditions on new developments restricting the areas of land that can be built on to those above a one in one hundred year flood level.²⁴ Similar development control provisions are appearing in some areas of the United States. An example is the Coastal Sand Dune Rules issued under the Maine Natural

Resources Protection Act, which require an anticipated sea level rise of two feet in the next one hundred years to be considered in determining size, density, and location restrictions for proposed development.²⁵ Some planning authorities have contemplated more drastic measures to adapt to climate change-induced sea level rise such as instituting a policy of planned retreat where human settlements are relocated away from the coastline.²⁶ Bryon Shire Council on the central eastern coast of Australia is one such local government that is implementing a policy of this kind with mixed results.²⁷

Unsurprisingly, local adaptation measures that restrict development in the coastal zone have not gone unchallenged. In Australia, this has resulted in a number of cases coming before planning and environmental tribunals and courts.²⁸ These cases have necessitated judicial consideration (at varying levels of detail) of the risks of sea level rise with climate change and the legal scope for adaptation measures to respond to such risks. The decisions contribute to a growing body of climate change jurisprudence in Australia dealing with the permissible nature of global warming mitigation and adaptation strategies taken at the local, state, or national level.²⁹

CLIMATE CHANGE ADAPTATION LITIGATION

Two recent landmark decisions of Australian courts illustrate the way in which litigation through the planning system is shaping actions to respond to the challenge of impending climate change. The two cases originated in different coastal areas of Australia: the New South Wales south coast (the *Walker* case) and the low-lying South Gippsland coast in the State of Victoria (the *Gippsland Coastal Board* case). Consequently, different local government and state laws were applicable in each case. Yet, an interesting link between the decisions is their shared reliance on the principles of sustainable development to interpret planning laws in a way that supports the implementation of adaptation measures.

In Australia, the internationally-derived concept of sustainable development (known as ecologically sustainable

Climate change adaptation is a topic naturally suited to consideration at a more local level.

development or “ESD”) is a central policy goal of planning and environmental law requiring the integration of environmental considerations into development-related decision-making.³⁰ It is embodied in the objectives of multiple statutes spanning all Australian jurisdictions.³¹ ESD is generally underpinned in such legislation by a series of environmental principles whose function is to guide the development of specific environmental rules and to provide a framework for making individual decisions that balance environmental and development considerations. Important principles of ESD in Australia (that mirror international sustainable development principles)³² include the principle of inter-generational equity (requiring regard to be had to the environmental needs and interests of future generations) and the precautionary principle (advising caution in the face of scientific uncertainty over potential environmental impacts).³³ ESD and its principles thus provide a common framework for environmental law and decision-making in Australia, superimposed over the requirements of specific, local legal and policy requirements.

WALKER CASE

The *Walker* case was a judicial review action in which a challenge was brought to approval of a concept plan for a residential subdivision and retirement village.³⁴ The proposed development was located at Sandon Point, near Wollongong on the coast just south of Sydney.³⁵ The Sandon Point proposal attracted strong public opposition on the basis of its potential environmental impacts, including effects on three watercourses crossing the site that were prone to flooding.³⁶

Approval powers for the development had been transferred from the local authority to the New South Wales Planning Minister under state legislation following the designation of the proposal as a “major infrastructure project.”³⁷ The relevant legislation was the *Environmental Planning and Assessment Act 1979* (“EPA Act”), which under Part 3A, makes special provision for the assessment of projects designated as major infrastructure. Pursuant to Part 3A of the EPA Act, in approving the concept plan the Minister was obliged to take into account an environmental assessment prepared by his department. In turn this assessment was required to identify any relevant aspect of “the public interest,”³⁸ a category which has been judicially interpreted to encompass the principles of ESD such as inter-generational equity and the precautionary principle.³⁹ Accordingly, one of the principal grounds for review in the *Walker* case was that the Planning Minister had failed to take into account principles of ESD in making his decision.⁴⁰ The factual basis for this claim was the absence of any consideration by the Minister or his department of the potential for the flooding risk on the Sandon Point site to be exacerbated by climate change.⁴¹

Justice Biscoe of the New South Wales Land and Environment Court began by considering whether, under Part 3A of the EPA Act, ESD principles were a mandatory consideration in decision-making and, if so, whether the Minister was bound to consider the relevance of climate change flood risk to the development.⁴² The answers to these questions turned on construction

of the subject matter, scope, and purpose of the EPA Act. The court noted that the objects of the Act included the encouragement of ESD as well as protection of the environment, “defined broadly and non-exhaustively in s[ection] 4(1) to include ‘all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.’”⁴³ Moreover, Justice Biscoe held:

There may be found in the subject matter, scope and purpose of this legislative scheme, as with nearly every statute conferring power to make an administrative decision, an implication that the decision is to be made on the basis of the most current material available to the decision-maker which has a direct bearing on the justice of the decision So too, in my opinion, with the deadly serious issue of climate change, which has loomed ever larger in the public and political eye for years.⁴⁴

In the context of the project at issue, the court found that climate change flood risk could be described as “an aspect of the public interest that potentially has a direct bearing on the justice of the decision.”⁴⁵ In Justice Biscoe’s view, therefore, climate change flood risk was appropriately designated as a necessary consideration for environmental assessment of a flood-constrained, coastal plan development like that under review. Flowing from the objective of encouraging ESD in the objects of the EPA Act, the consideration of climate change flood risk thus became a relevant, mandatory consideration for the Minister in deciding whether to approve the concept plan. His failure to do so rendered that approval void and of no effect.⁴⁶

The importance of the *Walker* decision in the context of the adaptation imperative for climate change is twofold. First, the case illustrates how general principles of environmental law, such as principles of (ecologically) sustainable development, can be employed as a framework for importing specific considerations pertinent to climate change risks into decision-making. The court’s reliance on ESD principles—rather than particular legislative or policy directives—as a basis for finding climate change flood risk to be a mandatory consideration in the case may have far-reaching ramifications “for all kinds of economic activities.”⁴⁷ The reasoning employed in the *Walker* judgment may be applicable to many types of development potentially impacted by climate change. This might include developments that are affected by increased drought risk, decreased snowfall, coral bleaching, or coastal erosion.

The second major contribution made by the case is the way it highlights how local development assessment and approvals must increasingly be made in terms of a holistic and global context that includes global warming risks. As Justice Biscoe stated:

Climate change presents a risk to the survival of the human race and other species. Consequently, it is a deadly serious issue. It has been increasingly under public scrutiny for some years. No doubt that is because of global scientific support for the existence and risks of climate change and its anthropogenic causes.⁴⁸

Such judicial statements point to an acceptance of a global scale for risk assessment when it comes to considering the potential impacts of climate change, even though the focus remains on local measures for adaptation. This view is precipitating a change in thinking on the part of developers and planning authorities in coastal regions. For instance, following the *Walker* decision, one Australian law firm advised that in relation to future project applications:

[I]t is recommended that proponents and councils make an assumption that there is the potential for greater flooding or inundation than is presently the case (i.e. due to climate change), and that proponents should consider whether any mitigation measures can be designed to alleviate any future flooding impacts.⁴⁹

GIPPSLAND COASTAL BOARD CASE

The wide-ranging consequences of the *Walker* case were echoed in another Australian climate change flooding case decided in 2008, although in this instance it was sea level rise rather than extreme weather events that were the cause for concern. The *Gippsland Coastal Board* case⁵⁰ has been regarded as a watershed decision in relation to coastal development adaptation and climate change. In its decision, which was based on a reappraisal of all the relevant scientific and planning evidence,⁵¹ the Victorian Civil and Administrative Tribunal determined to refuse consent for residential developments in a low-lying coastal region.⁵²

The local South Gippsland Shire Council had previously approved permits for six residential developments in the Grip Road area of Toora, an area zoned for agricultural and mixed land uses.⁵³ The grant of permits was opposed by the Gippsland Coastal Board, a regional coastal board set up under the Victorian *Coastal Management Act 1995*.⁵⁴ In its application to the Victorian Civil and Administrative Tribunal for merits review of the approvals, one of the principal objections raised by the Gippsland Coastal Board was that the proposed dwelling developments were inappropriate in light of projected sea level rises as a result of climate change.⁵⁵ In elaborating this argument, the Board relied on preliminary studies of potential sea level rise and wind surge undertaken by Australia's premier scientific research organization, the Commonwealth Scientific and Industrial Research Organisation.⁵⁶

The Tribunal ultimately determined to refuse approvals for the proposed development based on inconsistency with zoning and planning controls.⁵⁷ Importantly also, the Tribunal applied the precautionary principle as a component of ESD to find that development consent should not be granted in view of the likelihood of inundation of the land and proposed dwellings, due to sea level rise induced by climate change.⁵⁸

In the circumstances of the *Gippsland Coastal Board* decision, there were no specific provisions in the relevant planning laws mandating either consideration of the precautionary principle or the potential for sea level rise. However, the Tribunal noted the general scientific consensus "that some level of climate change will result in extreme weather conditions beyond the historical record that planners and others rely on in assessing future potential impacts."⁵⁹ According to the Tribunal there thus existed "a reasonably foreseeable risk of inundation" to the land and proposed dwellings that was judged to be unacceptable.⁶⁰ This threat was considered an adequate basis for invocation of the precautionary principle notwithstanding the Tribunal's acceptance that there was a degree of scientific uncertainty as to the level of projected sea rise on the Gippsland coast. Indeed, the Tribunal endorsed a precautionary approach on the issue of climate change adaptation while clearly acknowledging that "[t]he range of impacts may well be beyond the predictive capability of current assessment techniques."⁶¹ The Tribunal also emphasized that for effective risk assessment, it was not acceptable to rely upon historical data and previous flood model predictions in assessing future climate change induced risks.⁶²

Like the *Walker* case before it, the *Gippsland Coastal Board* decision illustrates the broad potential for ESD concepts to be relied upon in fashioning planning approaches for climate change adaptation. In particular, adoption of a precautionary approach to evaluating the effects of potential sea level rise signals an important development where the limits of existing risk assessment and predictive capability are clearly acknowledged.⁶³ The Tribunal's reasoning suggests that the necessity for precautionary action in coastal planning and decision-making flows from the general scientific consensus regarding the likelihood of inundation from rising seas as this risk is now one which is "reasonably foreseeable." In this regard, one consequence of the *Gippsland Coastal Board* decision may be the routine inclusion of climate change considerations via the importation of ESD principles in decision-making and merits review under planning and environment legislation across relevant Australian jurisdictions.

There is also the specter of litigation facing those governmental authorities that act without regard to future climate change risks.


CONCLUSION

Cases like the *Walker* and *Gippsland Coastal Board* decisions are still few and far between and the imperative for climate change adaptation planning and development has certainly not been accepted by all governments and planning authorities in Australia. Clear tensions remain between pressures for development approval in coastal regions and the need to adapt to climate change impacts through state and local planning regimes. Nevertheless, the currency of global warming issues and the firming

of scientific data on future impacts are encouraging many local governments and coastal planning authorities in Australia and elsewhere in the world to give serious thought to planning for and implementing precautionary measures to respond to expected effects like sea level rise and inundation. As climate change considerations come to be seen as relevant, if not essential, to environmental assessment processes, there is also the specter of litigation facing those governmental authorities that act without regard to future climate change risks.⁶⁴

The emerging trend evidenced in the Australian cases of *Walker* and *Gippsland Coastal Board* to consider climate change risks within the broader ambit of sustainable development could also have far-reaching significance. In Australia, as in many other jurisdictions, the policy and principles of sustainable development play an overarching, strategic role in planning and environmental laws. The Australian cases illustrate how general concepts of sustainability can be translated into specific requirements for planning and decision-making in areas at risk from the effects of climate change. The precautionary principle, in

particular, appears well-suited as a basis for measures to ensure coastal development adapts to climate change over the longer-term, at least in circumstances where there is clear supporting scientific evidence at the general level of climate change risks such as flooding or sea level rise.⁶⁵ Therefore, despite the well-acknowledged limitations of sustainable development as a guiding objective for environmental law,⁶⁶ it seems the concept may progressively be given real purchase in a practical way through its implementation in the evolving climate law jurisprudence.

The Australian cases on adaptation also illustrate the multiple scales relevant for actions to address climate change. Both the *Walker* case and the *Gippsland Coastal Board* case see climate change as a global problem but one that poses risks at the local as well as the global level. Although the focus of countries and many in the environmental community will remain (rightly) on preventing dangerous global warming, the law is also beginning to embrace a role for local adaptation measures to prepare for climate change effects. This gives new meaning to the old environmental adage “think globally, act locally.” 

Endnotes: Planning for Adaptation to Climate Change

Reference note: All Australian cases are available at <http://www.austlii.edu.au>.

¹ See Matthew D. Zinn, *Adapting to Climate Change: Environmental Law in a Warmer World*, 34 *ECOLOGY L. Q.* 61, 64 (2007).

² INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), *CLIMATE CHANGE 2007 SYNTHESIS REPORT: SUMMARY FOR POLICY-MAKERS* 19-20 (2007).

³ See Janet McDonald, *The Adaptation Imperative: Managing the Legal Risks of Climate Change Impacts*, in *CLIMATE LAW IN AUSTR.* 124, 124 (Tim Bonyhady & Peter Christoff eds., 2007); see also Daniel A. Farber, *Adapting to Climate Change: Who Should Pay?*, 23 *J. LAND USE & ENVTL. L.* 1 (2007).

⁴ See, e.g., B.L. PRESTON & R.N. JONES, COMMONWEALTH SCIENTIFIC & INDUS. RESEARCH ORG., *CLIMATE CHANGE IMPACTS ON AUSTR. AND THE BENEFITS OF EARLY ACTION TO REDUCE GLOBAL GREENHOUSE GAS EMISSIONS* 22 (2006), available at <http://csiro.au/files/files/p6fy.pdf> (last visited Feb. 15, 2009).

⁵ See generally R.J.S. BEETON ET AL. (2006 AUSTR. STATE OF THE ENV'T. COMM.), *AUSTR. STATE OF THE ENV'T 2006*, available at <http://www.environment.gov.au/soe/2006/publications/report/index.html>.

⁶ See Zinn, *supra* note 1, at 67-81 (noting that similar problems face coastal regions in the United States).

⁷ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 2, at 20.

⁸ See generally Kelley M. Jancaitis, *Florida on the Coast of Climate Change: Responding to Rising Seas* 31 *ENVIRONS ENVTL. L. & POL'Y J.* 157 (noting that Florida is a case in point in the United States).

⁹ AUSTRALIAN GOV'T, DEP'T OF CLIMATE CHANGE, *WHITE PAPER ON CARBON POLLUTION REDUCTION SCHEME: AUSTR.'S LOW POLLUTION FUTURE* 21 (2008), available at <http://www.climatechange.gov.au/whitepaper/foreword.html> (finding the Australian government is pessimistic on the prospects for international negotiations to achieve a comprehensive global agreement to stabilize greenhouse gas emissions at safe levels).

¹⁰ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE *FOURTH ASSESSMENT REPORT, WORKING GROUP III REPORT, ANNEX I* (Aviel Verbruggen ed., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-annex1.pdf> (outlining the definitions of mitigation and adaptation as drawn from the work of the IPCC).

¹¹ See Meg Caldwell & Craig Holt Segall, *No Day at the Beach: Sea Level Rise, Ecosystem Loss, and Public Access along the California Coast*, 34 *ECOLOGY L. Q.* 533, 535 (2007).

¹² Australian local governments are similar to municipal governments in the United States. They are not mentioned in the Australian Constitution but are established and given powers pursuant to state laws.

¹³ See, e.g., Environmental Planning and Assessment Act, 1979, No. 203, pt. 3A (N.S.W.) [hereinafter EPA] available at <http://www.legislation.nsw.gov.au/viewtop/inforce/act+203+1979+FIRST+0+N>; see also Environmental Effects Act, 1978, No. 9135 (Vict.), available at <http://www.legislation.vic.gov.au/> (select “Victorian Law Today” hyperlink, select “acts” and click E, scroll down to Environmental Effects Act of 1978).

¹⁴ See, e.g., Environment Protection and Biodiversity Conservation Act, 1999 (Austl.), available at <http://www.environment.gov.au/epbc/index.html> (providing that federal involvement is limited to projects with likely significant impacts on designated “matters of national environmental significance,” e.g. endangered species or World Heritage properties).

¹⁵ See, e.g., Coastal Management Act, 1995 (Vict.) (establishing regional coastal boards, such as the Gippsland Coastal Board, discussed in the case note below).

¹⁶ See McDonald, *supra* note 3, at 134.

¹⁷ See Philippa England, *Heating Up: Climate Change Law and the Evolving Responsibilities of Local Government*, 13 *LOC. GOV'T L. J.* 209, 210 (2008).

¹⁸ See McDonald, *supra* note 3, at 134.

¹⁹ England, *supra* note 17, at 210.

²⁰ See, e.g., Australian Gov't, Dep't of the Env't, *Cities for Climate Protection (“CCP”) Austl.*, available at <http://www.environment.gov.au/settlements/local/ccp/> (noting local governments played a prominent role in the CCP Australia program, part of the ICLEI Local Governments for Sustainability: <http://www.iclei.org>).

Endnotes: Planning for Adaptation to Climate Change
continued on page 71

DIRTY FUEL INCENTIVES IN THE BAILOUT BILL

By Rand Robins & Janet M. Hager*

The current dependence on oil in the United States cannot be supported in the future. The issue is how the United States will confront the growing problem of meeting its need for transportation fuel. One option is to develop unconventional fossil fuels derived from oil sands, oil shale, and liquid coal. However, this is an option that could come at a great cost to the environment. The question facing Congress and the American people is whether, and to what extent, the government should subsidize these environmentally devastating energy sources with tax incentives, direct financing, loan guarantees, or purchasing agreements.


The rate of consumption of oil in the United States is unsustainable.¹ The world uses twelve billion more barrels of oil each year than is discovered.² Yet, the United States is expected to continue to increase its consumption of oil by forty-four percent by the year 2025.³ Thus, there will not be enough supply to match the world's demands for oil.⁴ Furthermore, the United States consumes eleven percent of the world's production of oil, but only has three percent of the world's oil reserves.⁵ This dependence on foreign oil threatens the country's economy and national security.⁶ It is estimated that the oil dependence results in a penalty to the economy of \$297 to \$305 billion each year, so the threat to the economy is great.⁷ The threat to national security is also substantial, considering that much of the oil that is imported into the United States comes from hostile areas of the world.⁸

Because of these widespread problems with oil, it is not surprising that the United States is looking for new solutions. However, a transition to unconventional fossil fuels will only exacerbate the devastating problem of climate change. The threat to the global environment as a result of the continuing widespread use of fossil fuels is great.⁹ The global increase in carbon dioxide in the atmosphere is primarily the result of the increase in the use of fossil fuels like oil, and potentially these new unconventional fuels.¹⁰ The effect of the increase of greenhouse gases from fossil fuels has already been felt.¹¹ The sea level is rising, glaciers are decreasing, and extreme weather events have become more frequent.¹² It is expected that the surface temperature will increase by 3.2 to 7.2°F beyond levels in the 1990s by the end of the century.¹³ The United States must decrease, not increase, its use of fossil fuels if it is to combat the growing problem of climate change.¹⁴

There is evidence that unconventional fossil fuels will not just maintain the status quo, but will actually increase the rate of emissions of greenhouse gases in the United States.¹⁵ The two most viable unconventional fossil fuels are synthetic crude oil derived from oil sand ("SCO") and fuel made from coal liquefaction ("CTL").¹⁶ The production of these fuels emits more

greenhouse gases than conventional oil.¹⁷ The use of SCO emits twenty percent more carbon dioxide than lighter crude oils.¹⁸ The use of CTL would result in twice the emissions of conventional fuel.¹⁹ Additionally, mining for oil sand is similar to mining coal; these operations will require the addition of roads, pipelines, and other infrastructure, and will displace plant and animal life.²⁰

Despite the questionable nature of these unconventional fuels, Congress has still taken steps to promote them. The tax code has been modified by the recent financial bailout bill, enacted in October of 2008, to subsidize CTL in three ways. First, the code reduces the cost of constructing expensive CTL plants by providing tax credits for capital investment.²¹ Second, the code reduces the cost of operating dirty fuel facilities by providing tax deductions for the operating costs of oil shale and tar sands refineries.²² Third, the code reduces the risk that falling oil prices will suffocate the market for non-traditional transportation fuels by applying the alternative fuel credit (originally intended for ethanol production facilities) to coal-based facilities.²³

Although advocates for these unconventional fossil fuels promise energy independence, economic development, and improving environmental impacts, there is scant evidence to determine the likelihood of success on any of these promises.²⁴ Moving forward with commercialization of any of these unconventional fossil fuels will lock the United States into more dependence on carbon-based transportation fuel at a time when the nation should be focusing on clean forms of energy.²⁵ Lawmakers presented with this energy legislation in the recent bailout bill found themselves between a rock and a hard place: to vote for a bill with broad public backing that also gives support to dirty fuels, or to risk their political position by voting against the legislation.²⁶ In the end, lawmakers chose to support the bill, despite its shortcomings in energy policy.²⁷ In future legislation Congress should focus its efforts on deploying clean fuels, clean vehicles, and sustainable patterns of growth, rather than subsidizing fuels that contribute to global environmental problems. 

Endnotes:

¹ Natural Resources Defense Council, *Safe, Strong and Secure: Reducing America's Oil Dependence*, <http://www.nrdc.org/air/transportation/aoilpolicy2.asp> (last visited Feb. 27, 2009).

² *Id.*

Endnotes: Dirty Fuel Incentives in the Bailout Bill
continued on page 72

*Rand Robins and Janet M. Hager are J.D. candidates, May 2010, at American University, Washington College of Law.

EUROPEAN UNION COHERENCE IN UNFCCC NEGOTIATIONS UNDER THE NEW TREATY OF LISBON (REFORM TREATY)

by Stavros Afionis*

INTRODUCTION

The historic December 2008 European Council meeting in Brussels resulted *inter alia* in the endorsement by European Union (“EU”) leaders of a plan to revive the Lisbon Treaty, following the treaty’s rejection by the Irish people in June 2008. Both the 2005 European Constitution and its successor, the 2007 Lisbon or Reform Treaty,¹ are aimed at improving lingering shortcomings in the institutional operation of the EU in a number of policy fields.² To this end, the EU’s Member States had decided *inter alia* to appoint a full-time European Council President,³ promote a clearer and fairer voting system in the Council of Ministers,⁴ create a more powerful EU High Representative for Foreign Affairs and,⁵ finally, introduce majority voting on a number of internal security policy areas.⁶

This article focuses exclusively on the extent to which this new amending treaty will have an improving effect on the EU’s performance when negotiating in the context of the United Nations Framework Convention on Climate Change (“UNFCCC”). Authors have been unanimous in identifying the rotating Presidency system, the predominance of environment ministries in climate change negotiations, and the complexity of internal EU coordination, as being the three main causes undermining the negotiating performance of the EU in international climate talks. Following an analysis of the climate-related changes instituted by the Reform Treaty, this article concludes that it will not significantly improve the current situation, as EU leaders proved largely unwilling to weaken the powers of the Member States vis-à-vis the Community in that particular policy area.⁷

BACKGROUND

On December 13, 2007, the heads of government and state of the EU Member States signed the Treaty of Lisbon (also known as the Reform Treaty) at a summit in Lisbon, Portugal. Expected at the time to enter into force sometime in 2009, this

new treaty amended the existing treaties of the EU by carrying out most of the reforms previously proposed in the rejected European Constitution. The Constitution, signed in October 2004 and ratified by eighteen Member States, was prevented from entering into force by its rejection in referenda held in France and the Netherlands in May and June 2005 respectively. The resulting ratification crisis led to a period of “reflection, clarification

and discussion,”⁸ ending only when the European summit held in Brussels in June 2007 abandoned the idea of a European Constitution and decided to replace it with a new amending treaty in the manner of previous treaties (i.e. the Single European Act, the Maastricht or Nice treaties).

Unexpectedly, Ireland—the only Member State to hold a referendum—turned its back on the Lisbon Treaty and voted it down in June 2008. This unexpected development prompted the vast majority of journalists⁹ to prejudge the “death” of the Lisbon Treaty, followed by

Václav Klaus, the president of the Czech Republic and the only EU leader to state that “the Lisbon project is finished.”¹⁰ However, this pessimism was not shared by other European leaders who, following the initial shock, initiated negotiations on how to bypass the Irish problem. As a matter of fact, one of the top priorities of President Nicolas Sarkozy for the French Presidency of the EU (France took over the six-month rotating presidency on July 1, 2008) was to come up with a plan for somehow salvaging the Lisbon Treaty.¹¹

The European Council met in Brussels on June 19–20, 2008 and decided to delay any decision until the next summit in October 2008.¹² As a result of the unexpected financial meltdown, the issue of the treaty was pushed to the sidelines, as Europe’s leaders had far more pressing and urgent concerns to occupy their attention during October’s European Council summit. Decisions

There exist a number of problems that result from the EU’s current institutional set-up, which involves too many actors in the whole climate change negotiation process.

*Stavros Afionis is a Ph.D. candidate at Keele University’s Research Institute for Law, Politics, and Justice.

were postponed for the next Council meeting in December 2008, where European governments eventually approved a package of concessions to Ireland, aiming at addressing the concerns about sovereignty that led Irish voters to reject the Lisbon Treaty.¹³ It is of interest to note that the EU Presidency had, from the very outset, the firmly expressed commitment of the Irish government to producing a plan that would facilitate a “Yes” vote in a future second referendum.¹⁴ These concessions were offered with the proviso that Ireland would ratify the Lisbon Treaty by October 2009. Of course, it remains to be seen whether these measures will be enough to convince the Irish people to endorse the Lisbon Treaty a second time around. In any case, at the time of writing, the Lisbon Treaty is far from dead and may soon be a reality in the lives of European citizens. It would therefore be of usefulness to academics, policy-makers, and all interested parties to be aware in advance of what this treaty actually entails for Europe.

The main objectives of both the European Constitution and the Reform Treaty that replaced it were *inter alia* to establish simpler and clearer rules for decision-making in a continuously enlarging EU of (currently) twenty-seven Member States and to “ensure that the EU’s institutions operate in a more effective and efficient manner.”¹⁵ The present study focuses only on one particular policy area, investigating specifically the extent to which the new Reform Treaty will ensure a more effective and efficient operation of the EU when negotiating in the context of the UNFCCC. The relevant EU climate policy literature has long ago identified a number of problematic features in the EU’s climate decision-making machinery and has offered possible remedies. Groundbreaking as they were, European leaders proved unwilling to incorporate the bulk of these remedies in the 2007 Lisbon Treaty.

CRITICISMS OF THE CURRENT INSTITUTIONAL SET-UP

Unlike other areas, such as trade, water quality, or hazardous waste disposal, where competence¹⁶ lies with the Community, climate change is an area in which a situation of “shared competence” pertains. In international climate change negotiations, therefore, common EU positions have been agreed upon in advance “by the Member States, with the participation of the Commission. The country holding the Presidency of the EU—a position that rotates every six months—coordinates the members and presents the EU position at the international negotiations.”¹⁷ In other words, the Presidency, assisted by the previous and next Member State to hold that position (the “troika”), has assumed the leadership role.

There exist a number of problems that result from the EU’s current institutional set-up, which involves too many actors in the whole climate change negotiation process (currently the twenty-seven Member States plus the Commission). The first problem is the system of the half-yearly rotating presidency. Authors argue/criticize that not only does it not allow for continuity in the EU’s negotiating strategy and the formulation of a long-term strategic perspective, but that it also results in a loss

of “institutional memory.”¹⁸ As Van Schaik and Egenhofer note, “since the Presidency is changing every half year, there is a relatively high chance of inconsistencies in performance and actual positions. This semi-annual change in leadership can also be a constraining factor regarding the formulation of a long-term strategic perspective.”¹⁹

A second complication confronting the EU during the course of international climate change negotiations is known as the “EU Bunker.” Changing positions and agreeing on new proposals by other international actors requires the assent of the majority of Member States. This, however, is very difficult to achieve during the course of the negotiations and it can be a “major source of delay and frustration, with endless co-ordination meetings and the inflexibility of Council Mandates.”²⁰ Investing much (precious) time in bridging internal differences may also result in EU Member States being practically unable to react to outside developments. Creatively put, the amount of time and diplomatic effort that is required for these intra-bloc negotiations often means that the EU is conducting “a conference within a conference.”²¹

It is well known, for example, that in the final dramatic night at Kyoto the EU ministers “were still locked in internal consultations while the plenary was in session: Chairman Estrada gavelled through the critical text on the Clean Development Mechanism (“CDM”) while EU ministers were still trying to establish a common position in another room.”²² When they informed the Chairman of their opposition to the pre-budget crediting of emission reductions, the decision had already been made and could not be reopened.²³ The same situation recurred during the sixth Conference of Parties (“COP”) at The Hague in 2000, when EU ministers were still debating amendments they wished to propose to Chairman Pronk’s compromise paper after amendments from all the other groups, even the much larger and under-resourced Group of 77 (underdeveloped countries) plus China (“G-77/China”), had been circulated and the final night’s crucial negotiations had begun.²⁴

Finally, a third problem relates to the predominance of environment ministries and the under-representation of economics and trade ministries in climate change negotiations. Several authors agree that climate talks have somewhat “outgrown” the environmental ministries, as they involve not only environmental but also—and increasingly so—economic, trade, development, energy, and transport issues and concerns.²⁵ It is thus felt that closer cooperation between the environment, trade, and economic ministries “would do more justice to the economic realities of climate change policy.”²⁶ In the United States, for example, it is the State Department that takes the lead in the negotiations, with the Department of Commerce being responsible for the overall coordination of the U.S. position.²⁷ Following the flawed performance of the EU at The Hague COP in 2000, the EU did try to address this issue by allowing for greater flexibility in the common position, strengthening the role of the Committee of Permanent Representatives (“COREPER”), and having economic, trade, and foreign ministries more involved in the whole process.²⁸ These changes did lead to improvements

in the performance of the EU in COP-6bis (Bonn) and COP-7 (Marrakech), but did not “fundamentally alter the way the EU position [was] formulated.”²⁹

SUGGESTIONS FOR IMPROVEMENT

Commentators over the years have made a number of proposals aiming at improving the EU’s operational functioning. It has been widely suggested, for instance, that the performance of the EU would improve dramatically if the Member States allowed the European Commission to take over the coordination of the EU negotiating position from the Presidency.³⁰ This, however, is a highly unlikely future prospect, as several Member States (i.e. the UK) are vehemently opposed to any further expansion of the competencies of the Commission.³¹ As we shall see, such a prospect becomes even slimmer now with the new Reform Treaty.

Another proposal, by Lacasta et al., involves delegating authority to a number of “lead countries” that would prepare, in close cooperation with the Commission, “draft common negotiating positions to be decided by the Council.”³² Grubb and Gupta share this proposal, noting in turn that such a move would “reflect the nature of the EU as a strong intergovernmental rather than supranational institution.”³³ These “lead countries”—or the Commission in the first case—would also be responsible for the formulation beforehand of commonly agreed “fall-back” positions that would allow for greater EU flexibility in the decisive phases of UNFCCC talks.³⁴ Currently, the inflexibility of the Council mandates results in the EU having neither such fall-backs nor the necessary mechanisms for coming up with them in the midst of the negotiations.³⁵ However, given the political and economic implications of climate change, the extent to which some Member States would be willing to allow for decisions to be taken for them without their express approval and input is subject to debate.

Finally, regarding the issue of the predominance of environment ministries, a possible suggestion by some authors provides for climate policy to become part of the EU’s Common Foreign and Security Policy (“CFSP”), thereby bringing “diplomatic muscle (and, hopefully, finesse) to the Community actions.”³⁶ Similar is one of many proposals by Van Schaik and Egenhofer, who propose that the Foreign Affairs Council would be responsible for the formulation of climate policy, thus “offering a possibility for more integration of the EU’s position in climate

negotiations with other external policies of the EU.”³⁷ In this case, Environment Ministers, whose expertise is deemed essential, could second their Foreign Ministers during sessions of the Foreign Affairs Council in which external climate policy negotiating positions are debated.³⁸ Another option in this regard would be for Foreign and Environment Ministers to hold joint meetings, for instance every half a year.³⁹

CHANGES INSTITUTED BY THE REFORM TREATY

Before attempting to explain the benefits the Reform Treaty will have for the EU’s performance in UNFCCC negotiations, a symbolic comment should be made. The new treaty, in the amended Article 174, states that one of the aims of EU environmental policy will be to promote “measures at [the] international level to deal with regional or worldwide environmental problems, and in particular combating climate change.”⁴⁰ It is the first time the term “climate change” appears in the text of an

EU treaty. Provided that it enters into force, the Reform Treaty will introduce, as already discussed, a number of institutional changes meant to improve the efficient running of the EU. How then, would this new treaty strengthen EU performance in international climate change negotiations?

To begin with, the European Parliament (“EP”) will be able to veto international agreements, including climate change-related ones. Until now, the Council only consulted the EP and could ignore its judgement if acting unanimously. Pursuant to the Reform Treaty, the consent of the EP (as the

“voice of the people”) would be required for the ratification of international environmental (including climate) agreements, enhancing therefore the democratic legitimacy of the EU.⁴¹ The EP might never actually vote down an international environmental agreement, but it may become more demanding and insist that its viewpoints on climate change issues be taken more seriously into consideration.⁴²

Continuing on with the Presidency, the rotating system will remain largely the same. Even though the European Council will have its own President (in office for two and a half years), the chairmanship of the other councils, except foreign affairs, will continue to rotate every six months. The efficiency of the Presidency, however, is expected to improve significantly with the introduction—already in operation since 2007—of a new enhanced “troika-like” system, known as the “triple presidency.”

It has been widely suggested . . . that the performance of the EU would improve dramatically if the Member States allowed the European Commission to take over the coordination of the EU negotiating position from the Presidency.

According to the Treaty Establishing a Constitution for Europe, which never came into force, the Presidency would continue to rotate every six months, but every eighteen months the three Presidencies due to hold office would negotiate a common agenda and work together over this one and half year period to accomplish its objectives, always led by the Member State holding the presidency at the time. Even though the aforementioned treaty is not legally binding, the September 2006 Council of the European Union decided to adopt the concept of the presiding trio.⁴³

This development will allow for greater coordination and continuity, as it will put an end to the practice exercised up to 2006 of every successive Presidency re-writing the agenda every six months in accordance with its own priorities. In the context of climate politics, the new “troika-like” system will enable Member States with a greater interest in this policy area to relieve smaller ones of the burden of conducting negotiations in which they have no actual interest. As is obvious, not all Member States are usually active in a particular policy area. In most Multilateral Environmental Agreements (“MEAs”), less than half a dozen positions are likely to emerge, as most small Member States do not have a particular line to push. Luxemburg, for example, cannot employ more than a handful of its officials to specialize in any MEA when it holds the presidency.⁴⁴ To give another example, the Presidency during 1996—one year prior to Kyoto’s crucial COP-3—had been held by Italy and Ireland, two countries known for their lack of a progressive stance on climate change. The position of the EU had remained practically unchanged since Berlin’s 1995 COP-1, and it would not have been a hyperbole to suggest that it had virtually stagnated.⁴⁵ It is for cases such as this that the Reform Treaty’s new presiding Trio concept could prove a far more workable system. Of course, as promising as it may seem, only time will demonstrate the extent to which this new arrangement will indeed be an improvement.

A final related innovation is, as already mentioned, the establishment by the Reform Treaty of an EU Minister for Foreign Affairs (the High Representative for Foreign Policy and Security)—merging the existing roles of High Representative for Common Foreign and Security Policy and the Commissioner for External Affairs. The role, if any, of the High Representative for Foreign Policy and Security in international climate change negotiations is as yet unclear.⁴⁶ According to Van Schaik and Egenhofer, involvement of the Foreign Minister in EU activities in the UNFCCC could “advance the integration of climate change with other policy areas, notably with other external policies.”⁴⁷ Such involvement, however, even if it does occur, will likely remain limited or auxiliary, as only officials of environment

ministries command the immensely specialized knowledge on technical aspects of the climate change policy area.⁴⁸ Given that the EU “Foreign Minister” will be mainly responsible for the EU’s CFSP, Environment Ministers will in all probability remain largely responsible for the formulation of the EU’s position on climate change, aided on occasion by their economic, trade, and foreign counterparts. In other words, the current system is not expected to be altered significantly.

CONCLUSION

To conclude, despite the explicit acknowledgement of climate change in the Reform Treaty, actual climate-related changes in the Treaty are limited. National governments prove to be adamant in their insistence to maintain control over their energy policy, a key element of national security in the view of many sovereigns. When it comes to energy, major disparities exist within, between, and among the nations of the EU. Given their vast differences in economic development, these twenty-seven

Member States have, in most cases, widely different energy matrices, greenhouse gas emission, and energy consumption patterns. Internal EU negotiations for agreeing a common climate policy, therefore, are quite strenuous and time-consuming, as different Member States are more willing and/or capable to reduce their emissions than others.⁴⁹ Closely related to this is the Euro-scepticism of some Member States (e.g. the United Kingdom) who are unwilling to expand the competencies and

reach of the EU’s governing bodies. The Commission’s 1990s proposal for an energy/carbon tax serving in this case as a prominent example.⁵⁰

The extent, therefore, to which the new treaty would benefit the performance of the EU in UNFCCC negotiations is likely narrow. Contrary to expectations, the Reform Treaty does not sufficiently address any of the three problems affecting the negotiating ability of the EU tentatively outlined earlier. The “EU bunker” will continue to afflict the EU, as will most of the problems associated with the predominance of environment ministries. The same largely applies to the rotating Presidency, but in this case the new enhanced “troika-like” system will definitely result in some meaningful improvements in the current situation. Undoubtedly, the big question remains whether the new EU Foreign Minister will become involved in EU climate activities and what will be his/her exact role. As seen, such an involvement—in all probability one of limited importance—can only benefit the EU. In any case, such a discussion is highly hypothetical and the questions posed will only be answered following the potential entry into force of the Reform Treaty in 2009 or 2010. Several authors have advocated a reform of EU institutions as the only

*The extent . . . to which
the new treaty would
benefit the performance
of the EU in
UNFCCC negotiations
is likely narrow.*

practical solution for dealing with the current shortcomings of the EU as a negotiator in policy areas of “shared competence.” Unfortunately, such a reform of institutions—as far as climate

change policy is concerned—was not carried out by the Reform Treaty, as it presented a choice not politically acceptable to the majority of EU Member States.



Endnotes: European Union Coherence in UNFCCC Negotiations Under the New Treaty of Lisbon (Reform Treaty)

¹ Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community, O.J. (C 306/01) opened for signature Dec. 13, 2007 [hereafter Reform Treaty].

² For more information on both the Constitutional & Reform Treaties, see generally Sebastian Kurpas, *The Treaty of Lisbon – How much ‘Constitution’ is left? An Overview of the Main Changes* (CEPS, Policy Brief Series No.147, 2007) available at http://shop.ceps.eu/BookDetail.php?item_id=1568 (last visited May 30, 2008).

³ See *id.* at 4 (stating “[o]n paper the European Council President only has limited powers of a mostly procedural nature (e.g. chairing European Council meetings), but much will depend on the personality that fills the position.”).

⁴ See Reform Treaty, *supra* note 1, art. 1(9c). Under the Reform Treaty, a measure will pass the Council of Ministers if it is backed by 55 percent of the member-states (currently 15 out of 27), provided they represent at least 65 percent of the EU’s population.

⁵ See Reform Treaty, *supra* note 1, art. 1(9b). The new post of “High Representative for Foreign Policy and Security” is created. As things currently stand, the EU has both the Council’s High Representative (currently Javier Solana) and the Commissioner for External Action (currently Benita Ferrero-Waldner). As co-operation between the two foreign policy figureheads is often problematic, the Reform Treaty merges the two posts. The High Representative will *inter alia* chair the meetings of EU foreign ministers, coordinate the EU’s foreign policy agenda, and be in charge of the EU’s external relations budget.

⁶ See, e.g., Reform Treaty, *supra* note 1, art. 1(28B). The new treaty does away with national vetoes in about fifty areas. The most radical shift concerns decisions on EU co-operation for fighting terrorism, crime, and illegal immigration, or what officials refer to as Justice and Home Affairs (“JHA”). On the insistence of the UK, it was decided that if a dissenting country cannot reach a compromise with its EU partners, it is free to opt out of the measure.

⁷ Unlike trade or agriculture, where exclusive Community competence is expressly provided by the Treaty of Rome, climate change talks involves restricted Community competence with the EU operating “at 28”, with the Commission involved alongside Member States, but with the leadership role being taken by the Presidency.

⁸ Press Release, Luxembourg Presidency of the Council of the European Union, Jean-Claude Juncker states that there will be a period for reflection and discussion but the process to ratify the Constitutional Treaty will continue with no renegotiation (June 17, 2005), available at <http://www.eu2005.lu/en/actualites/communiqués/2005/06/16jclj-ratif/index.html> (last visited Feb. 16, 2009).

⁹ See David Sharrock & David Charter, *Irish voters sign death warrant for EU’s Lisbon treaty*, THE TIMES, June 14, 2008, available at <http://www.timesonline.co.uk/tol/news/world/ireland/article4134077.ece> (last visited Feb. 26, 2009); Benedict Brogan, EU treaty “dead” after Irish voters reject it in referendum victory for “no” campaign, THE DAILY MAIL, June 16, 2008.

¹⁰ David Pryce-Jones, *Before the Revolution: Europe’s governors refuse to listen to the governed*, NAT’L REV., July 14, 2008, at 8.

¹¹ See Ian Taylor, *Sarkozy pledges to restore trust in EU as France takes over presidency*, THE GUARDIAN, July 1, 2008, at 19.

¹² Presidency Conclusions, Brussels European Council (June 20, 2008), available at http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/101346.pdf (last visited Feb. 26, 2009).

¹³ See Judith Crosbie, *Ireland to hold second referendum*, EUROPEAN VOICE.COM, Dec. 12, 2008, <http://www.europeanvoice.com/article/2008/12/ireland-to-hold-second-referendum/63417.aspx> (last visited Feb. 26, 2009). “Brian Cowen, Ireland’s prime minister, has pledged to hold a second referendum on the EU’s reforming Treaty of Lisbon” but only after securing legal guarantees that Ireland would not lose its membership in the European Commission and its military neutrality, as well as certain Irish constitutional provisions. *Id.*

¹⁴ John O’Brennan, *Ireland’s plan to resurrect the Lisbon Treaty to be unveiled at the Brussels summit 1-3* (CEPS Commentary, Dec. 4, 2008) available at http://shop.ceps.eu/BookDetail.php?item_id=1763 (last visited Dec. 7, 2008).

¹⁵ Richard Whitman, *No and after: options for Europe*, 81 INT’L AFF. 673, 674 (2005).

¹⁶ Competence is the EU term for “powers” or, in other words, who has authority to undertake negotiations and initiate policy (the Commission, the Member States, or both). See John Vogler, *The European Union as an Actor in International Environmental Politics*, ENVTL. POLITICS, Sept. 1999, at 24-48.

¹⁷ SEBASTIAN OBERTHÜR & HERMANN E. OTT, *THE KYOTO PROTOCOL: INTERNATIONAL CLIMATE POLICY FOR THE 21ST CENTURY* 14 (Springer 1999).

¹⁸ HOUSE OF LORDS, *THE EU AND CLIMATE CHANGE* 56 (House of Lords Paper 179-I Session 2003-04).

¹⁹ Louise Van Schaik & Christian Egenhofer, *Reform of the EU Institutions: Implications for the EU’s Performance in Climate Negotiations* 4 (CEPS, Policy Brief Series No.40, 2003) [hereinafter *Climate Negotiations*] available at <http://shop.ceps.eu/free/1060.pdf?> (last visited Feb. 26, 2009). This is to a great extent remedied by the Council is the WPCC (called until 1999 the Ad Hoc Group on Climate Change), a body under the EU Environment Council, which prepares EU negotiation positions on various issues. Established after COP-1 in Berlin in 1995, it is further divided into a number of expert groups that deal with and prepare reports (so-called “submissions”) on several technical issues (e.g. sinks, technology transfer, national communications, etc). It should also be noted that most EU submissions to the UNFCCC originate from the WPCC and, as mentioned above, small Member States holding the Presidency tend to rely extensively on the assistance and expertise of the WPCC. See Louise Van Schaik & Christian Egenhofer, *Improving the climate: Will the new Constitution strengthen the EU’s performance in international climate negotiations?* 7-8 (CEPS, Policy Brief Series No.63, 2005) available at http://shop.ceps.eu/BookDetail.php?item_id=1198 (last visited Feb. 26, 2009).

²⁰ See John Vogler, *The External Environmental Policy of the European Union*, YEARBOOK OF INTERNATIONAL CO OPERATION ON ENVIRONMENT AND DEVELOPMENT 2003/2004 65, 70 (Olav Schram Stokke & Øystein B. Thommessen eds. 2003).

²¹ R.P. BARSTON, *MODERN DIPLOMACY* 87 (2006).

²² Michael Grubb & Farhana Yamin, *Climatic collapse at The Hague: what happened, why, and where do we go from here?*, 77 INT’L AFF. 261, 274 (2001).

²³ OBERTHÜR & OTT, *supra* note 17, at 90.

²⁴ Grubb & Yamin, *supra* note 22, at 274.

²⁵ *Climate Negotiations*, *supra* note 19, at 3.

²⁶ Christian Egenhofer & Jan Cornillie, *Reinventing the Climate Negotiations: An Analysis of COP6 9* (CEPS, Policy Brief Series No.1, 2001) available at <http://shop.ceps.eu/free/102.pdf?> (last visited Feb. 26, 2009).

Endnotes: European Union Coherence in UNFCCC Negotiations Under the New Treaty of Lisbon (Reform Treaty)
continued on page 73

CREATING A U.S. CARBON MARKET

by Alex Hoover*

President Obama's recent budget proposal is a strong indication that the current Administration will take the first real steps towards realizing a nationwide cap-and-trade system in the United States.¹ Examining existing cap-and-trade systems such as the European Union Emissions Trading Scheme ("EUETS"), the Regional Greenhouse Gas Initiative ("RGGI"), and the New South Wales Greenhouse Gas Abatement Scheme ("NSW Scheme") illustrates the value of two increasingly common features that the United States should consider: auctions and offset mechanisms. As this article shows, these mechanisms can address major concerns with cap-and-trade by mitigating price distortion and encouraging technological advances.

The EUETS consists of thirty member states² and targets carbon-fuel power plants and other industrial facilities.³ The system has been widely criticized due its failure to prevent market price distortions in part because it uses an emission allocation distribution system which allows nations to directly distribute carbon allowances.⁴ However, in 2013 the EUETS will enter Phase III (it is currently in Phase II)⁵ which will include a shift from the current distribution system to an auction system.⁶ It will also implement a single allowance allocation system that sets common emissions caps for all member states, rather than the current "national allocation plans."⁷

RGGI consists of ten northeastern U.S. states and targets carbon dioxide emissions from power plants.⁸ RGGI requires a ten percent reduction in GHG emissions from power plants by 2018.⁹ Individual states sell the majority of the carbon credits offered through quarterly auctions.¹⁰ In addition to buying credits, installations may receive allowance offsets by undertaking projects that reduce or sequester GHG.¹¹

The NSW Scheme sets an emissions baseline and distributes certificates for power generators that reduce GHG emissions.¹² Power generators earn a certificate for each ton of emissions reduction through low-emission electricity generation, activities that reduce electricity consumption, and carbon sequestration through forestry.¹³ These generators may then sell their certificates to other generators.¹⁴


In designing a national cap-and-trade system, U.S. lawmakers should learn from these examples to avoid market distortion and encourage innovation. For example, an allowance auction could create revenue to fund targeted tax breaks to mitigate price distortion. The choice of allowance distribution is generally between auctions and direct distribution. In auctions, the government collects the price of each bid as revenue. Under a direct distribution system, the government gives companies carbon allowances, which they could potentially sell on the market for a profit. The EUETS illustrated the problems of a direct distribution system¹⁵ where companies do not generally pass their

savings to the consumer.¹⁶ Instead, they collect the difference between the free carbon allowances and the market price as profit.¹⁷ The EUETS's Phase II leaves the value of the initial carbon allowances unavailable to correct potential price distortions.¹⁸

The use of auction revenue to fund targeted tax breaks addresses the criticism that auctions would burden consumers through increased carbon prices passed on by companies.¹⁹ For instance, the European Commission will use the revenues from Phase III auctions to invest in renewable energies that companies may utilize to improve energy efficiency and address the impact of energy price increases to consumers.²⁰ Effective use of tax policy could significantly offset the costs of investing in new technology or paying higher energy prices.

A U.S. cap-and-trade system should also include an offset mechanism, like those in RGGI and the NSW Scheme, to encourage investment in efficient technologies. An offset mechanism allows a company to earn allowances by undertaking projects that reduce or sequester carbon emissions.²¹ The offsets can act as subsidies when companies that earn offsets sell them on the market to recover some of the project costs.²²

Critics argue that an offset mechanism could increase emissions if the government distributes allowances for projects that companies would have done even without the allowances.²³ RGGI's offset mechanism addresses this problem by disqualifying projects encouraged by other government action.²⁴ For instance, a company may not receive offset credits for projects that the law already requires or receive funding or assistance from other programs.²⁵ Under the NSW Scheme's Metered Baseline Method ("MBM"), the government determines baseline energy use for each facility based on its historical energy use.²⁶ To ensure that offset allowances truly reduce emissions, the MBM does not consider efficiency projects undertaken during the baseline period or projects anticipated while the facility was collecting offset allowances.²⁷

Examining policies and challenges of existing systems provides valuable, real-world lessons for implementing a cap-and-trade program. As policymakers proceed with President Obama's ambitious charge, they must create an efficient system that promotes the country's best interests. As this article illustrates, including auctions and offset mechanisms to mitigate price distortions, encourage true reductions in GHG emissions, and support the development of efficient technology will be an important aspect of any national cap-and-trade program. 

Endnotes: Creating a U.S. Carbon Market
continued on page 73

*Alex Hoover is a J.D. candidate, May 2010, at American University, Washington College of Law.

CLIMATE CHANGE, ENERGY, AND SUSTAINABLE DEVELOPMENT IN SOUTH AFRICA:

DEVELOPING THE AFRICAN CONTINENT AT THE CROSSROADS

by Professor Edson L. Meyer* & Dr. Kola O. Odeku**

INTRODUCTION

Various scientific research has confirmed that climate change has started affecting the atmosphere and, in particular, the African continent.¹ International concerns regarding climate change are now overwhelming as various governments of the world create policies and measures to reduce the carbon dioxide emissions that cause climate change. The African continent is likely to be severely affected by climate change if the warming continues² because institutional capacities to combat the changing weather are not in place.³ The irony is that developing African countries are more concerned with the issues of access to energy (modern fuels and electricity) in order to improve and increase industrial production and output, economic growth,⁴ and development,⁵ as opposed to policies that would reduce carbon dioxide emissions and halt climate change.⁶

There is ample consensus that sustainable development involves an integration of environmental protection and economic growth.⁷ Economic growth can still be attained through alternative energy sources as opposed to fossil fuels. Due to the global nature of climate change and the unpredictability of its likely impacts, the cooperation of all countries is required to successfully address it. One approach that should be considered in order for developing African countries to grow their economies by utilizing their natural resources without contributing to climate change is encouraging more environmentally sustainable energy sector expansion. South Africa is currently the first nation in Africa to utilize this approach, which is the primary reason it has been chosen as a case study.

While developing countries are the most vulnerable to the impacts of climate change, they do not perceive or consider climate change as a priority or serious matter to be handled with levity.⁸ Instead, most African leaders and policy makers have linked the issue of energy and natural resources to poverty alleviation,⁹ which they consider the major challenge facing the continent.¹⁰ They have consistently invoked the UN Millennium Development Goals (“MDGs”) to support their positions and validate their actions.¹¹

Interestingly, it is not only African leaders who believe that developing countries should vigorously pursue energy intensive economic activities. Some African pundits and their collaborators have also supported this position by asserting that “whether climate change proves benign or harmful, attempting to control it through global regulation of emissions would be counterproductive” because it would not engage individuals in sustainable development activities that improve their quality of life.¹²

There is a price to be paid for this inaction and lackadaisical attitude. Any major catastrophe from climate change would affect the natural resources and economies of African nations.¹³ It might also result in “struggle for food, energy, and water as they lack resources and capacity to quickly adapt.”¹⁴ These negative impacts may “undermine sustainable development, increase poverty, and delay or prevent the realization of the Millennium Development

Goals.”¹⁵ This could lead to a situation where millions would be forced to migrate to other regions of the world.¹⁶

Climate change is a grave threat to South Africa and a major obstacle to continued poverty reduction across its many dimensions.

SOUTH AFRICA AS A CASE STUDY

South Africa, as a developing country, is the most industrialized within the African region. It is well endowed with natural resources such as coal, gold, diamonds, metals, and minerals. Its overall economy is chiefly dependent on energy production and use, with coal accounting for seventy-five percent of the fossil fuel demand and ninety-one percent of electricity generation. The energy sector contributes approximately fifteen percent of gross domestic product and provides around 250,000 jobs.¹⁷ Compared to other African countries, the South African economy is energy-intensive and the energy consumption rate is very high. This is mainly due to the heavy mining industries, such as iron and steel, cement, aluminum, etc. Furthermore, it is the

*Prof. Edson L. Meyer is the Director Fort Hare Institute of Technology, University of Fort Hare Alice, 5700 Eastern Cape South Africa. **Dr. Kola O. Odeku is a Research Fellow at Fort Hare Institute of Technology, University of Fort Hare Alice, 5700 Eastern Cape South Africa.

most electrified country in Africa; electricity plays a pivotal role in the economy and improves the quality of life of the previously disadvantaged majority in addition to supporting large-scale industrial development.¹⁸

South Africa is fully committed to growing its economy through exploration and use of energy resources to meet its development objectives.¹⁹ When the country attained independence in 1994, the issues of climate change and global warming were not a priority and the perceived “linkages between sustainable development and climate change issues were very weak.”²⁰ Be that as it may, there has been scientific evidence that climate change is far more rapid and dangerous than thought earlier.²¹ The government has now realized that climate change is a grave threat to South Africa and a major obstacle to continued poverty reduction across its many dimensions. This is a great concern that calls for a change in attitude to make the issue of climate change a major priority. Bearing this in mind, South Africa is beginning to proactively link its objectives with climate change priorities within a sustainable development framework.

THE ERA OF TURNING UP THE HEAT IN SOUTH AFRICA

Since 1994, various government policies, legislation, and regulations in South Africa have been primarily based on the development paradigm that addresses the injustices of the past and focuses on the provision of basic needs, equity, employment creation, and economic growth for all South Africans by utilizing available natural resources, in particular energy from coal. Consequently, the issue of integrating energy, economic growth, and environment has not been a major concern. This deliberate oversight on the part of the government created a major barrier to integrating climate change into South Africa’s vision of a sustainable development pathway. There has been a lack of an adequate policy approach to consider energy and climate change objectives alongside each other, as well as a lack of institutional, human, legal, and financial capabilities.²² Furthermore, South Africa’s ability to respond to concerns about climate change are complicated by the fact that the greater majority of South Africans live in varying degrees of poverty and want to increase their living standards, leading to increased energy use per capita and increased reliance on fossil fuels with high carbon dioxide emissions.²³

This scenario had the support of the government based on the 1998 White Paper on Energy Policy (“1998 White Paper”).²⁴ The 1998 White Paper sets the main objectives of the energy sector in South Africa as follows: increasing access to affordable energy services; stimulating economic development; improving energy governance; managing energy-related environmental

impacts; and securing supply through diversity.²⁵ However, aggressive approaches to increasing access to affordable energy services to stimulate economic growth have been without regard to the environmental impacts.²⁶

In South Africa, energy sector activities are the largest sources of greenhouse gas (“GHG”) emissions, accounting for about eighty-nine percent of the total emissions.²⁷ More importantly, electricity is mainly supplied by Eskom, a public utility company, based on coal-fired systems; this accounts for ninety-one percent of all electricity produced in the country, and there is continuous increase in demand.²⁸ Increase in electricity supply based on coal-fired systems has led to increased carbon dioxide emissions.²⁹

As a result of the high levels of energy production and consumption, there are high levels of particulate concentrations in South Africa.³⁰ High level of particulate matter results in “serious environmental and health problems because air quality, land, water, and forest resources have been severely degraded.”³¹ The use of coal, wood, paraffin, and candles for cooking, heating, and lighting also exposes households to hazardous levels of indoor air pollution and the risk of fire. Illness and death can result.³²

The aggressive drive by the South African government to grow the economy by utilizing energy intensively without regard to the negative consequences has put South Africa at a crossroads. However, the government has now decided to live up to its responsibility by implementing drastic measures to reduce carbon dioxide emissions to mitigate the affect of potential catastrophes on what has been gained through economic growth.

THE ERA OF TURNING DOWN THE HEAT IN SOUTH AFRICA

The threat of global climate instability and its likely impacts on countries worldwide led to the signing and subsequent ratification of the United Nations Convention on Climate Change (“UNFCCC”). This was a clear indication of political will by governments worldwide to combat climate change. Unfortunately, however, as clearly expressed in the UNFCCC, it will be difficult for developing countries to avoid increasing emissions as they attempt to meet their needs through fossil fuel production.³³ The challenge, therefore, is to ensure that there are synergies between sustainable development goals and carbon dioxide reduction strategies in order to avoid the impact of climate change. The South African government is now heeding the clarion call by implementing various strategies that will lead to massive reduction of carbon dioxide in the country. The most potent of these is the synergy between achieving sustainable development goals within the context of climate change.

This was a clear indication of political will by governments worldwide to combat climate change.

POLICIES TO FIGHT CLIMATE CHANGE THROUGH EMISSION REDUCTION

It must be pointed out from the outset that South Africa does not have emission reduction targets for the first commitment period of the UNFCCC Kyoto Protocol, which runs from 2008–2012, because it is not an “Annex I” country.³⁴ Even so, the South African government recognizes that it needs to take adequate measures as one of the highest emitting of the non-Annex I countries.³⁵

South Africa’s Environmental Affairs and Tourism Minister, Marthinus van Schalkwyk, described the overall approach to climate change mitigation and adaptation as “progressive, ambitious, and far-reaching” as well as focused on protecting South Africa from the “onslaught” of global warming.³⁶ He added that the goal is for carbon dioxide emissions to “stop growing by 2020–2025 at the latest, stabilize for up to ten years, and then decline in absolute terms.”³⁷ Towards this end, the government has started implementing stringent policies and measures and also enforcing the laws relating to environment³⁸ and pollution.³⁹ This approach is now shifting the country’s development path to become more sustainable and should gradually reduce carbon dioxide emissions.⁴⁰

A NATIONAL AGENCY TO PROMOTE CDM PROJECTS

In 2005, the South Africa Department of Minerals and Energy created a Designated National Authority to coordinate CDM activities as required by the Kyoto Protocol.⁴¹ The agency coordinates activities to attract investors and project developers to South Africa. Shortly after the agency was established, it received information on four projects from the private sector, including one for the Kuyasa Low-Cost Housing Project in Khayelitsha, Cape Town, the first CDM project in Africa.⁴² This project includes the construction of energy-efficient houses.

A CARBON TAX ON BUSINESSES

One of the South African government’s most ambitious proposals for dealing with climate change is considering the passage of a carbon tax on carbon dioxide-emitting industries.⁴³ The policy, which some consider “the point at which the government began steering the economy along a more sustainable growth path,”⁴⁴ imposes a 2 Rand cents per kilowatt-hour tax on non-renewable electricity sources.⁴⁵ Of South African’s many proposals on the table for cutting GHG emissions, a carbon tax could have the most significant impact.⁴⁶ The carbon tax proposal also includes stringent energy efficiency measures and would begin at 100 Rand per ton on carbon dioxide equivalent and increase to 250 Rand per ton by 2020.⁴⁷ At the time of writing, the South African cabinet has endorsed the plan but it has not achieved final parliamentary approval. Nevertheless, financial officials have begun discussing an effective implementation framework.⁴⁸

INTEGRATING ENERGY POLICY AND SUSTAINABLE DEVELOPMENT

Although the 1998 White Paper does not specifically refer to sustainable development goals or objectives, it does contain a number of provisions that refer to environmental, social, and economic aspects of energy. For instance, it states that:

Fossil fuels such as coal, uranium, liquid fuels, biomass and gas continue to play a central role in the socio-economic development of our country, while simultaneously providing the necessary infrastructural economic base for the country to become an attractive host for foreign investments in the energy sector . . . energy policy should balance the use of natural energy resources with environmental considerations.⁴⁹

It is in this regard that the government published the White Paper on Renewable Energy in 2003 (“2003 White Paper”)⁵⁰ and established a long-term goal to build an energy industry that will offer a fully non-subsidized alternative to fossil fuels.⁵¹ This policy approach has been

concretized through significant financial support for renewable energy research and development.⁵²

A key challenge in the reform agenda is to make sure that the public benefits of sustainable development are advanced. The electricity industry can make a difference in the arena of sustainable development through underpinning sustainable economic growth, promoting social equity, and adopting more environmentally-friendly technologies. The goal is an electricity industry that delivers secure, low-cost supplies that support industrial competitiveness; provides widened access to affordable services; and encourages energy efficiency, increased use of renewable energy technologies, and reduced emissions generally. These goals are now embedded in the on-going reform processes and the government has started implementing crucial policies that ensure reduction in emissions activities.⁵³

ENERGY EFFICIENCY AND RENEWABLE ENERGY

In South Africa, energy efficiency was not really an issue until recently; however, the situation has now changed. Stakeholders are now aware of the need to consume energy differently. The CDM has mobilized several industrial players and sensitized them on the need to modernize energy equipment. South Africa has designed a Renewable Energy Strategy which sets a target of 10,000 GWh of renewable energies by 2013 (this would amount to four percent of production in 2004). In addition, an energy-saving framework by the Department of Minerals and Energy has set its goal to save fifteen percent by 2015. Energy efficiency and renewable energies are the focus of the framework, a first for Africa that may serve as a model for other countries.⁵⁴

The government has started implementing policies on energy efficiency, which is assuredly the most effective and eco-

South Africa has designed a Renewable Energy Strategy.

The government has started implementing policies on energy efficiency, which is assuredly the most effective and economically advantageous means of reducing carbon dioxide emissions and other pollutants from energy production.

nominically advantageous means of reducing carbon dioxide emissions and other pollutants from energy production. Efficiency measures have also drastically reduced the cost of electricity bills to industry and individuals. This is producing substantial economic benefits.⁵⁵

In 2006, Environment Minister van Schalkwyk demonstrated the energy-efficiency conversion of his home, which consisted of the installation of “energy-efficient lighting, solar water heating, better insulation, and a range of other measures.”⁵⁶ Minister van Schalkwyk stressed that although government action draws attention to these issues, individuals in South Africa must also take steps to save energy in their homes.⁵⁷ The Minister also stated that replacing one normal light bulb with a compact fluorescent bulb could result in savings of 18.50 South African Rands per year, as well as a total of 430 kilograms of coal and 1,100 liters of water.⁵⁸

There has also been an aggressive approach towards promotion and production of environmentally friendly biodiesel and bioethanol fuels manufactured from crops such as canola, soya, sunflower, sugar beet, maize, sorghum, wheat, and sugarcane.⁵⁹ This will create new jobs, protect the country from volatile oil prices, and decrease damage to the environment.⁶⁰

TRAINING AND CAPACITY DEVELOPMENT

South African universities are beginning to focus on the specialized educational needs for climate research and CDM project implementation.⁶¹ Furthermore, National Research Foundation funds research on climate change.⁶² The government is currently investing in technology and upgrading existing institutions of research and education by promoting courses on engineering, science, agriculture, and forestry and also collaborating with various institutions in developed countries.⁶³ The government has also started creating awareness and sensitizing entrepreneurs and industrial sectors to embark on research into energy-efficient activities.⁶⁴

MONITORING FOR ADAPTATION

South Africa has embarked on a program for Monitoring, Mapping and Analysis of Disaster Incidents known as MANDISA.⁶⁵ It is a core activity for the Disaster Mitigation for Sustainable Livelihoods Programme of the University of Cape Town.⁶⁶ MANDISA began as a pilot program from 1990 to 1999 in the Cape Town Metropolitan Area.⁶⁷ The program evaluates socio-

economic and environmental risk factors that can affect the impacts of disasters and allows for tracking of the conditions that may cause disaster.⁶⁸ This requires cooperation between several agencies, “consultation and feedback, active sourcing of emergency and disaster information, strategic consolidation of information across agencies and robust geo-referencing.”⁶⁹ The project also includes an online database which provides information for disaster management workers, educational institutions, and researchers.⁷⁰

NON-GOVERNMENTAL APPROACHES

In addition to government policy, other major stakeholders are also taking action to combat climate change in South Africa. Two examples are discussed below.

Clinton Climate Initiatives

In 2008, the Clinton Climate Initiative (“CCI”) committed funding and technical support to decrease energy consumption in Johannesburg.⁷¹ This prompted the city to implement energy efficiency measures, including the Rea Vaya bus rapid transit system and the energy efficiency building retrofit program.⁷² The initiative has also provided know-how, in the form of a technical director for project support, to assist with joint projects between the City of Johannesburg and CCI. Other initiatives include drives to reduce energy consumption in the city by promoting solar power and a project to convert methane gas generated by landfills into energy used for electricity.⁷³

The Kuyasa Project

South Africa has successfully developed a low-cost housing project known as the Kuyasa project, the first of its kind in Africa and one of fewer than fifty in the world.⁷⁴ It was developed by SouthSouthNorth, an international CDM non-governmental organization, and Cape Town. The city has committed to use ten percent renewable energy sources by 2020, and have ten percent of households with solar water heaters by 2010.⁷⁵ It is in recognition of this achievement that Kuyasa was awarded gold standard recognition by the UNFCCC, allowing it to earn certified emission credits. The price of these credits is calculated according to the amount of carbon dioxide saved.⁷⁶ Some of the benefits of this project to South Africa are: retrofitted buildings are five percent warmer in winter and five percent cooler in summer, allowing a savings of up to forty percent on electricity bills;

the buildings reduce localized air pollution, helping prevent pulmonary pneumonia, carbon monoxide poisoning, and other respiratory illnesses which are major sources of health hazards to poor people; and more importantly, a decrease in the deadly fires common in high-density and low-income settlements. Apart from the individual benefits of the program, the projects stand to earn carbon credits equaling nine million tons of carbon a year, with a value of US\$253 million to the South African economy. The projects have crediting periods lasting until at least 2015; some extend until 2026.⁷⁷

CONCLUSION

The effects of climate change are no longer limited to predictions; temperatures are rising, icecaps and glaciers are melting, and extreme weather conditions are becoming more frequent and more intense.⁷⁸ Africa is both the continent most vulnerable to climate change as well as the one with the least

capacity to adapt. For the developing continent, there exist multiple and concurrent stresses and development challenges, such as endemic poverty, governance and institutional dimensions, limited access to capital, ecosystem degradation, and complex disasters and conflicts. These are obstacles to reducing carbon dioxide emissions.

Realizing that economic growth, sustainable resource management, and climate change are closely connected, the executive and legislative arms of the government of South Africa have agreed on a progressive policy on climate change. This will ensure that the country reduces emissions to become a “low carbon” economy while also helping to limit the effects of global warming. South Africa should serve as an example to the other nations of Africa as the developing continent becomes a stronger and more effective player in the fight against global climate change.



Endnotes: Climate Change, Energy, and Sustainable Development in South Africa

¹ See generally African Workshop on Adaptation, Accra, Ghana, Sept. 21–23, 2006, *Background Paper on Impacts, vulnerability and adaptation to climate change in Africa*, available at http://unfccc.int/adaptation/adverse_effects_and_response_measures_art_48/items/3743.php (follow link to title) (last visited Feb. 2, 2009).

² Scott Johnson, *World News*, SUSTAINABLE DEV. L. & POL’Y, Winter 2007, at 71.

³ UN NEWS CENTER, *New Climate Change Alliance Will Benefit Millions of World’s Poor – UN Agency* (Nov. 7, 2007), available at <http://www.un.org/apps/news/story.asp?NewsID=24579&Cr=climate&Cr1=change> (last visited Feb. 2, 2009); CONSULTANCY AFRICA INTELLIGENCE, *Evaluating the Challenge of Climate Change: Southern African Adaptation Measures*, available at <http://www.consultancyafrica.com/africa-watch/newsletter/november-2008> (last visited Feb. 2, 2009).

⁴ OGUNLADE DAVIDSON & HARALD WINKLER, SOUTH AFRICA’S ENERGY FUTURE: VISIONS, DRIVING FACTORS AND SUSTAINABLE DEVELOPMENT INDICATORS 12 (2003), available at <http://developmentfirst.org/Studies/SouthAfricaCountryStudies.pdf> (last visited Feb. 26, 2009).

⁵ See generally Renatè Janse van Vuuren, *Alternative Energy for Africa: Enhancement of the UN Millennium Development Goals*, SCIENCE SCOPE, June 2008, at 54–55, available at http://www.csir.co.za/enews/2008_july/pdfs/sciencescope.pdf (last visited Feb. 26, 2009).

⁶ See generally Kyle W. Danish, *An Overview of the International Regime Addressing Climate Change*, SUSTAINABLE DEV. L. & POL’Y, Winter 2007, at 10.

⁷ NICO SCHRIJVER ET AL., INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PRINCIPLES AND PRACTICE 7 (2004).

⁸ See generally DAVIDSON & WINKLER, *supra* note 4; OGUNLADE DAVIDSON ET AL., CLIMATE CHANGE, SUSTAINABLE DEVELOPMENT AND ENERGY: FUTURE PERSPECTIVES FOR SOUTH AFRICA 5 (2002), available at <http://www.oecd.org/dataoecd/22/14/1934698.pdf> (last visited Feb. 2, 2009).

⁹ This is what prompted the African leaders to make a pledge, through The New Partnership for Africa’s Development (NEPAD), to eradicate poverty and put African countries on a path of sustainable growth and development. NEPAD, NEPAD in brief, <http://www.nepad.org/2005/files/inbrief.php> (last visited Feb. 2, 2009).

¹⁰ See generally van Vuuren, *supra* note 5.

¹¹ *Id.*

¹² MARTIN ÅGERUP ET AL., INT’L POLICY NETWORK, CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT, A BLUEPRINT FROM THE SUSTAINABLE DEVELOPMENT NETWORK 3 (2004), available at http://www.policynetwork.net/uploaded/pdf/cc_sd_final.pdf (last visited Feb. 2, 2009).

¹³ GÜNTHER FISCHER ET AL., INT’L INST. FOR APPLIED SYSTEMS ANALYSIS, CLIMATE CHANGE AND AGRICULTURAL VULNERABILITY 2-13 (2002), available at <http://www.iiasa.ac.at/Research/LUC/IB-Report.pdf> (last visited Feb. 2, 2009).

¹⁴ Michael K. Lee, *The Day After Tomorrow Scenario: What if Global Warming Causes Rapid Climate Change?*, SUSTAINABLE DEV. L. & POL’Y, Winter 2007, at 39.

¹⁵ Particularly, the lack of effective adaptation to the adverse effects of climate change can jeopardize the achievement of goal 1 (eradicating extreme poverty and hunger), goal 6 (combating HIV/AIDS, malaria and other diseases), and goal 7 (ensuring environmental sustainability). United Nations Framework Convention on Climate Change, *Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries* at 42–43, available at <http://unfccc.int/resource/docs/publications/impacts.pdf> (last visited Feb. 15, 2009).

¹⁶ UN NEWS CENTER, *supra* note 3.

¹⁷ DAVIDSON & WINKLER, *supra* note 4, at ii.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ DAVIDSON ET AL., *supra* note 8, at 5.

²¹ See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT, available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf (last visited Feb. 26, 2009).

²² DAVIDSON ET AL., *supra* note 8, at 5.

²³ TRADE KNOWLEDGE NETWORK, SUSTAINABLE DEVELOPMENT: THE CASE OF ENERGY IN SOUTH AFRICA 5 (Rashad Cassim & Wendy Jackson, eds. 2003).

²⁴ See generally SOUTH AFRICA DEPARTMENT OF MINERALS AND ENERGY, WHITE PAPER ON THE ENERGY POLICY OF THE REPUBLIC OF SOUTH AFRICA (1998), available at <http://www.info.gov.za/whitepapers/1998/energywp98.htm> (last visited Feb. 4, 2009).

²⁵ *Id.*

Endnotes: Climate Change, Energy, and Sustainable Development in South Africa *continued on page 74*

MONGOLIA: A CASE FOR ECONOMIC DIVERSIFICATION IN THE FACE OF A CHANGING CLIMATE

by Nathan Borgford-Parnell*

INTRODUCTION

In the past two decades Mongolia has experienced significant environmental changes driven both by human action and climate change. These changes have had considerable detrimental effects on Mongolia's economy and people. Basic survival in this country of harsh climates requires a careful balance with the environment.¹ Climate change, which may exacerbate climatic extremes, in combination with unsustainable land use practices, have begun to change that balance and reveal Mongolia's significant environmental vulnerabilities. In response to these changing conditions, the Mongolian government instituted a number of mitigating and adaptive measures to decrease its vulnerability, but without further economic diversification the success of these measures is limited.

Basic survival in this country of harsh climates requires a careful balance with the environment.

In more recent years, Mongolia has begun to depend upon its rich mineral resources to diversify its economy away from a dependence on the more traditional vocations of herding and animal husbandry. Although diversification is the key to Mongolia's future, these mining operations pose additional real threats to Mongolia's fragile environment and represent only one economic alternative to animal husbandry. Mongolia's economic diversification should include the development of renewable energy resources. Mongolia has strong, untapped wind and solar resources in abundance and their development may help tilt the environmental balancing act back towards sustainability.²

CLIMATE CHANGE ON THE STEPPE

Climate change is making Mongolia both warmer and drier.³ Over the past sixty years, Mongolia's mean temperature has increased by 3.4°F, compared to the global mean of 1°F in the past century.⁴ Rainfall is also more infrequent and heavier, which is increasing erosion on already fragile pastureland.⁵ Mongolia's glaciers, which feed many of the country's rivers, have decreased in flow causing approximately fifty of the country's rivers to vanish between 2004 and 2005.⁶



Photo courtesy of Nathan Borgford-Parnell

The combination of these effects is causing a significant drying of Mongolia's soil.⁷ Desertification has become so significant that Mongolian dust storms are causing environmental impacts on countries as far away as Japan.⁸ As of 2002, over seventy percent of Mongolia's pastureland was considered degraded.⁹ This has led to a decrease of pasture biomass of 20–30% over the past twenty years.¹⁰ Livestock fodder production today is one third that of 1986 production numbers.¹¹

Mongolia's livestock live on open pastures year-round, making them susceptible to any severe changes in the weather, climate, or changes in biomass. Typically, the animals build up fat stores during the summer to help them get through the harsh Mongolian winters. However, with the decrease in pasture biomass it is much more difficult for the animals to build the reserves they need.¹²

Mongolia depends upon the livestock industry both for employment and basic food products. Almost fifty percent of Mongolians are employed in animal husbandry or a related field.¹³ Livestock accounts for thirty-four percent of annual gross production and thirty percent of Mongolia's total exports.¹⁴ However, pasture degradation brought on by climate change is only partially to blame for these changes. Institutional and economic collapse of the Mongolian government in the early 1990s conspired to exacerbate the damage that climate change was already doing to Mongolia's pasturelands.¹⁵

*Nathan Borgford-Parnell is a J.D. candidate, May 2009, at American University, Washington College of Law. He is also the founder of Valkyrie Energy LLC, a renewable energy development firm focusing on new and developing markets.

THE FALL OF COMMUNISM AND THE RISE OF THE HERD

In 1990, Mongolia's peaceful transition from a communist regime to a democratic government signaled the dissolution of the central planned economy and state-subsidized systems of food distribution. As a result of this transition, virtually overnight thousands of Mongolians found themselves out of work. Many Mongolian families, searching for a means of survival, turned to traditional livestock herding to fill the economic void. Between 1990 and 2001 the number of herding households in Mongolia more than doubled, from 75,000 to 185,500.¹⁶ Many of the new herding families had no experience in animal husbandry and were unaccustomed to the careful and balanced nature of traditional nomadic herding.¹⁷

Prior to the 1990 transition, the communist government limited the number of livestock in the country to about fifteen million; with its dissolution and the introduction of a market economy livestock populations grew unchecked.¹⁸ Without centralized controls, livestock populations ballooned until 1999 when herd populations reached thirty-three million, more than ten times the number of people in Mongolia.¹⁹

The meteoric increase in herd populations combined with the decrease in biomass discussed above left Mongolia supremely vulnerable to any dramatic shift in environmental conditions. This vulnerability became most evident between 1999 and 2002 when Mongolia was hit with four historic droughts and abnormally severe winters.

MONGOLIA'S LONGEST WINTER

In Mongolian *dzud* is a term for severe winter weather conditions of the type that are so extreme they can prevent animals from grazing on open pastures.²⁰ *Dzud* are quite common in Mongolia, occurring typically once every seven years, but always in localized areas.²¹ However, between 1999 and 2002 Mongolia experienced three *dzud* in sequence each covering approximately seventy percent of the country.²² The *dzud* were preceded by particularly dry summers where over three thousand water sources, including 680 rivers and 760 lakes, literally disappeared, decimating the already stressed and low weight livestock population.²³

In four years, more than eleven million adult animals died from the combination of extreme summer droughts and severe winter weather.²⁴ The loss of so many animals was devastating to Mongolia's herders as almost ten thousand families lost their entire herd and seventy-five percent of the remaining families were left with herds below maintenance levels.²⁵ The economic impact of the 1999–2002 *dzud* is estimated at over 200 million U.S. dollars and dropped Gross Domestic Product growth to 1.1% from 3.2% in 1998.²⁶

Climate change deserves much of the blame for this tragic convergence of events but its effects would have been much more localized were it not for the unpreparedness of the Mongolian state. The institutions of the new Mongolian state were not prepared to manage the drastic increase in new herding families, or the dramatic changes brought about by the new market economy. This left the government agencies unable to cope with rapidly changing environmental conditions and the herders with little to no capacity to adapt to the deteriorating environment.

NEW INSTITUTIONS NOT UP TO THE TASK

In 1990 the new Mongolian state dismantled the communist era herding collectives that had managed herd populations and allocated pastureland for over half a century.²⁷ The remaining traditional and customary institutions for pasture management could not cope with the influx of new herding families, and so the responsibility fell to the new government.²⁸ Stepping into the void, the Mongolian government passed a battery of laws

and regulations seeking to lay a foundation for environmental protection, ease pressures on pastureland, and strengthen the capacities of herders to adapt to changing conditions. Between 1990 and 2000 Mongolia passed more than twenty laws regulating land rights and environmental standards.²⁹

There is little question that the Mongolian government recognized the significance of the problems and challenges it faced. The real impediment is

not a lack of will, but institutional capacity. Overall coordination between the agencies and institutions tasked with environmental protection and pasture management was often limited.³⁰ While the laws were robust, the administrative procedures for implementation had no clear guidelines for dealing with administrative overlaps.³¹ Agencies tasked with pasture management suffered from a significant lack of resources, both in trained personnel and budget.³² Nowhere was this more true than at the local level where small community governments were tasked with the lion's share of environmental and pastureland management and oversight.³³

Following the *dzud*, the Mongolian government, international donors, and multilateral institutions took action to combat the worst effects of the disaster. In 2003 Mongolia passed the Law on Disaster Protection, designed to improve coordination between government and institutional actors within the context of existing environmental and pastoral management laws.³⁴ The World Bank implemented the Sustainable Livelihoods Project, designed to improve institutional capacity for pastoral risk management, develop funds for local development, and make micro-finance more available to rural households.³⁵

While significant effort has been made to mitigate and prevent future disasters, Mongolia has thus far only had limited

Desertification has become so significant that Mongolian dust storms are causing environmental impacts on countries as far away as Japan.

success in changing the paradigm of environmental vulnerability for its herding families. If any silver lining can be found from the 1999–2002 *dzud*, it is the fact that tens of thousands of herders were forced out of the industry, thereby decreasing pressure on critically damaged pastureland. Unfortunately, by 2008 herd populations have climbed back to their 1999 numbers, once again threatening pastureland with extreme overgrazing.³⁶ As of January 2009, 120,400 live-stock have died from extreme winter temperatures in Mongolia, nearly a seventy percent increase from 2008; it remains to be seen whether Mongolia's institutions are ready for another hard winter.³⁷

CONCLUSIONS: ECONOMIC DIVERSIFICATION, THE KEY TO MONGOLIA'S FUTURE & A ROLE FOR RENEWABLE ENERGY

There are two general means of addressing the human vulnerabilities to climate change in developing countries: mitigation and adaptation.³⁸ While the Mongolian government must continue its progress in institution-building and environmental protection to help mitigate human impact on the environment it must also focus on diversifying its economy away from a dependence on one or two industries. For Mongolia's herders, economic diversification is the key to decreasing their vulnerability to changing climatic conditions. Economic diversification is an adaptive measure that will decrease herder vulnerability to climate change by providing the ability to move away from animal-husbandry, easing pressures on the environment and government.

Unfortunately, the Mongolian economy has only had a limited capacity to diversify away from a dependence on herding. The two largest industrial sectors in Mongolia today are animal husbandry and mining of coal, gold and copper.³⁹ The formal mining industry is Mongolia's fastest growing industry, currently accounting for a third of Mongolia's economy; recent surveys of miners found that more than fifty-five percent are from families that lost their herds during the *dzud* and turned to mining to survive.⁴⁰

While mining has helped take some of the pressure off herders, dependence on mining will only further stress Mongolia's fragile environment. However, under the right conditions

*The dzud were preceded
by particularly dry
summers where over 3000
water sources, including
680 rivers and 760 lakes,
literally disappeared.*

Mongolia's mining growth can be a windfall for the country, especially if it is used to spur new forms of development, particularly in the field of energy generation. Mongolia should use this opportunity to invest in renewable energy, particularly in rural communities. As a nation, Mongolia has strong, proven wind and solar resources that it has yet to tap on a commercial basis.⁴¹ The development of such resources can help Mongolia adapt to changing

environmental conditions, spur new industry in rural communities and help shift the country away from an exclusive dependence on coal for power generation.⁴²

Global experience has shown a strong positive correlation between increases of stable electricity use and economic growth in developing nations.⁴³ Stable electrical distribution provides a strong foundation for new commercial and industrial opportunities for small communities, as well as an increase in working hours and productivity.⁴⁴ In addition to creating a new economy based on domestic, clean, and unlimited resources, renewable energy development will create new jobs and facilitate development in rural communities.

Development of renewable energy will also strengthen Mongolia's commitment to environmental protection by decreasing its own generation of greenhouse gasses. As energy services come on-line in Mongolia's rural communities, families will have a broader range of choices in securing their economic future. Economic diversification will strengthen local communities and local institutions, thereby improving capacity to protect pastureland and bringing herding practices back into equilibrium with the environment. While Mongolia's actions alone cannot reverse the effects of climate change, giving its citizens the economic flexibility to adapt to those changes without overburdening its already fragile, harsh environment will go a long way towards preventing the kind of catastrophic disaster that occurred between 1999 and 2002.



Endnotes: Mongolia

¹ See generally P. Batima et al., *Observed Climate Change in Mongolia* (AIACC, Working Paper No. 12, 2005), available at www.aiaccproject.org/working_papers/Working%20Papers/AIACC_WP_No013.pdf (last visited Feb. 25, 2009).

² WORLD WILDLIFE FUND, OVERVIEW OF CLIMATE CHANGE ISSUES IN MONGOLIA (2006), available at http://assets.panda.org/downloads/climate_change_issues_mn_oct2006.pdf (last visited Feb. 25, 2009).

³ P. Batima et al., *supra* note 1, at 23.

Endnotes: Mongolia continued on page 75

THE WORLD BANK CLEAN TECHNOLOGY FUND: FRIEND OR FOE TO THE UNFCCC?

by Addie Haughey*

INTRODUCTION

In response to the Bali Action Plan's calls for an expanded international response to climate change, the World Bank created a series of Climate Investment Funds ("CIFs") to provide "immediate financial resources" to respond to global climate challenge.¹ Since the creation of the funds last year, more than \$6 billion has been pledged to CIF programs by donor countries² and the CIFs have quickly become leaders in international climate investment, at least in terms dollar amount.³

The Clean Technology Fund ("CTF")⁴ is one of the more advanced CIFs, and began providing large-scale financial resources for low-carbon technology projects in developing countries in early 2009.⁵ This article examines whether the CTF is an instrument through which donor countries can fulfill their international climate change funding obligations under the UN Framework Con-

vention on Climate Change ("UNFCCC"). First, background for answering this question is provided. Then it is argued that inconsistencies between the CTF and the UNFCCC should prevent CTF donations from fulfilling UNFCCC obligations.

BACKGROUND

In response to the imminent threat of climate change, the international community came together at the Rio Earth Summit in 1992 to create a framework convention to combat climate change.⁶ The objective of the UN Framework Convention on Climate Change is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."⁷ The UNFCCC was created to organize and coordinate efforts to fight climate change as well as to build political will and accountability. The convention's Conference of the Parties ("CoP") is the primary mechanism for the world to address climate issues and solutions.⁸

The framework created by the convention obligates country parties to meet "common but differentiated" standards,⁹ a

compromise meant to acknowledge that industrialized nations in the global north are the primary cause of anthropogenic climate change, but that all nations have a role to play in the solution.¹⁰ One key difference in obligations is that wealthier, developed nations are responsible for funding climate change initiatives

around the globe by providing "new and additional financial resources" for developing countries.¹¹ In order to facilitate this funding responsibility, the UNFCCC established the Global Environment Facility ("GEF") as its official financial arm, responsible for aiding countries in meeting their obligations to the Convention.¹²

The Kyoto Protocol to the UNFCCC went into effect in 2005.¹³ It is the first instrument produced by the UNFCCC with legally binding emission reduction targets and timetables.¹⁴ The Protocol includes flexible market mechanisms giving parties multiple paths through which to meet their binding targets.¹⁵ One

such path is the Clean Development Mechanism ("CDM"),¹⁶ which allows investment in emission reducing projects in developing countries to generate "carbon emission reductions" ("CERs") that can then be traded on the market to developed countries for use in their compliance with Kyoto.¹⁷

The market for carbon emission reduction credit trading grew exponentially in the two years after the Kyoto Protocol came into effect, reaching an estimated \$30 billion.¹⁸ There are now at least fifty-eight carbon funds in the market,¹⁹ which purchase carbon credits on behalf of countries and private entities that cannot meet their Kyoto obligations through emission reductions alone.²⁰

THE WORLD BANK

The World Bank has played a significant role in the development of the carbon market through its creation of the Prototype Carbon Fund²¹ and its extensive involvement in carbon emission

*The World Bank's
Clean Technology
Fund . . . works by
pooling donations from
industrialized countries
and investing those
funds in carbon emission
reducing projects in
developing countries.*

*Addie Haughey is a J.D. candidate, May 2010, at American University, Washington College of Law.

trading.²² The Bank's involvement in the international climate regime began with its prototype permit purchasing,²³ and was solidified when it was selected to serve as the trustee for the UNFCCC's financial arm, the Global Environment Facility.²⁴

The World Bank is considered the "pre-eminent multilateral institution providing assistance to developing countries."²⁵ Established in 1945 after the Bretton Woods Conference,²⁶ the Bank has served as an intermediary between its powerful shareholders, wealthy developed nations, and developing countries. In this role, the Bank provides financial assistance, technical assistance, risk guarantees, and policy advice to public and private sector parties in developing countries.²⁷ This history of development assistance serves as a backdrop to the Bank's involvement in climate change finance, focusing its efforts on development goals that are linked to carbon emission reduction and the transition to low carbon economies.²⁸

THE CLEAN TECHNOLOGY FUND

The World Bank's Clean Technology Fund is a Climate Investment Fund that works by pooling donations from industrialized countries and investing those funds in carbon emission reducing projects in developing countries.²⁹ Through the CTF, the Bank focuses its financial expertise on scaling-up³⁰ proven low carbon technologies by expanding them to full sector scale, or at least demonstrating that the technologies could be expanded to such a wide scale.³¹

The Trust Fund Committee ("TFC"), the Clean Technology Fund's governing body, is responsible for approving programs and project pipelines, establishing project criteria, determining what financing products will be available, and ensuring consistency between CTF practices and the UNFCCC.³² The Committee is comprised of eight representatives from donor countries and eight from countries eligible to receive CTF financing.³³ TFC representatives are selected by consultation with the parties eligible to serve.³⁴

The CTF is structured so that Multilateral Development Banks ("MDBs") work with partner countries to develop country-specific investment plans.³⁵ These plans incorporate CTF financed projects and programs³⁶ into the country's existing climate change reduction strategies. Recipients of CTF funds can be public or private, though private recipients must demonstrate their place within a broader public climate change plan.³⁷ Once developed, projects are sent to the Trust Fund Committee for approval, after which funds are transferred in the form of grants, concessional loans, and guarantees.³⁸ Projects are examined based on established standards, including greenhouse gas ("GHG") emission savings,³⁹ demonstration potential,⁴⁰ development impact,⁴¹ implementation potential,⁴² and additional cost and risk premium.⁴³

ANALYSIS OF THE CLEAN TECHNOLOGY FUND

The founding document of the Clean Technology Fund goes to great lengths to demonstrate consistency and collaboration with the UNFCCC,⁴⁴ but that consistency does not extend far beyond rhetorical principles. This is evidenced by significant

criticisms of the CTF's motives, the World Bank's record on climate change, the Bank's "technology neutral" approach to carbon emission, and more.⁴⁵ Beneath the layers of policy disagreement, even the CTF founding document⁴⁶ itself demonstrates at least three areas where the CTF is inconsistent with the UNFCCC. First, circular language in the document absolves the CTF of responsibility for ensuring "new and additional" funding to its recipient countries. Second, measures put in place to ensure equitable governance of the CTF do not achieve this purpose. Finally, the so-called "sunset clause," intended to prevent undermining of the UNFCCC process by the CTF, is drafted poorly, with a major loophole that allows the CTF to avoid sunset.

NEW AND ADDITIONAL FINANCIAL RESOURCES ARE NOT GUARANTEED BY THE CTF

Article 4 of the UNFCCC lays out the commitments of the party countries, including paragraph 3, which requires "new and additional financial resources to meet the agreed full costs incurred by developing country parties in complying with their obligations."⁴⁷ Similarly, the Clean Technology Fund founding document uses the phrase "new and additional" in its principles.⁴⁸ It is telling, however, that the document neglects to cite to the provision of the UNFCCC in which that terminology originated, despite extensive citation to other UNFCCC provisions.

Undoubtedly, all donor countries consider their donations "new and additional" and intend to report their CTF donations to the UNFCCC as part of meeting their Article 4 commitments.⁴⁹ The CTF, however, has absolved itself of responsibility for ensuring that obligations are met by placing the responsibility on the donor country, not the CTF, to "ensure that contributions are new and additional resources supplementing existing [Official Development Aid] flows otherwise available for developing countries."⁵⁰

Even if some of the \$6 billion donated into the CIFs so far is new and additional, money donated to the CTF is comingled and combined with other sources of funding.⁵¹ This is problematic because the UNFCCC reporting process requires that countries demonstrate that their individual contributions to climate change are new and additional.⁵² Under this system it will be difficult for a country to demonstrate this,⁵³ and equally difficult for a UNFCCC body to determine whether funds are new and additional if they are mixed with other funding sources from the outset.

In the midst of confusion and disagreement over exactly what is new and additional funding and where the responsibility for it lies, it appears that the CTF has used its founding document to pass responsibility on to its donor countries. This creates a conflict; the system makes it difficult to ensure that funds are new and additional and demonstrates that the World Bank is either not prepared or not willing to meet UNFCCC standards for climate change financing.

The Bank still has the opportunity to tighten up this loose provision by not just asking donor countries to ensure that funding is new and additional, but by requiring them to demonstrate that it is. In addition, the CTF could include an analysis of

whether or not funding is new and additional in their donation acceptance process, and/or incorporate new and additional status into the investment criteria for projects.⁵⁴ This has potential to be complicated administratively,⁵⁵ but may be required if donor countries are to report donations as “new and additional” to the UNFCCC. The CTF has multiple opportunities to ensure that “new and additional” funding is used, and it should do so.

EQUITABLE GOVERNANCE IS NOT GUARANTEED BY THE CTF

Under the current international climate regime, each party has an equal vote in all UNFCCC decisions,⁵⁶ ensuring that developed countries cannot use their superior political and financial circumstances to overpower the developing countries of the global south.⁵⁷ In the context of financing, this was a battle hard fought, and won, by developing countries to ensure their equal say in the distribution of financial resources coming from the global north.⁵⁸ Unfortunately, the CTF has demonstrated inconsistencies with this principle since its creation.

The G8, an organization that lacks representation and input from developing nations,⁵⁹ made the initial request to the World Bank to establish the Climate Investment Funds.⁶⁰ This means that even if developing countries have subsequently been included, they were not involved at the outset in determining what international body should house and administer the fund, the fund structure, or fund goals and objectives.

In its attempt to have equal representation of developing countries, the CTF included an equal number of donor and recipient country members on its governing board.⁶¹ It also established decision-making by consensus, allowing an unsatisfied board member to block decisions entirely or to abstain.⁶²

In reality, however, the CTF governance structure does not involve developing countries in the decision-making process in a meaningful way. The consequences of this are potentially dire in terms of the legitimacy of CTF projects. The inconsistency between the CTF’s governing body and the governance principles of the UNFCCC is twofold.

First, Membership on the Trust Fund Committee (“TFC”) is acquired through a “consultation” with an undefined group of stakeholders.⁶³ The CTF founding document is loose in its instructions on the selection of Trust Fund Committee membership and unclear as to how the consultation among those parties should work.⁶⁴ A footnote says that the “selection of donor

country representatives is to be primarily guided by total contributions to the CTF,”⁶⁵ which implies less of a “consultation” and more of a selection process based on the highest dollar donation. What is more disconcerting is that no such instructions are given regarding the recipient country representation on the committee; the document simply instructs that a consultation will occur among the interested countries.⁶⁶ This leaves interested countries to wonder how to ensure fair representation—or any representation at all—on the Committee.

The first Trust Fund Committee membership selection process took place behind closed doors at a meeting in Washington, DC in October of 2008.⁶⁷ The “recipient” countries that will serve on the committee include Brazil, China, Egypt, India, Mexico, South Africa, and Turkey.⁶⁸ While these countries are vital to solving climate change, they represent emerging economic superpowers that are unlikely to share the concerns of a vast number of smaller, less developed recipient nations, which may now have inadequate and ineffective representation on the CTF committee.

The Trust Fund Committee is charged with decision making authority regarding which programs and projects will receive funding from the CTF.⁶⁹ This vital role should be given to a body that equitably represents all parties involved.⁷⁰ The current system does not guarantee fairness or equity in selection for the Committee and is inconsistent with the UNFCCC’s principles of equity.⁷¹

The World Bank should clarify the founding document’s language that lays out the involved parties and defines “consultation.” Alternatively, the Bank should give more power to the “Partnership Forum,” a body established to encourage

dialogue about the Climate Investment Funds among diverse interested parties.⁷² The role of the forum could be increased to something more like the UN’s Global Environment Facility (“GEF”) Assembly, which has some decision-making power over GEF activities.⁷³ Involving more stakeholders in actual decision-making, beyond the current Partnership Forum role of “dialogue and consultation,”⁷⁴ would create a model much more in line with the principles of the UNFCCC.⁷⁵

Second, the committee is given little, if any, real power. The board of the World Bank maintains control over all actions of the bank, potentially including actions of the CTF as well.⁷⁶ In addition, the MDBs maintain implementing power over CTF projects after the TFC approves them,⁷⁷ and the CTF founding document provides only weak language to ensure that consistency with the

It is vital that the UN find ways to make sure that even non-UN programs that are working towards climate change goals meet the necessary standards of quality and integrity in all facets of their operations.

UNFCCC is maintained outside the scope of Trust Fund Committee responsibilities.⁷⁸

The Trust Fund Committee is affirmatively given some power over the Multilateral Development Banks that administer CTF projects: it is charged with “ensuring monitoring and periodic independent evaluation of performance and financial accountability of MDBs.”⁷⁹ The CTF document also, however, specifies that MDBs “rely on their own policies and procedures in developing and managing activities the [CTF] funds will finance,”⁸⁰ including fiduciary standards and environmental and social safeguards.⁸¹ This structure implies that projects voted on by the Trust Fund Committee will be passed down to MDB boards to control.

The CTF should ensure separation between the CTF’s Trust Fund Committee and the World Bank Board by making it explicitly clear how the CTF’s decisions might, or might not, be subject to oversight from the World Bank Board and the Boards of the MDBs. This would bring the actual practices at the World Bank into compliance with the CTF’s claims of Trust Fund Committee leadership.⁸² In addition, the CTF founding documents should set firm guidelines for MDB administration of projects and should require MDBs to incorporate UNFCCC principles into their standards and into their reporting to the Trust Fund Committee.

THE CTF SUNSET CLAUSE DOES NOT EFFECTIVELY PREVENT UNDERMINING OF THE UNFCCC PROCESS

The World Bank calls the CTF an “interim measure” to provide funding for climate change projects during the negotiations of the successor to the Kyoto Protocol.⁸³ The Bank claims that the CTF’s “sunset clause”⁸⁴ is sufficient to limit it to this temporary goal and prevent diversion from or preemption of UNFCCC negotiations.⁸⁵ However, diversion and preemption are possible if the CTF operates as a parallel structure to already existing UNFCCC mechanisms, and in so doing creates a channel for climate related financing to bypass existing mechanisms and flow through the CTF instead.⁸⁶ The idea of having a sunset for the Fund after its “interim” purpose has been served is a logical way to prevent this potential problem. The language of the actual sunset clause, however, lacks a guaranteed ending for the fund. A built-in loophole allows the CTF to remain operational if UNFCCC negotiations so indicate, thus rendering the clause ineffective and creating a strong incentive for heavy Bank involvement in the UN negotiations.⁸⁷

The sunset clause states that “if the outcome of the UNFCCC negotiations so indicates, the Trust Fund Committee . . . may take necessary steps to continue the operations of the CTF.”⁸⁸

On its face, then, it appears to offer up the CTF’s fate to the UNFCCC’s Conference of the Parties, but this language is problematic. The World Bank will have strong motivation to ensure that the UNFCCC negotiations leave room for the CTF to continue.

This motivation comes from the Bank’s pronounced desire to be at the forefront of climate change funding and carbon finance. The Bank also has a strong case to make—the CTF has already demonstrated interest from big league donors to the tune of over \$6 billion,⁸⁹ a number no doubt envied by other players in the climate change field.⁹⁰

The sunset clause loophole leaves room for the Bank to use its clout to keep the CTF alive.⁹¹ It is unclear that the CoP will be able to take strong

enough action to counteract political pressures coming from the Bank and donor countries, which may be fonder of the CTF than more regulated UNFCCC climate funding mechanisms.⁹²

Indeed there are strong arguments that the CTF loophole should remain in place to allow the Fund to continue beyond the current climate negotiations. Proponents argue that World Bank involvement in long-term projects could create market stability because many climate change related investments occur on longer timelines than the UNFCCC or the Kyoto Protocol has provided for thus far.⁹³ The CTF could offer ongoing and guaranteed financial support for such projects. It is also predicted that tens of billions more dollars will be needed to finance emission reducing projects if the global community is going to successfully combat long-term climate change.⁹⁴ It may be unwise to remove any avenue for funding from the market until that target amount of investment is reached.

These arguments, however, do not change the ineffectiveness of the sunset clause as a tool to insulate the UNFCCC negotiations and do not change the possibility that the term “interim” was used only to make the CTF easier for doubters to swallow. The sunset clause was a politically shrewd addition, couched as a compromise, which required little concession from the Bank.

The sunset clause leaves a gap between what the World Bank claims the CTF does—prevent the undermining of future UNFCCC negotiations—and what is likely, or even probable, to do in Copenhagen. Even if the UNFCCC negotiations result in the end of the CTF, the World Bank will ultimately have gained experience, capacity, and connections in climate change finance that will allow it to continue operations (similar to the CTF or otherwise) in the field. It is possible that the CTF itself will sunset only to be replaced by a similar program under another name. The World Bank has successfully placed itself at the forefront of climate change finance with little or no input from the UNFCCC.


Steps must be taken in good faith to address the inconsistencies between the Clean Technology Fund and the UN Framework Convention on Climate Change.

CONCLUSION

Analyzing the Clean Technology Fund governance structure and founding documents provides a broader picture of the international financing of climate change solutions. It is valuable to the extent that it provides new ideas and new models for future finance structures, which will need to generate and invest an unprecedented amount of funding in order to meet the challenge that global climate change presents. Advocates may be hesitant to endorse and foster non-UN programs, but as the CTF demonstrates, major donors do not feel the same hesitation. As such, it is vital that the UN find ways to make sure that even non-UN programs that are working towards climate change goals meet the necessary standards of quality and integrity in all facets of their operations.

Steps must be taken in good faith to address the inconsistencies between the Clean Technology Fund and the UN Framework Convention on Climate Change. Efforts can and should come from both sides: the World Bank and the UNFCCC. The World Bank must show that it can play nice when international “soft law”⁹⁵ conventions regulate its investment targets. The UN must manage the reality that the CTF and CTF-like instruments are here to stay and will have to be dealt with within the existing framework.

Ultimately, the global goal is to slow climate change before it causes permanent damage. Clean Technology Fund projects will no doubt contribute to a global reduction in GHG emissions and an increase in low carbon economies around the world, but these benefits come at a cost. The world spoke with one voice when it established the UNFCCC, and success in the battle to slow climate change requires that the voice of the UNFCCC be respected and maintained in the international community.

The UNFCCC secretariat continues to call for a “political answer” to the scientific community’s increasing knowledge on the threat of climate change,⁹⁶ and it has been asserted that the 2009 Copenhagen negotiations may be the last chance for this political answer. It is vital that the UNFCCC and those working for its success learn from the current state of climate change finance. In Copenhagen, the CTF’s governance structure, financial success, and environmental effectiveness will each need to be scrutinized and analyzed to learn more effective paths forward and for the UNFCCC and to generate the political will for the Conference of the Parties to utilize the sunset clause freely and based on results, without the undue influence of politics. 

Endnotes: The World Bank Clean Technology Fund

¹ See Press Release, The World Bank Group [World Bank], World Bank Board Approves Climate Investment Funds (July 1, 2008) (on file with author) [hereinafter Board Approves CIF].

² See Press Release, World Bank, Donor Nations Pledge Over \$6.1 Billion to Climate Investment Funds (Sept. 26, 2008) (on file with author).

³ See, e.g., WORLD BANK, WORLD BANK PROJECT IMPLEMENTATION REVIEW FY07 2 (2008) (reporting that the World Bank’s Global Environment Facility, the financial arm of the UNFCCC, had a portfolio of \$3.9 billion in 2007, more than \$2 billion less than the CIFs).

⁴ See generally WORLD BANK, CLEAN TECHNOLOGY FUND (2008) [hereinafter CLEAN TECHNOLOGY FUND], available at http://siteresources.worldbank.org/INTCC/Resources/Clean_Technology_Fund_paper_June_9_final.pdf (last visited Feb. 26, 2009).

⁵ See Press Release, Board Approves CIFs, *supra* note 1; and Press Release, World Bank, Climate Investment Funds: Countries Selected for Governing Bodies (Oct. 17, 2008) (on file with author) [hereinafter Countries Selected].

⁶ See, e.g., DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 667-69 (3rd ed. 2007).

⁷ UN Framework Convention on Climate Change [UNFCCC], art. 2, May 9, 1992, 1771 U.N.T.S. 165.

⁸ See *id.* art. 7 (establishing the Conference of the Parties as the “supreme body of this Convention”); UNFCCC, STATUS OF RATIFICATION 1-7 (2007) (exemplifying the near universal ratification of the Convention by 195 countries as of Aug. 22, 2007).

⁹ *Id.* art. 3, ¶ 1.

¹⁰ See e.g., Michael McKenzie, *Climate Change and the Generalized System of Preferences*, 11 J. INT’L ECON. L. 679, 680-82 (2008) (discussing that developing countries “are less culpable for [climate change], and less capable of dealing with it, than developed countries”); Anita M. Halvorssen, *Global Response to Climate Change – From Stockholm to Copenhagen*, 85 DENV. U. L. REV. 841, 847-49 (2008) (discussing that even though the UN Charter gives all countries equal rights and obligations, “developing countries have not historically

had the same economic growth and social benefits” and have contributed less to global environmental problems).

¹¹ See Halvorssen, *supra* note 10, at 849 (citing PATRICIA W. BIRNIE & ALAN E. BOYLE, INTERNATIONAL LAW & THE ENVIRONMENT 101 (2d ed. 2002)) (stating that common but differentiated responsibilities can be “seen as requiring obligations of solidarity assistance in the form of technology transfer and financial assistance”); see also MICHAEL BOTHE & ECKARD REHBINDER, CLIMATE CHANGE POLICY 4-5 (2005) (“For all practical purposes, the developed countries should bear the actual compliance costs of the developing countries,” attributing the smooth ratification process of the UNFCCC to this “soft approach”).

¹² See UNFCCC, *supra* note 7, art. 11 (establishing the Global Environment Facility).

¹³ See Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 [hereinafter Kyoto]. See also HUNTER ET AL., *supra* note 6, at 679-80.

¹⁴ See WARWICK J. MCKIBBIN & PETER J. WILCOXEN, CLIMATE CHANGE POLICY AFTER KYOTO: BLUEPRINT FOR A REALISTIC APPROACH 43 (2002) (describing Kyoto as the “treaty that formalized the targets and timetables approach that had been taking shape since COP 1. The protocol set explicit emission targets for the thirty-nine countries listed in its Annex B, which included essentially all industrialized countries that were signatories”).

¹⁵ See BOTHE & REHBINDER, *supra* note 11, at 6-7 (describing each of the four flexible mechanisms in the Kyoto Protocol).

¹⁶ See generally Kyoto, *supra* note 13, art. 12 (establishing the Clean Development Mechanism).

¹⁷ See *id.* art. 12, ¶ 3.

¹⁸ See Christopher Carr & Flavia Rosembuj, *Flexible Mechanisms for Climate Change Compliance: Emissions Offset Purchases Under the Clean Development Mechanism*, 16 N.Y.U. ENVTL. L.J. 44, 50 (2008).

Endnotes: The World Bank Clean Technology Fund

continued on page 76

LITIGATION UPDATE

WINTER V. NRDC, INC.

by Natalie Dillree*

INTRODUCTION

On November 12, 2008, the Supreme Court vacated portions of a preliminary injunction limiting the Navy's use of mid-frequency active ("MFA") sonar in training exercises.¹ Environmental organizations argued that MFA sonar would cause injury to marine mammals.² Ultimately, the Court held that the Navy's interest in adequately training its sailors outweighed the alleged irreparable injury.³

LEGAL BACKGROUND AND ARGUMENTS

This case involves Navy MFA sonar training exercises performed in the waters off the coast of southern California ("SOCAL").⁴ The Navy's fleet faces a threat from diesel-electric submarines because they operate "almost silently" and are "extremely difficult to detect and track."⁵ To track these submarines, the Navy uses MFA sonar, "which involves emitting pulses of sound underwater. . . ." To ensure that sonar operators are "thoroughly skilled" in its use, the Navy conducts regular training exercises under "realistic conditions."⁷

At least thirty-seven species of marine mammals can be found in the SOCAL operating area.⁸ The plaintiffs assert that "MFA sonar can cause much more serious injuries to marine mammals than the Navy acknowledges, including permanent hearing loss, decompression sickness, and major behavioral disruptions."⁹ Furthermore, the plaintiffs allege that MFA sonar has been linked to "several mass strandings of marine mammals" in the area.¹⁰

Plaintiffs sued the Navy, seeking declaratory and injunctive relief.¹¹ The environmental groups asserted that the training exercises violated several federal laws, including the National Environmental Policy Act of 1969 ("NEPA").¹² Under NEPA, an environmental impact statement ("EIS") must be prepared for any "major Federal action significantly affecting the quality of the human environment."¹³ However, no EIS is required if, based on a shorter environmental assessment ("EA"), a federal agency determines that "the proposed action will not have a significant impact on the environment."¹⁴

In February 2007, the Navy prepared an EA that concluded that the SOCAL training exercise scheduled through January 2009 "would not have a significant impact on the environment"

and, because of this finding, did not prepare a full EIS.¹⁵ The Navy insisted that MFA sonar could only cause "temporary injury or disruption of behavioral patterns such as migration, feeding, surfacing and breeding."¹⁶

Based on the plaintiffs' demonstration of a "possibility of success" on their claims under NEPA and another federal law, the District Court entered a preliminary injunction prohibiting the Navy from using MFA sonar during its training exercises.¹⁷ The District Court further determined that there was "a 'near certainty' of irreparable injury to the environment, and that this injury outweighed any possible harm to the Navy."¹⁸

The Navy appealed. The Court of Appeals held that this "blanket injunction" was "overbroad" and remanded to the District Court.¹⁹ The District Court then entered a revised preliminary injunction, imposing six restrictions on the Navy's use of MFA sonar training exercises.²⁰

However, in a simultaneous development, the Council on Environmental Quality ("CEQ") allowed the Navy to adopt "alternative arrangements" because the injunction created a "significant and unreasonable risk" that Navy sailors would "not be able to train and be certified as fully mission capable."²¹ Therefore, the CEQ authorized the Navy to continue its training exercises under previously adopted mitigation measures.²²

Subsequently, the Navy moved to vacate the District Court's preliminary injunction with respect to two of the imposed conditions.²³ The District Court rejected the Navy's motion.²⁴ The Court of Appeals affirmed, holding that the preliminary injunction was appropriate because "the balance of hardships and a consideration of the public interest weighed in favor of the plaintiffs."²⁵ The Supreme Court then granted certiorari.²⁶

HOLDINGS

The Supreme Court vacated the portions of the preliminary injunction challenged by the Navy.²⁷ The Court concluded that the Ninth Circuit's "possibility" of irreparable harm standard was too lenient to warrant a preliminary injunction, stating that their "frequently reiterated standard requires plaintiffs

*Natalie Dillree is a J.D. candidate, May 2010, at American University, Washington College of Law.

seeking preliminary relief to demonstrate that irreparable injury is likely. . . .”²⁸ Furthermore, “even if plaintiffs have shown irreparable injury . . . any such injury is outweighed by the public interest and the Navy’s interest in effective, realistic training. . . .”²⁹ The Court further concluded that the “most serious possible injury” to plaintiffs would be “harm to an unknown number of the marine mammals that they study and observe.”³⁰

CONCLUSION

The Navy’s arguments challenged the government’s obligation to adhere to environmental laws.³¹ Therefore, some environmental groups feared that an unfavorable ruling would essentially excuse the government from performing studies of the effects of their actions on the environment.³² However, Chief Justice Roberts evaded such broad arguments, writing that the majority did not mean to say that military interests will always trump environmental concerns.³³ In addition to the decision’s narrow language, some protections for marine mammals are still intact, as four of the originally imposed restrictions on MFA sonar use remain.³⁴



Endnotes: Litigation Update

¹ *Winter v. NRDC*, 129 S.Ct. 365, 382 (2008).

² *Id.* at 371.

³ *Id.* at 376.

⁴ *Id.* at 370.

⁵ *Id.*

⁶ *Winter*, 129 S.Ct. at 370.

⁷ *Id.* at 371.

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Winter*, 129 S.Ct. at 372.

¹² *Id.*

¹³ *Id.*, citing 42 U.S.C. § 4332(2)(C) (2000).

¹⁴ *Id.*, citing 40 C.F.R. §§ 1508.9(a), 1508.13 (2207).

¹⁵ *Id.*

¹⁶ *Winter*, 129 S.Ct. at 371.

¹⁷ *Id.* at 372.

¹⁸ *Id.* at 373.

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.* at 374.

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* at 375.

²⁹ *Id.* at 376.

³⁰ *Id.* at 378.

³¹ Jerry Markon & Juliet Eilperin, *Justices Revoke Limits On Navy Use of Sonar*, THE WASHINGTON POST, Nov. 13, 2008, at A04, available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/11/12/AR2008111201058.html> (last visited Feb. 26, 2009).

³² *Id.*

³³ *Id.*

³⁴ *Id.*

BOOK REVIEW

SIX DEGREES: OUR FUTURE ON A HOTTER PLANET

by Mark Lynas

Reviewed by Matthew Padilla*

Mark Lynas, writing for National Geographic, pens his warning as if writing a travel book. The book begins with a quote from Dante, warning the reader that the journey they are embarking on is akin to a visit to the depths, where sinners atone for their misdeeds on earth. The sinners in this story are the emitters of carbon, however, and those who will atone are likely not yet born.

While Dante's allegorical journey takes the reader to successive depths, Lynas' work takes the reader on a journey of degrees: both authors lead the reader through a series of frightening and potentially catastrophic stages. Broken into six parts, Lynas explains what may occur as global temperatures increase and the climate changes. Lynas distinguishes between the impacts of an average temperature increase and a mere seasonal rise in temperature, emphasizing the dire consequences of the former. While a difference of a few degrees on a day-to-day basis is hardly noticeable, an average annual increase of only a few degrees will affect global air and water circulation causing dramatic and dangerous impacts.

As Lynas effectively conveys, the extent to which one or two degrees can affect the planet is alarming. Beginning with a rise of one degree, which is already occurring, Lynas takes the reader to places where climate impacts are already starkly apparent. He travels from the highest peaks, where glaciers once covered mountains but now are quickly receding, to the depths of the sea, where coral bleaching is now afflicting Australia's Great Barrier Reef.

Along with concrete examples, Lynas uses scientific models to demonstrate that multiple species face eminent extinction as temperatures rise. For most species, climate change means that habitats will shift towards the poles and to higher elevations. However, migration is not always an option; some species cannot move to new locations fast enough to beat the rising heat. Other species, such as polar bears, will have no place to go. The overall effect described by the author is a great extinction of plant and animal life, caused primarily by human activity.

Lynas makes it clear that it is not certain whether even humans will be able to adapt fast enough to avert disaster. A mere two to three degree rise in temperature will lead to wider

desertification, water shortages, crop failures, and increased risk of disease which may force human populations to migrate. Although wealthy, developed nations are better situated to adapt to the impacts of climate change than poor, developing countries, we will all feel the impacts of each degree. Using the fall of the Maya as an example, Lynas warns that even the heartiest civilizations may succumb to the adverse impacts of climate change.

Serious students of climate change may not find much new information in this book, which covers many of the same topics Al Gore described in *An Inconvenient Truth* and *Earth in the Balance*. Without going into the more complicated aspects of climate science, Lynas describes global warming in simple terms enabling him to reach an audience that may otherwise shy away from a scientific text. *Six Degrees* is probably most similar to Tim Flannery's *The Weather Makers*. However, where Flannery's book arguably offers more hopeful solutions, *Six Degrees* views those solutions through a skeptical lens. There is good reason for skepticism. As the book outlines the realities of a hotter world, it becomes clearer and clearer that our future planet is likely to be drier and more desolate despite human efforts to reduce carbon emissions.

At the end of Lynas' journey, the author brings us back to Dante's expedition and questions the potential for a solution to this harrowing problem by looking at science and psychology. The last chapter is dedicated to the possibility that we can solve the climate change crisis, but also clearly outlines the pitfalls and challenges that interfere with eliminating a carbon-fueled lifestyle. Echoing a line from Al Gore's award-winning documentary, Lynas states that there "is nothing so difficult as trying to get a man to understand something when his salary depends on his not understanding it." Despite the grim outlook presented by *Six Degrees*, the book is recommended for all readers concerned about climate change. Lynas' perspective is sure to send chills down the spine of a casual reader on an unseasonably warm winter day.



* Matthew Padilla is a J.D. candidate, May 2010, at American University, Washington College of Law.

ENDNOTES: AN OVERVIEW OF THIS ISSUE *continued from page 2*

¹ UNEP Year Book 2009, at 21, available at http://www.unep.org/publications/UNEP-eBooks/UNEP_YearBook2009_ebook.pdf.

² *Id.*

³ See generally, United Nations Framework Convention on Climate Change website, available at <http://unfccc.int/2860.php>.

⁴ *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007).

ENDNOTES: RESOLVING THE CLIMATE WARS *continued from page 14*

¹ STEPHEN SEIDEL & DALE L. KEYES, ENVTL. PROT. AGENCY, CAN WE DELAY GREENHOUSE WARMING? (1983).

² President George H.W. Bush, Speech at Erie Metropark, Michigan (Aug. 31, 1988).

³ Letter from William Reilly (on file with author).

⁴ NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW (Cambridge University Press 2007).

⁵ WILLIAM NORDHAUS, A QUESTION OF BALANCE (Yale University Press 2008).

⁶ President George W. Bush, Campaign Speech in Saginaw, Michigan (Sept. 29, 2000).

⁷ G8 Environment Ministers Communiqué ¶ 7, Trieste, Italy, Mar. 2–4, 2001, available at <http://www.g7.utoronto.ca/environment/2001trieste/communiqu.html> (last visited Feb. 17, 2009).

⁸ BARTON GELLMAN, ANGLER: THE CHENEY VICE PRESIDENCY 84 (Penguin Press, 2008).

⁹ *Id.*

¹⁰ *Id.* at 84.

¹¹ Press Release, Office of the Press Secretary, Text of a Letter from the President to Senators Hagel, Helms, Craig, and Roberts (Mar. 13, 2001), available at <http://georgewbush-whitehouse.archives.gov/news/releases/2001/03/20010314.html> (last visited Feb. 17, 2009).

¹² ROBERT DRAPER, DEAD CERTAIN: THE PRESIDENCY OF GEORGE W. BUSH 122 (Free Press, 2007).

¹³ *Id.* at 123.

¹⁴ COUNCIL OF ECON. ADVISERS, ECONOMIC REPORT OF THE PRESIDENT 215 (2002), available at http://www.gpoaccess.gov/USbudget/fy03/pdf/2002_erp.pdf (last visited Feb. 17, 2009).

¹⁵ *Id.* at 245.

¹⁶ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2001: SYNTHESIS REPORT 14 (2001) available at <http://www.ipcc.ch/pdf/climate-changes-2001/synthesis-spm/synthesis-spm-en.pdf> (last visited Feb. 17, 2009).

¹⁷ World Meteorological Organization, Report Of The International Conference on the Assessment of the Role of Carbon Dioxide and other Greenhouse Gases in Climate Variations and Associated Impacts, Villach, Austria, Oct. 9–15, 1985.

¹⁸ Alan D. Hecht & Dennis Tirpak, *Framework Agreement on Climate Change: A Scientific and Policy History*, 29 CLIMATIC CHANGE 371 (1995).

¹⁹ Michael E. Mann et al., *Global-scale Temperature Patterns and Climate Forcing over the Past Six Centuries*, 392 NATURE 779, 783 (1998).

²⁰ *Climate history, science, and health effects of mercury emissions: Hearing before the S. Comm. on Env't and Pub. Works* 108th Cong. (2003) (statement of Michael Mann, Professor, University of Virginia).

²¹ Willie Soon & Sallie Baliunas, *Proxy Climatic and Environmental Changes over the Past 1000 years*, 23 CLIMATE RESEARCH 89, 103 (2003), available at <http://www.int-res.com/articles/cr2003/23/c023p089.pdf> (last visited Feb. 17, 2009).

²² Letter from Joe Barton, Chairman, House Committee on Energy and Commerce, to Michael Mann, Assistant Professor, University of Virginia 2-3 (June 23, 2005), available at http://republicans.energycommerce.house.gov/108/Letters/062305_Mann.pdf (last visited Feb. 17, 2009).

²³ IPCC, *supra* note 16, at 31.

²⁴ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 6 (2007) available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf (last visited Feb. 17, 2009).

²⁵ Pub. L. No. 106-554, §515 (2001).

²⁶ Complaint at 1, *Competitive Enter. Inst. v. Bush*, No. 03-1670 (D.D.C. filed Aug. 6, 2003) (dismissed).

²⁷ Catherine M. Cooney, *Lawsuit Challenges Data in National Climate Report* 38 ENVTL. SCI. & TECH. 15A (2004).

²⁸ Pub. L. No. 101-606, 104 Stat. 3096 (codified at 15 U.S.C. §§ 2921-2961 (1990)).

²⁹ Global Change Research Act of 1990, 15 U.S.C. §2936 (2008).

³⁰ Letter from President George W. Bush to Michael MacCracken, Climate Institute (on file with author).

³¹ U.S. DEP'T OF STATE, U.S. CLIMATE ACTION REPORT 2002, at 4 (2002).

³² Andrew C. Revkin, *U.S. Sees Problems in Climate Change*, N.Y. TIMES, June 3, 2002, available at <http://query.nytimes.com/gst/fullpage.html?res=9507E4DC133AF930A35755C0A9649C8B63&sec=&spn=&pagewanted=1> (last visited Feb. 17, 2009).

³³ Andrew C. Revkin, *U.S. Report, in Shift, Turns Focus to Greenhouse Gases*, N.Y. TIMES, Aug. 26, 2004, available at <http://query.nytimes.com/gst/fullpage.html?res=9C07E2D9133EF935A1575BC0A9629C8B63> (last visited Feb. 26, 2009).

³⁴ U.S. CLIMATE CHANGE SCIENCE PROGRAM, SCIENTIFIC ASSESSMENT OF THE EFFECTS OF GLOBAL CHANGE ON THE UNITED STATES 2 (2008), available at <http://www.climatechange.gov/Library/scientific-assessment/6-SA-FAQ-LO-RES.pdf> (last visited Feb. 17, 2009).

³⁵ Exec. Order No. 13,422, 72 Fed. Reg. 2763 (May 14, 2007).

³⁶ HOUSE COMM. ON OVERSIGHT AND GOV'T REFORM, POLITICAL INTERFERENCE WITH CLIMATE CHANGE UNDER THE BUSH ADMINISTRATION 22 (2007), available at <http://oversight.house.gov/documents/20071210101633.pdf> (last visited Feb. 17, 2009) (quoting extensive emails and hand-written documents, and summarizing case studies affecting actions on EPA, NOAA, and NASA).

³⁷ Soon & Baliunas, *supra* note 21.

³⁸ House Committee on Oversight and Government Reform, *supra* note 36, at 23.

³⁹ *Id.* at 25.

⁴⁰ *International Center for Technology Assessment v. Whitman*, No. 02-CV-2376 (D.D.C. filed Dec. 5, 2002). See also *International Center for Technology Assessment, Chronology of the Global Warming Case Against the EPA*, available at <http://www.icta.org/doc/Chronology%20Short%208-31-06.pdf> (last visited Feb. 17, 2009).

⁴¹ See *Control of Emissions From New Highway Vehicles and Engines*, 68 Fed. Reg. 52,922 (petition for rulemaking denied Sept. 8, 2003) (noting that EPA received over 50,000 comments on the petition and most comments were relatively brief expressions of support).

⁴² *Massachusetts v. EPA*, 415 F.3d 50 (D.C. Cir. 2005), *reh'g en banc denied*, 433 F.3d 66 (D.C. Cir. 2005), *rev'd*, 549 U.S. 497 (2007).

⁴³ *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560-61 (1992).

⁴⁴ See Kathryn A. Watts & Amy J. Wildermuth, *Massachusetts v. EPA: Breaking New Ground on Issues Other Than Global Warming*, 102 NW. U. L. REV. COLLOQUY 1 (2007).

⁴⁵ *Massachusetts v. EPA*, 549 U.S. 497, 499 (2007).

⁴⁶ *Id.* at 523.

⁴⁷ *Id.* at 498-501.

- ⁴⁸ *Id.* at 545 (Roberts, J. dissenting).
- ⁴⁹ *Id.* at 521.
- ⁵⁰ Exec. Order No. 13,432, 72 Fed. Reg. 27,717 (May 14, 2007).
- ⁵¹ Juliet Eilperin, *EPA Seeks Comment on Emissions Rules, Then Discredits Effort*, WASH. POST, July 12, 2008, at A04.
- ⁵² *Id.*
- ⁵³ Juliet Eilperin & R. Jeffrey Smith, *EPA Won't Act on Emission this Year*, WASH. POST, July 11, 2008, at A1.
- ⁵⁴ HOUSE COMMITTEE ON SCIENCE, UNLOCKING OUR FUTURE: TOWARD A NEW NATIONAL SCIENCE POLICY 3-4 (1998), available at <http://www.access.gpo.gov/congress/house/science/cp105-b/science105b.pdf> (last visited Feb. 17, 2009).
- ⁵⁵ See Environmental History Timeline: 1970-1980, <http://www.radford.edu/~wkovarik/envhist/9seventies.html> (last visited Feb. 17, 2009).
- ⁵⁶ THOMAS FRIEDMAN, HOT, FLAT AND CROWDED (2008).
- ⁵⁷ HART HODGES, ECONOMIC POLICY INSTITUTE, FALLING PRICES: COST OF COMPLYING WITH ENVIRONMENTAL REGULATIONS ALMOST ALWAYS LESS THAN ADVERTISED 5 (1997), available at <http://www.epinet.org/page/-/old/briefingpapers/bp69.pdf> (last visited Feb. 17, 2009).
- ⁵⁸ FRIEDMAN, *supra* note 56, at 274. ROLAND HWANG & MATT PEAK, INNOVATION AND REGULATION IN THE AUTOMOBILE SECTOR: LESSONS LEARNED AND IMPLICATIONS FOR CALIFORNIA'S CO2 STANDARDS 7 (2006), available at http://docs.nrdc.org/air/air_08030301A.pdf (last visited Feb. 17, 2009).
- ⁵⁹ Press Release, General Electric, GE Launches Ecomagination to Develop Environmental Technologies: Company-Wide Focus on Addressing Pressing Challenges (May 9, 2005), available at <http://www.genewscenter.com/Content/Detail.asp?ReleaseID=1992&NewsAreaID=2&MenuSearchCategoryID=> (last visited Feb. 17, 2009).
- ⁶⁰ DAN ESTY & ANDREW WINSTON, GREEN TO GOLD: HOW SMART COMPANIES USE ENVIRONMENTAL STRATEGY TO INNOVATE, CREATE VALUE, AND BUILD COMPETITIVE ADVANTAGE 67 (Yale University Press 2006).
- ⁶¹ Alan D. Hecht, *The Next Level of Environmental Protection: Business Strategies Government Policies converging on Sustainability*, SUSTAINABLE DEV. L. & POL'Y, Fall 2007, at 19.
- ⁶² General Electric, United States Climate Action Partnership Update, http://www.ge.com/citizenship/priorities_engagement/energy_and_climate_change_co_action.jsp (last visited Feb. 15, 2009). See also U.S. Climate Partnership, <http://www.us-cap.org> (last visited Feb. 15, 2009).
- ⁶³ U.S. Climate Action Partnership, About USCAP, <http://www.us-cap.org/about/index.asp> (last visited Feb. 17, 2009).
- ⁶⁴ See Carbon Monitoring for Action, <http://www.carma.org> (last visited Feb. 17, 2009).
- ⁶⁵ *Id.*
- ⁶⁶ *Id.*
- ⁶⁷ PEW CENTER ON GLOBAL CLIMATE CHANGE, LEARNING FROM STATE ACTION ON CLIMATE CHANGE 5 (2007), available at http://www.pewclimate.org/docUploads/States%20Brief%20Template%20_March%202007_jgph.pdf (last visited Feb. 17, 2009).
- ⁶⁸ See generally *id.*
- ⁶⁹ See Pew Center on Global Climate Change, Renewable Portfolio Standards, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last visited Feb. 17, 2009).
- ⁷⁰ Press Release, TXU Corp., TXU to Set New Direction As Private Company: Public Benefits Include Price Cuts, Price Protection, Investments in Alternative Energy and Stronger Environmental Policies (Feb. 26, 2007).
- ⁷¹ Sunflower Electric Power Corp and industry groups are determined to overturn the denial of the \$3.6 billion power plant project; some of these groups have been threatening to dismantle the state department of health and environment.
- ⁷² Letter from Stephen Johnson, Env't Prot. Agency Adm'r, to Gov. Arnold Schwarzenegger (Dec. 19, 2007), available at <http://www.epa.gov/otaq/climate/20071219-slj.pdf> (last visited Feb. 17, 2009).
- ⁷³ PRESIDENTIAL CLIMATE ACTION PROJECT, THE PRESIDENTIAL CLIMATE ACTION PLAN 7 (2008), available at http://climateactionproject.com/docs/PCAP_08_13_08.pdf (last visited Feb 17, 2009).
- ⁷⁴ C40 Cities – Climate Leadership Group, <http://www.c40cities.org/> (last visited Feb 17, 2009) (By 2007 more than 700 cities have pledged to cut their greenhouse gas by at least 7 percent by 2012).
- ⁷⁵ BARRY C. RABE, PEW CENTER ON GLOBAL CLIMATE CHANGE, RACE TO THE TOP: THE EXPANDING ROLE OF U.S. STATE RENEWABLE PORTFOLIO STANDARDS 25 (2006), available at <http://www.pewclimate.org/docUploads/RPSReportFinal.pdf> (last visited Feb 17, 2009).
- ⁷⁶ PRESIDENTIAL CLIMATE ACTION PROJECT, THE PRESIDENTIAL CLIMATE ACTION PLAN 7 (2008), available at http://climateactionproject.com/docs/PCAP_08_13_08.pdf (last visited Feb 17, 2009).
- ⁷⁷ COMM. ON STRATEGIC ADVICE ON THE U.S. CLIMATE CHANGE SCI. PROGRAM & NAT'L RESEARCH COUNCIL, EVALUATING PROGRESS OF THE U.S. CLIMATE CHANGE SCIENCE PROGRAM: METHODS AND PRELIMINARY RESULTS (2007).
- ⁷⁸ *Id.*
- ⁷⁹ Robert Monroe, *U.S. Climate Change Science Program Making Good Progress in Documenting and Understanding Changes, but Study of Impacts on Humans and Communication With Decision Makers Lag*, UCSD NEWS CENTER, Sept. 13, 2007, <http://ucsdnews.ucsd.edu/newsrel/science/09-07USClimateChangeServiceRM-.asp> (last visited Feb 17, 2009).
- ⁸⁰ COMM. ON STRATEGIC ADVICE ON THE U.S. CLIMATE CHANGE SCI. PROGRAM & NAT'L RESEARCH COUNCIL, *supra* note 77.
- ⁸¹ Press Release, The National Academies, U.S. Climate Change Science Program Making Good Progress In Documenting and Understanding Changes, but Study of Impacts on Humans and Communication with Decision Makers Lag (Sept. 13 2007), available at <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=11934> (last visited Feb. 17, 2009).
- ⁸² Eileen Claussen, President of the Pew Center on Global Climate Change, Speech at the National Academy of Sciences Workshop on Future Priorities for the U.S. Climate Change Science Program (Oct. 17, 2007).
- ⁸³ CLIMATE SCIENCE WATCH, *Eileen Claussen: The First Thing the CCSP Needs is Strong and Independent Leadership* (Oct. 17, 2007), available at http://www.climate-science-watch.org/index.php/csw/details/claussen_nrc_ccsp/ (last visited Feb. 17, 2009).
- ⁸⁴ Env'tl. Prot. Agency, A Screening Assessment of the Potential Impacts of Climate Change on Combined Sewer Overflow (CSO) Mitigation in the Great Lakes and New England Regions (2008), <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=188306> (last visited Feb. 23, 2009).
- ⁸⁵ Daniel Schearf, *China Firm on Climate Change Policy Ahead of International Negotiations*, VOICE OF AMERICA (Oct. 29, 2008), available at <http://www.voanews.com/english/archive/2008-10/2008-10-29-voa16.cfm> (last visited Feb. 17, 2009).
- ⁸⁶ Top GDP Countries 2000-2050, http://www.photius.com/rankings/gdp_2050_projection.html (last visited Feb. 17, 2009).
- ⁸⁷ Netherlands Env't Assessment Agency, China Now No. 1 in CO2 Emissions, <http://www.pbl.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html> (last visited Feb. 17, 2009).
- ⁸⁸ JOSHUA BUSBY, COUNCIL ON FOREIGN RELATIONS, CLIMATE CHANGE AND NATIONAL SECURITY: AN AGENDA FOR ACTION (2007).
- ⁸⁹ Elizabeth Economy & Kenneth Lieberthal, *Scorched Earth, Will Environmental Risks in China Overwhelm its Opportunities?*, HARVARD BUSINESS REVIEW, June 2007, at 89.
- ⁹⁰ *Id.*
- ⁹¹ *Id.*
- ⁹² BUSBY, *supra* note 88.
- ⁹³ Jonathan Wiener, *Climate Change Policy and Policy Change in China*, 55 UCLA L. REV. 1805, 1805-1926 (2008).
- ⁹⁴ *Id.* at 1805-26.
- ⁹⁵ Methane to Markets, China, <http://www.methanetomarkets.org/partners/country/china.htm> (last visited Feb. 23, 2009).
- ⁹⁶ Zijun Li, *Acid Rain Affects One-Third of China; Main Pollutants Are Sulfur Dioxide and Particulate Matter*, WORLDWATCH INSTITUTE, Aug. 31, 2006, <http://www.worldwatch.org/node/4496> (last visited Feb. 23, 2009).
- ⁹⁷ Wiener, *supra* note 93, at 1816.

ENDNOTES: POZNAŃ CLIMATE CONFERENCE 2008 *continued from page 15*

- ¹ EARTH NEGOTIATIONS BULLETIN, SUMMARY OF THE FOURTEENTH CONFERENCE OF PARTIES TO THE UN FRAMEWORK CONVENTION ON CLIMATE CHANGE 1 (2008), available at <http://www.iisd.ca/download/pdf/enb12395e.pdf> (last visited Feb. 12, 2009).
- ² See Richard Black, *Mood Mixed as Climate Summit Ends*, BBC, Dec. 13, 2008, available at <http://news.bbc.co.uk/1/hi/sci/tech/7781022.stm> (last visited Feb. 11, 2009).
- ³ See EARTH NEGOTIATIONS BULLETIN, *supra* note 1, at 1.
- ⁴ Compare ENERGY RESEARCH CENTRE OF THE NETHERLANDS, POZNAŃ: DISAPPOINTMENT OR SUCCESS? (2008), available at <http://www.ecn.nl/en/news/item/article/284/1/> (last visited Feb. 13, 2008) (stating that Poznań provided a healthy exchange of information between parties that lays a foundation for progress in future negotiations), with Oxfam International, Oxfam Analysis of the Poznań Conference Outcomes, <http://www.oxfam.org/pressroom/pressrelease/2008-12-13/oxfam-analysis-Poznan-conference-outcomes> (last visited Feb. 13, 2008) (stating that developed countries failed to submit proposals on emissions reductions, finance and technology at Poznań).
- ⁵ See Black, *supra* note 2.
- ⁶ See Black, *supra* note 2; see also UNFCCC, Adaption Fund, http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php (last visited Feb. 13, 2008).
- ⁷ See Black, *supra* note 2.
- ⁸ *Id.*
- ⁹ *Id.*
- ¹⁰ *Id.*

- ¹¹ European Union @ United Nations, UN Climate Change Conference: EU Commission Welcomes Poznań Outcome, http://www.europa-eu-un.org/articles/en/article_8368_en.htm (last visited Feb. 12, 2009).
- ¹² Press Release, United Nations, United Nations Climate Change Conference – Poznań, Poland Lays Foundation for Copenhagen Deal (Dec. 12, 2008), available at http://unfccc.int/files/press/news_room/press_releases_and_advisories/application/pdf/081213_pressrel_cop14.pdf (last visited Feb. 13, 2009).
- ¹³ See generally EURACTIV, *Poor Countries Need Billions to Cut Emissions* (Dec. 6, 2007), available at <http://www.euractiv.com/en/climate-change/poor-countries-need-billions-cut-emissions/article-168903> (last visited Feb. 22, 2009).
- ¹⁴ See ENVTL. NEWS SERVICE, *Climate Hopes and Fears at Poznań*, Dec. 5, 2008, available at <http://www.ens-newswire.com/ens/dec2008/2008-12-05-01.asp> (last visited Feb. 22, 2008).
- ¹⁵ CARBON POSITIVE, *Poznań Climate Talks Drift to a Close* (Dec. 15, 2008), available at <http://www.carbonpositive.net/viewarticle.aspx?articleID=1341> (last visited Feb. 22, 2009).
- ¹⁶ Bryan Walsh, *All Talk, Little Action, at UN Climate-Change Summit*, TIME, Dec. 13, 2008, available at <http://www.time.com/time/health/article/0,8599,1866291,00.html> (last visited Feb. 11, 2009).
- ¹⁷ *Id.*
- ¹⁸ Elisabeth Rosenthal, *U.S. Shift on Climate Lifts Mood at Conference in Poznań*, INT'L HERALD TRIBUNE, Dec. 11, 2008, available at <http://www.iht.com/articles/2008/12/11/healthscience/climate.php> (last visited Feb. 15, 2009).

ENDNOTES: ASSESSING THE CHALLENGES OF GEOLOGIC CARBON CAPTURE AND SEQUESTRATION *continued from page 21*

- ³⁰ See, e.g., *Tate v. United Fuel Gas Co.*, 71 S.E.2d 65 (1952); see also *Dept. of Transp. v. Goike*, 560 N.W.2d 365, 366 (1996) (holding that “a surface owner possesses the right to the storage space created after the evacuation of underground minerals or gas. . . . Only the surface owner . . . possesses the right to use the cavern for storage of foreign minerals or gas. . . .”).
- ³¹ Two caveats to relying on these decisions are that first, it is not clear if gas storage law is apposite to GCCS, and second, in each case, the language of the mineral rights grant impacted the respective court’s analysis.
- ³² See generally Mark Anthony de Figueiredo, *The Liability of Carbon Dioxide Storage* (Jan. 12, 2007) (Ph.D. dissertation, MIT), available at http://sequestration.mit.edu/pdf/Mark_de_Figueiredo_PhD_Dissertation.pdf.
- ³³ See generally *id.*
- ³⁴ If CO₂ migrated into groundwater and was deemed a contaminant, liability might arise for remediation of the groundwater by way of private litigation, the Comprehensive Environmental Response, Compensation, and Liability Act, the Clean Water Act (“CWA”), the California Porter-Cologne Water Quality Control Act, or the California state superfund statute. Specific facts are necessary to quantify potential costs.
- ³⁵ Because CCS law is undeveloped, this issue poses complex questions with no clear answers, as at least one scenario relates to alleged surface releases with claims of destruction of surface vegetation. See Michael L. Sorey et al., U.S. Geological Survey, *Invisible CO₂ Gas Killing Trees at Mammoth Mountain, California* (June 20, 2001), available at <http://pubs.usgs.gov/fs/fs172-96> (last visited Jan. 29, 2009). More difficult questions exist regarding wholesale failure of GCCS, including impact on the use and trading of emissions credits.
- ³⁶ *Cassinus v. Union Oil Co. of Cal.*, 18 Cal. Rptr. 2d 574, 578; *Miller v. Nat’l Broad. Co.*, 232 Cal. Rptr. 668, 677 (Ct. App. 1986); 5 Witkin, Summary of Cal. Law Torts § 693(1)(a) (10th ed. 2005).
- ³⁷ *Starrh & Starrh Cotton Growers v. Aera Energy LLC*, 63 Cal. Rptr. 3d 165, 170-71 (Ct. App. 2007); *Beck Dev. Co. v. S. Pac. Transp. Co.*, 52 Cal. Rptr. 2d 518, 557-60 (Ct. App. 1996).
- ³⁸ *Starrh*, 63 Cal. Rptr. at 170-71.
- ³⁹ *Cassinus*, 18 Cal. Rptr. 2d at 578.
- ⁴⁰ CAL. CIV. CODE § 3333 (1872); *Cassinus*, 18 Cal. Rptr. 2d at 582.
- ⁴¹ *Rankin v. DeBare*, 271 P. 1050, 1050 (Cal. 1928).
- ⁴² *Cassinus*, 18 Cal. Rptr. 2d at 582.
- ⁴³ *Id.* at 582-83.
- ⁴⁴ CAL. CIV. CODE §§ 3480-3481 (1872).
- ⁴⁵ *Hutcherson v. Alexander*, 70 Cal. Rptr. 366, 369 (Ct. App. 1968).
- ⁴⁶ *Mangini v. Aerojet-Gen. Corp.*, 281 Cal. Rptr. 827, 840 (Ct. App. 1991); *Phillips v. City of Pasadena*, 162 P.2d 625, 626 (Cal. 1945).
- ⁴⁷ A permanent nuisance is a nuisance where “by one act a permanent injury is done, [and] damages are assessed once for all.” *Williams v. S. Pac. R.R. Co.* 89 P. 599, 599 (Cal. 1907) (quoting *Beronio v. S. Pac. R.R. Co.*, 24 P. 1093, 1094 (Cal. 1890)).
- ⁴⁸ CAL. CIV. PROC. CODE § 731 (1872).
- ⁴⁹ CAL. CIV. CODE § 3333 (1872).
- ⁵⁰ *Acadia, Cal., Ltd. v. Herbert*, 353 P.2d 294, 299 (Cal. 1960).
- ⁵¹ *Stoiber v. Honeychuck*, 162 Cal. Rptr. 194, 202 (Ct. App. 1980).
- ⁵² *Ingram v. City of Gridley*, 224 P.2d 798, 802 (Cal. Ct. App. 1950).
- ⁵³ *Spaulding v. Cameron*, 239 P.2d 625, 627-28 (Cal. 1952).
- ⁵⁴ *Rowland v. Christian*, 443 P.2d 561, 563-64 (Cal. 1968).
- ⁵⁵ CAL. CIV. CODE § 3333 (1872); 6 Witkin, Summary of Cal. Law Torts § 1548 (10th ed. 2005).
- ⁵⁶ *Parsons v. Crown Disposal Co.*, 936 P.2d 70, 80 (Cal. 1997).
- ⁵⁷ *Id.*
- ⁵⁸ 6 Witkin, Summary of Cal. Law Torts § 1414 (10th ed. 2005). In determining whether an activity is a UHA, California courts consider: (a) the “degree of risk of some harm to the person, land or chattels of others;” (b) likelihood that resulting harm will be great; (c) inability to eliminate the risk through reasonable care; (d) commonness of the activity; (e) inappropriateness of location; and (f) value to the community weighed against the danger. *SKF Farms v. Superior Ct.*, 200 Cal. Rptr. 497, 499 (Ct. App. 1984) (citing RESTATEMENT (SECOND) OF TORTS § 520).

⁵⁹ 6 Witkin, Summary of Cal. Law Torts § 1414 (10th ed. 2005).

⁶⁰ *Goodwin v. Reilley*, 221 Cal. Rptr. 374, 376 (Ct. App. 1985).

⁶¹ *Travelers Indem. Co. of Ill. v. City of Redondo Beach*, 34 Cal. Rptr. 2d 337, 344 (Ct. App. 1994).

⁶² RESTATEMENT (SECOND) OF TORTS § 519 (1979) (stating that a person that carries on an abnormally dangerous activity is subject to strict liability for harm caused by that activity).

⁶³ *Cassinovs v. Union Oil Co. of Cal.*, 18 Cal. Rptr. 2d 574, 584.

⁶⁴ *Id.* In reaching this conclusion, the *Cassinovs* court considered two similar Oklahoma cases. In those cases, waste water migrated into space devoid of oil or gas, causing the courts to find no damages. See *W. Edmond Salt Water Disposal Ass'n v. Rosecrans*, 226 P.2d 965, 969 (Okla. 1950) (stating that "if . . . disposal of salt water is forbidden unless oil producers first obtain the consent of all persons under whose lands it may migrate . . . , underground disposal would be practically prohibited); *Sunray Oil Co. v. Cortez Oil Co.*, 112 P.2d 792, 794-96 (Okla. 1941).

⁶⁵ In *Chance*, defendant BP injected waste water containing dissolved salts and other organics, into saline pore space 2,500 feet below the surface using deep well technology. 670 N.E.2d 985, 986-87 (Ohio 1996). Plaintiffs brought a class action for subsurface trespass, nuisance, negligence, ultrahazardous activity, fraud, and negligent infliction of emotional distress, alleging extensive migration. See *id.* at 987-89. In affirming the trial court's finding that no damages existed for trespass, the Ohio Supreme Court held that plaintiffs failed to "to prove some physical damages or interference with use proximately caused by the deepwells . . . [such] that the injectate interfered with the reasonable and foreseeable use of their properties." *Id.* at 993. In addition, because of the number of variables in determining the existence and extent of migration, including the permeability, porosity, and thickness of the injection strata, the diffusion of the waste into the saline, and the degradation of the substances over time, plaintiffs could not prove a property invasion as a factual matter. *Id.* at 994.

⁶⁶ See, e.g., Elizabeth J. Wilson & Mark A. de Figueiredo, *Geologic Carbon Dioxide Sequestration: An Analysis of Subsurface Property Law*, 36 ENVTL. LAW REP. 10114 (2006). See generally Moore, *supra* note 8.

⁶⁷ 42 U.S.C. §§ 300f-j (1996).

⁶⁸ Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells, 73 Fed. Reg. 43,492 (July 25, 2008) (to be codified at 40 C.F.R. pts. 144 & 146).

⁶⁹ *Id.* The proposed measures include mapping nearby underground drinking water and ensuring injection, confinement, and containment zones; periodic review, modification and corrective action; deep-well construction procedures accounting for nature of CO₂; testing and monitoring of groundwater quality and CO₂ plume; 50-year post-injection site care and closure plans; and demonstrated financial assurances.

⁷⁰ Statutes such as the CWA, the Resource Conservation and Recovery Act, and the Clean Air Act contain permit shield language, which protect permittees from certain types of liability. For example, CWA Section 402(k) states that "[c]ompliance with a permit issued pursuant to this section shall be deemed [to be] compliance." 33 U.S.C.A. § 1342(k) (West 2008). If a permit holder discharges pollutants in compliance with its permit, it will be shielded from CWA civil or criminal liability. Several courts have addressed the scope of the permit shield. See generally, e.g., *Piney Run Pres. Ass'n v. County Comm'rs of Carroll County, Md.*, 268 F.3d 255 (4th Cir. 2001); see also *Atl. States Legal Found., Inc. v. Eastman Kodak Co.*, 12 F.3d 353, 357 (2nd Cir. 1993).

⁷¹ See generally, e.g., *Piney Run Pres. Ass'n*, 268 F.3d 255; see also *Chance v. BP Chems., Inc.*, 670 N.E.2d 985, 986-87 (Ohio 1996).

⁷² See Letter from Cynthia C. Dougherty, Director, Office of Ground Water and Drinking Water, and Brian McLean, Director, Office of Atmospheric Programs, to Water Management Division Directors, Air Division Directors, & EPA Regions I to X (Mar. 1, 2007), available at http://www.epa.gov/safewater/uic/pdfs/guide_uic_carbonsequestration_final-03-07.pdf (last visited Jan. 2, 2009).

⁷³ The possibility of classification of CO₂ as a pollutant under the Clean Air Act or any other statute should be irrelevant to the permitting process itself, as compliance with a SDWA permit is a distinct issue.

⁷⁴ For example, Greenpeace has made its opposition to GCCS clear. See generally EMILY ROCHON ET AL., GREENPEACE INT'L, FALSE HOPE: WHY CARBON CAPTURE AND STORAGE WON'T SAVE THE CLIMATE (2008), available at <http://www.greenpeace.org/usa/press-center/reports/4/false-hope-why-carbon-capture> (last visited Feb. 21, 2009).

⁷⁵ See generally CAL. CONST. art. XI.

⁷⁶ Vitaly V. Adushkin et al., *Seismicity in the Oil Field*, OILFIELD REV. (Summer 2000), available at http://www.slb.com/media/services/resources/oilfieldreview/ors00/sum00/p2_17.pdf.

⁷⁷ H.R. 6049, 110th Cong. (2008).

⁷⁸ CAL. PUB. RES. CODE § 3261 (2006); CAL. PUB. RES. CODE § 3251 (2001); CAL. PUB. RES. CODE § 3862 (2001).

⁷⁹ Three levels of coverage exist: First, nuclear plant operators must maintain individual insurance at mandated levels; second, each operator contributes up to the industry statutory cap; and third, the federal treasury provides coverage beyond the sum of the individual and industry combined levels. 42 U.S.C.A. § 2210 (West 2006).

⁸⁰ 42 U.S.C.A. § 4001 (West 2006).

⁸¹ See, e.g., TASK FORCE, *supra* note 28.

⁸² See, e.g., 15 U.S.C.A. § 717f (West 2009).

ENDNOTES: HUMAN RIGHTS AND CLIMATE CHANGE *continued from page 22*

⁵ See INT'L COUNCIL ON HUMAN RIGHTS POLICY, CLIMATE CHANGE AND HUMAN RIGHTS: A ROUGH GUIDE 13 (2008) [hereinafter ROUGH GUIDE], available at http://www2.ohchr.org/english/issues/climatechange/docs/submissions/136_report.pdf (last visited Feb. 17, 2009).

⁶ See Sara C. Aminzadeh, Note, *A Moral Imperative: The Human Rights Implications of Climate Change*, 30 HASTING INT'L & COMP. L. REV. 231, 258-59 (2007).

⁷ INT'L COUNCIL ON HUMAN RIGHTS POLICY, SUBMISSION TO THE OFFICER OF THE HIGH COMM'R FOR HUMAN RIGHTS IN REGARD TO HUMAN RIGHTS COUNCIL RESOLUTION 7/23 2, available at <http://www2.ohchr.org/english/issues/climatechange/docs/submissions/1CHRSubmission.pdf>.

⁸ See ROUGH GUIDE, *supra* note 5, at 59.

⁹ See *id.* at 85.

¹⁰ See KATE RAWORTH ET AL., OXFAM, CLIMATE WRONGS AND HUMAN RIGHTS: PUTTING PEOPLE AT THE HEART OF CLIMATE CHANGE POLICY 20 (2008), available at <http://www.oxfam.org/files/bp117-climate-wrongs-and-human-rights-0809.pdf> (last visited Feb. 17, 2009) (estimating the annual cost of adaptation in all developing countries to be \$50 billion).

¹¹ See UNITED NATIONS DEVELOPMENT PROGRAM, FIGHTING CLIMATE CHANGE: HUMAN SOLIDARITY IN A DIVIDED WORLD 192 (2007/2008), available at http://hdr.undp.org/en/media/hdr_20072008_en_complete.pdf (last visited Feb. 17, 2009).

¹² See ROUGH GUIDE, *supra* note 5, at 7.

¹³ See *id.* at 7 n.15.

¹⁴ See Celeste Hicks, *Chad Charcoal Ban Enflames Public*, BBC NEWS, Jan. 27, 2009, <http://news.bbc.co.uk/2/hi/africa/7853250.stm> (last visited Feb. 14, 2009) (estimating that more than 60% of Chad's natural tree cover has been cut for the production of charcoal).

¹⁵ See ROUGH GUIDE, *supra* note 5, at 19.

¹⁶ See *id.* at 76.

¹⁷ See *id.* at 52.

¹⁸ *Cf. id.* at 52 (noting criticism levied at donor countries for attempting to avoid a participatory process that includes developing countries).

¹⁹ See *id.* at 76.

¹⁴ Most Australian cases to date have focused on reviewing Government decisions to approve coal mines or coal-fired electricity generators. The first case to raise such issues was *Greenpeace Austl. Ltd. v. Redbank Power Co. Pty. Ltd.* (1994) 84 L.G.E.R.A. 143 (imposing conditions upon a coal-fired power station in NSW requiring it to mitigate the effects of greenhouse gas emissions by the planting of sinks, the limitation of fuel sources for the station to tailings from particular mines, and the monitoring of and reporting on stack emissions). See also *Austl. Conservation Found. v. La Trobe City Council* (2006) [2006] A.L.M.D. 6142; *Wildlife Pres. Soc’y of Queensl. Proserpine/Whitsunday Branch Inc. v. Minister for the Env’t & Heritage* (2006) 232 A.L.R. 510; *Gray v. Minister for Planning* (2006) 152 L.G.E.R.A. 258; *Anvil Hill Project Watch Ass’n Inc. v. Minister for the Env’t and Water Res.* [2007] F.C.A. 1480; and *Re: Xstrata Coal Queensl. Pty. Ltd. & Ors* [2007] Q.L.R.T. 33 (using merits review to object to a mining lease before the Land and Resources Tribunal).

¹⁵ See generally Donna Green et al., *Will climate change force some Torres Strait Islanders to be amongst the first ‘internally displaced’ Australians?* (forthcoming 2009).

¹⁶ See MICHAEL DUNLOP & PETER R. BROWN, AUSTRALIA DEPARTMENT OF CLIMATE CHANGE, IMPLICATIONS OF CLIMATE CHANGE FOR AUSTRALIA’S NATIONAL RESERVE SYSTEM 68 (2008) [hereinafter SHARING KNOWLEDGE – TORRES STRAIT ISLANDS], available at <http://www.climatechange.gov.au/impacts/publications/pubs/nrs-report.pdf> (last visited Feb. 6, 2009); see also Torres Strait Islands [map], Sharingknowledge Project, <http://sharingknowledge.net.au/> (last visited Feb. 20, 2009).

¹⁷ SHARING KNOWLEDGE – TORRES STRAIT ISLANDS, *supra* note 16.

¹⁸ T.P. Hughes et al., *Climate Change, Human Impacts, and the Resilience of Coral Reefs*, SCIENCE, Aug. 15, 2003, at 929.

¹⁹ Nathaniel L. Bindoff et al., *Observations: Oceanic Climate Change and Sea Level*, in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS (S. Solomon et al. eds., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter5.pdf> (last visited Jan. 28, 2009).

²⁰ Lisa Alexander & Julie Arblaster, *Assessing Trends in Observed and Modelled Climate Extremes Over Australia in Relation to Future Projections*, 28 INT’L J. CLIMATOLOGY (2008), abstract available at <http://www3.interscience.wiley.com/journal/120835621/abstract?CRETRY=1&SRETRY=0> (last visited Feb. 6, 2009).

²¹ SHARING KNOWLEDGE – TORRES STRAIT ISLANDS, *supra* note 16.

²² PUBLIC HEALTH SERVICES AND HEALTH INFORMATION CENTRE, HEALTH DETERMINATIONS: TORRES STRAIT AND NORTHERN PENINSULA AREA HEALTH SERVICE DISTRICT 11 fig. TO 6.7 (2004), available at http://www.health.qld.gov.au/hdq/documents/22418_6_nz_tore.pdf (last visited Jan. 30, 2009); Bill Arthur, *Location and Socioeconomic Status: Torres Strait Islanders* (Ctr. for Aboriginal Econ. Policy Research, The Austl. Nat’l Univ., Discussion Paper No. 199/2000, 1996), available at http://www.anu.edu.au/caepr/Publications/DP/2000_DP199.pdf (last visited Feb. 6, 2009).

²³ SHARING KNOWLEDGE – TORRES STRAIT ISLANDS, *supra* note 16.

²⁴ *Id.*

²⁵ See generally DUNLOP & BROWN, *supra* note 16, at 52-56.

²⁶ *Id.*

²⁷ DONNA GREEN, COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION, HOW MIGHT CLIMATE CHANGE AFFECT CULTURE IN THE TORRES STRAIT? 13 (2006), available at www.cmar.csiro.au/e-print/open/greendl_2006a.pdf (last visited Feb. 15, 2009).

²⁸ *Id.*

²⁹ Native Title Act, 1993, § 3(a) (Austl.).

³⁰ Mabo, *supra* note 11, at 100.

³¹ Determinations include Badu & Moa People #2, Badu Islanders #1, Buru & Warul Kawa, Dauan People, Erubam Le (Darnley Islanders) #1, Garboi, Gebara Islanders #1, Kaurareg People (Murulag #1), Kaurareg People (Mipa, Tarilag, Yeta, Damaralag), Kaurareg People (Murulag #2), Kaurareg People (Ngurupai), Kaurareg People (Zuna), Kulkalgal People, Mabo, Mabuiag People, Masig People and Damuth People, Meriam People, Moa Island, Mualgal People #2,

People of Boigu Island #2, Porumalgal Poruma People, Saibai Island, Ugar (Stephens Islanders) #1, Warraber People, Warraberalgal, Porumalgal and Iama Peoples, Yam Islanders/Tudulaig People. See National Native Title Tribunal website, <http://www.nntt.gov.au/Pages/default.aspx> (last visited Feb. 6, 2009).

³² *Id.*

³³ See North Australian Indigenous Land and Sea Management Alliance, *Kuku Yalanji Agreements: Signed and Sealed*, KANTRI LAIF, 2007, available at http://www.nailsma.org.au/publications/kantri_laif_issue_3_2007.html?tid=427709 (last visited Feb. 12, 2008).

³⁴ Northern Territory of Australia v. Arnhem Land Aboriginal Land Trust (2008) 82 A.L.J.R. 1099 (Austl.).

³⁵ See Native Title Act, 1993, §§ 17, 20, 22G, 22L, 23J, 50, 51, 51A (Austl.).

³⁶ *Id.* at § 13(1).

³⁷ Bryan Keon-Cohen, *Compensation and Compulsory Acquisition Under the Native Title Act 1993*, 28(1) MONASH UNIVERSITY L. REV. 17, 24 (2002).

³⁸ See IPCC, *Human Settlements, Energy, and Industry: State of Knowledge Regarding Climate Change Impacts on Human Populations*, in CLIMATE CHANGE 2001: IMPACTS, ADAPTATION AND VULNERABILITY 388 (2001), available at http://www.grida.no/climate/ipcc_tar/wg2/index.htm. See also Mark Byrne & Marta Iljadica, *There Goes the Neighbourhood!: Human Rights and Climate Law*, 12 UNIYA OCCASIONAL PAPER (2007), available at http://www.uniya.org/talks/byrne_may07-op1.html (last visited Jan. 29, 2009).

³⁹ See Byrne & Iljadica, *supra* note 38.

⁴⁰ SHEILA WATT-CLOUTIER, INUIT CIRCUMPOLAR CONFERENCE, 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 (2005) [hereinafter INUIT PETITION], available at http://www.earthjustice.org/library/legal_docs/petition-to-the-inter-american-commission-on-human-rights-on-behalf-of-the-inuit-circumpolar-conference.pdf (last visited Jan. 29, 2009).

⁴¹ See generally American Declaration of the Rights and Duties of Man, April 1948, OAS Res. XXX, reprinted in SECRETARIAT OF THE INTER-AMERICAN COURT OF HUMAN RIGHTS, BASIC DOCUMENTS PERTAINING TO HUMAN RIGHTS IN THE INTER-AMERICAN SYSTEM 5 (2003), available at <http://www.corteidh.or.cr/docs/libros/Basingl01.pdf> (last visited Jan. 29, 2009).

⁴² See generally International Covenant on Civil and Political Rights, December 16, 1966, 999 U.N.T.S 171 [hereinafter ICCPR].

⁴³ See International Covenant on Economic, Social, and Cultural Rights, Dec. 16, 1966, 993 U.N.T.S 3 [hereinafter ICESCR].

⁴⁴ INUIT PETITION, *supra* note 40, at 5-6.

⁴⁵ Michael Gerrard, *Survey of Climate Change Litigation*, 238(63) N.Y. L. J. 1 (2007), available at http://www.nycbar.org/mp3/ClimateChangeLitigationNew_Y.pdf (last visited Jan. 30, 2009).

⁴⁶ Australia acceded to the Optional Protocol to the ICCPR on September 25, 1991 and the Protocol came into force for Australia on December 25, 1991, ICCPR, *supra* note 42.

⁴⁷ Meinhard Doelle, *Climate Change and Human Rights: The Role of International Human Rights in Motivating States to Take Climate Change Seriously*, 1 MACQUARIE J. INT’L & COMP. ENVTL. L. 179, 186 (2004), available at http://www.law.mq.edu.au/html/MqJICEL/vol1/vol1-2_2.pdf (last visited Jan. 29, 2009).

⁴⁸ See generally Elizabeth Evatt, *Reflecting on the Role of International Communications in Implementing Human Rights*, 5 AUSTR. J. HUM. RTS. 20 (1999), available at <http://www.austlii.edu.au/au/journals/AJHR/1999/20.html> (last visited Feb. 20 2009).

⁴⁹ Doelle, *supra* note 47, at 200-205 (discussing cases that have previously recognized the link between environmental health and the right to life). See also *Gbemre v. Shell Petroleum Development Co. Nigeria*, No. FHC/B/DS/53/05 (Nigeria 2005), available at <http://www.climatelaw.org/cases/case-documents/nigeria/ni-shell-nov05-judgment.pdf> (last visited Jan. 30, 2009).

⁵⁰ See *Lopez Ostra v. Spain*, 46 Eur. Ct. H.R. (1994).

- ⁵¹ DONNA GREEN, COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION, CLIMATE CHANGE AND HEALTH: IMPACTS ON REMOTE INDIGENOUS COMMUNITIES IN NORTHERN AUSTRALIA 5, 8 (2006), available at http://www.cmar.csiro.au/e-print/open/greendl_2006.pdf (last visited Feb. 6, 2009).
- ⁵² The Secretary-General, *Internally Displaced Persons: Report of the Representative of the Secretary-General*, section D(1)(31) delivered to the Commission of Human Rights, UN Doc E/CN.4/1996/52/Add.2 (Dec. 5, 1995), available at <http://www.unhchr.ch/Huridocda/Huridoca.nsf/0/75550ee91a4fb1f802566cc005c2c63?Opendocument> (last visited Feb 6, 2009).
- ⁵³ *Kruger v. Commonwealth* (1997) 190 C.L.R. 1, 4 (Austl.).
- ⁵⁴ SARAH PRITCHARD & NAOMI SHARP, AUSTRALIAN HUMAN RIGHTS INFORMATION CENTRE, COMMUNICATING WITH THE HUMAN RIGHTS COMMITTEE: A GUIDE TO THE OPTIONAL PROTOCOL TO THE INTERNATIONAL COVENANT ON CIVIL AND POLITICAL RIGHTS 5.5.2.7 (1996).
- ⁵⁵ Racial Discrimination Act, 1975, § 9(1A) (Austl.).
- ⁵⁶ See *Department of Foreign Affairs and Trade v. Styles* (1989) 88 A.L.R. 621, 627 (Austl.).
- ⁵⁷ See *Complaint for Damages at 1, Kivalina v. ExxonMobil Corp.*, No. 08-1138 (N.D. Cal. Feb. 26, 2008), available at <http://www.climatelaw.org/cases/country/us/kivalina/Kivalina%20Complaint.pdf> (last visited Jan. 30, 2009).
- ⁵⁸ RESTATEMENT (SECOND) OF TORTS 10, 40 GM (1989 App.).
- ⁵⁹ See *R. v. Clifford* (1980) 1 N.S.W.L.R. 314, 318 (Austl.).
- ⁶⁰ See *Footscray Corp. v. Maize Products Pty. Ltd.* (1943) 67 C.L.R. 301, 312 (Austl.).
- ⁶¹ See *Connecticut v. American Elec. Power Co.*, 406 F. Supp. 2d 265, 267 (S.D.N.Y. 2005).
- ⁶² *Id.* at 268.
- ⁶³ See *California v. General Motors Corp.*, No. C06-05755 MJJ, 2007 WL 272687, at 1 (N.D. Cal. Sept. 17, 2007).
- ⁶⁴ See Office of Attorney General, California Department of Justice, Public Nuisance Litigation, <http://ag.ca.gov/globalwarming/litigation.php> (last visited Jan. 30, 2009).
- ⁶⁵ See *Complaint for Damages*, *supra* note 57, at 1-2.
- ⁶⁶ RESTATEMENT (SECOND) OF TORTS §291 (1965).
- ⁶⁷ RESTATEMENT (THIRD) OF TORTS §6 cmt. b (2005).
- ⁶⁸ See Press Release, Lawrence Livermore National Laboratory, Researchers Link Human Activities to Rising Ocean Temperatures in Hurricane Formation Regions (Sept. 11, 2006), available at https://publicaffairs.llnl.gov/news/news_releases/2006/NR-06-09-02.html (last visited Feb. 6, 2009); see also AAP, *Companies Could Be Sued Over Climate Change*, THE DAILY TELEGRAPH, Dec. 9, 2008, <http://www.news.com.au/dailytelegraph/story/0,22049,24777682-5001028,00.html> (last visited Jan. 30, 2009).
- ⁶⁹ The Torres Strait Islander Cultural Heritage Act and the Aboriginal and Torres Strait Islander Act may be important to establishing that Governments owe a duty of care to Torres Strait Islanders. See generally Torres Strait Islander Cultural Heritage Act, 2003 (Queensl.), available at <http://www.legislation.qld.gov.au/LEGISLTN/ACTS/2003/03AC080.pdf> (last visited Jan. 30, 2009); Aboriginal and Torres Strait Islander Act, 2005 (Austl.), available at http://www.austlii.edu.au/au/legis/cth/consol_act/aatsia2005359/ (last visited Jan. 30, 2009).
- ⁷⁰ See *Graham Barclay Oysters Pty. Ltd. v. Ryan* (2003) 211 C.L.R. 540, 576 (Austl.).
- ⁷¹ Zada Lipman & Robert Stokes, *Shifting Sands: The Implications of Climate Change and a Changing Coastline for Private Interests and Public Authorities in Relation to Waterfront Land*, 20 ENVTL. & PLANNING L.J. 406, 420 (2003). See also Jan McDonald, *The Adaptation Imperative: Managing the Legal Risks of Climate Change in Climate Law in Australia*, in CLIMATE LAW IN AUSTRALIA 124, 135 (Tim Bonyhady & Peter Christoff eds., Melbourne University Press 2007); Chris McGrath, *Legal Liability for Climate Change in Queensland*, 13 QUEENSL. ENVTL. PRACTICE REP. 17 (2007); Jan McDonald & Philippa England, *A Risky Climate for Decision-Making: The Legal Liability of Development Authorities for Climate Change Impacts*, 24 ENVTL. & PLANNING L.J. 405 (2007).
- ⁷² See Civil Liability Act, 2003, §36(2) (Queensl.).
- ⁷³ See *Massachusetts v. EPA*, 549 U.S. 497, 525 (2007).
- ⁷⁴ *Id.* at 524.
- ⁷⁵ See decision of *Comer v. Murphy Oil*, No 1:05-CV-436 (S.D. Miss, 18 April 2006) (dismissed on Aug. 30 2007).
- ⁷⁶ See *Mabo*, *supra* note 11, at 109-113.
- ⁷⁷ Richard Fletcher, *Climate Change and the Pacific – Science, Conference Papers and the Odd Bit of Real Action?* 61 INT'L. BAR NEWS 25, 26 (2007).
- ⁷⁸ See generally Environmental Protection Act, 1994 (Queensl.).
- ⁷⁹ See generally Chris McGrath, *Legal Liability for Climate Change in Queensland*, 13 QUEENSL. ENVTL. PRAC. REP. 17 (2007).
- ⁸⁰ See Environmental Protection Act, *supra* note 78, at § 505 (Queensl.).
- ⁸¹ See Integrated Planning Act, 1997, § 4.1.23 (Queensl.).
- ⁸² See *Maroochy Shire Council v. Barnes* (2001) 273 Q.C.A. 475.
- ⁸³ See Environmental Protection Act, *supra* note 78, at §§ 8, 9, 14 (Queensl.).
- ⁸⁴ Environmental Protection Act, *supra* note 78, at § 14(2).
- ⁸⁵ Environmental Protection Act, *supra* note 78, at § 319(1). See also *Maroochy Shire Council [2001] Q.P.E.L.R.* (where Dodds DCJ considered the duty is to not cause more damage than necessary rather than a protective duty).
- ⁸⁶ BENJAMIN L. PRESTON ET AL., COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION, CLIMATE CHANGE IN THE ASIA/PACIFIC REGION 49-50 (2006).

ENDNOTES: IS THE ENDANGERED SPECIES ACT THE RIGHT PLACE TO SET U.S. CLIMATE CHANGE POLICY?

continued from page 30

- ⁴ Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. at 76,287.
- ⁵ Press Release, U.S. Department of the Interior, Secretary Kempthorne Announces Decision to Protect Polar Bears Under the Endangered Species Act (May 14, 2008), available at http://www.doi.gov/news/08_News_Releases/080514a.html (last visited Feb. 25, 2009).
- ⁶ *Id.*
- ⁷ *Id.*
- ⁸ See Bryan Walsh, *Endangered Species: In More Danger*, TIME, Aug. 12, 2008, available at <http://www.time.com/time/nation/article/0,8599,1832164,00.html?xid=feed-cnn-topics> (last visited Feb. 22, 2009).
- ⁹ Editorial, *Protections in Peril*, WASH. POST, Dec. 27, 2008, at A14.
- ¹⁰ Press Release, Bob Irvin, Defenders of Wildlife, Bush Administration Takes Aim at Endangered Species Act, (Aug. 12, 2008), available at http://www.defenders.org/newsroom/press_releases_folder/2008/08_12_2008_bush_administration_takes_aim_at_endangered_species_act.php (last visited Feb. 25, 2009).
- ¹¹ Press Release, Center for Biological Diversity, Bush Administration Proposes Draft Regulations Gutting Protections for Nation's Endangered Species; Proposal Would Exempt All Greenhouse Gas Emissions From Endangered Species Act Oversight (Aug. 11, 2008), available at http://www.biologicaldiversity.org/news/press_releases/2008/esa-regulations-08-11-2008.html (last visited Feb. 25, 2009).

ENDNOTES: CASE STUDY *continued from page 35*

³² *Id.* at 30.

³³ See CITY OF KEENE, *supra* note 17, at 30.

³⁴ *Id.* at 31-42.

³⁵ *Id.* at 32-42.

³⁶ E-mail from Mikaela Engert, City Planner, City of Keene New Hampshire (on file with author).

³⁷ SNOVER ET AL., *supra* note 7.

³⁸ *Id.* at 28-31.

³⁹ *Id.* at 33-45.

⁴⁰ *Id.* at 47-54.

⁴¹ *Id.* at 55-63.

⁴² SNOVER ET AL., *supra* note 7, at 65-66.

⁴³ *Id.* at 67-86.

⁴⁴ *Id.* at 87-91.

⁴⁵ *Id.* at 93-108.

⁴⁶ *Id.* at 109-11.

⁴⁷ SNOVER ET AL., *supra* note 7, at 112 -19.

⁴⁸ For example, on February 17, 2009, New York City released projections of the impacts of climate change in New York City to inform the City's initiative to plan for adaptation. See NEW YORK CITY PANEL ON CLIMATE CHANGE, CLIMATE RISK INFORMATION (2009), available at http://www.nyc.gov/html/om/pdf/2009/NPCC_CRI.pdf (last visited Feb. 20, 2009). The Climate Change Advisory Task Force of Miami Dade County, working as a CRC community on adaptation, released its *Second Report and Initial Recommendations* in April 2008. CLIMATE CHANGE ADVISORY TASK FORCE OF MIAMI DADE COUNTY, SECOND REPORT AND INITIAL RECOMMENDATIONS (2008), available at http://www.miamidade.gov/derm/library/08-10-04_CCATF_BCC_Package.pdf (last visited Feb. 20, 2009). Climate change planning at the state level is also increasingly including adaptation measures. See, e.g., Florida's Energy and Climate Change Action Plan, Chapter 8, available at http://www.dep.state.fl.us/climatechange/actionplan_08.htm (last visited Feb. 20, 2009).

ENDNOTES: WHAT HAPPENS IN VEGAS . . . NEEDS LEGISLATIVE BACKUP *continued from page 36*

² Southern Nevada Water Authority, Apportionment, http://www.snwa.com/html/wr_colrvr_apportion.html (last visited Feb. 24, 2009).

³ Tim Richardson, *Nevada Falls to No. 8 in Population Growth*, LAS VEGAS SUN, Dec. 22, 2008, available at <http://www.lasvegassun.com/news/2008/dec/22/nevada-falls-no-8-population-growth/> (last visited Feb. 27, 2009).

⁴ Zack O'Malley Greenburg, *America's Emptiest Cities*, FORBES, Feb. 12, 2009, available at http://www.forbes.com/2009/02/12/cities-ten-top-lifestyle-real-estate_0212_cities.html (last visited Feb. 27, 2009).

⁵ Sean Whaley, *State's Growth Projected to Continue*, LAS VEGAS REV.-J., Oct. 7, 2008, available at <http://www.lvrj.com/news/30557039.html> (last visited Feb. 27, 2009).

⁶ *Lake Mead*, *supra* note 1.

⁷ See, e.g., Lieberman-Warner Climate Security Act of 2007, § 2191, 110th Cong. (2d Sess. 2007), Global Warming Pollution Reduction Act, § 309, 110th Cong. (1st Sess. 2007), Safe Climate Act of 2007, H.R. 1590, 110th Cong. (1st Sess. 2007).

⁸ *But see* California Global Warming Solutions Act Assem. B. 32, ("AB32"), Ch. 488, (Cal. 2006) (laying out the notable exception to the dearth of climate change legislation in the American Southwest).

⁹ ARIZONA CLIMATE CHANGE ADVISORY GROUP, CLIMATE CHANGE ACTION PLAN (2006), available at <http://www.azclimatechange.gov/download/O40F9347.pdf> (last visited Feb. 28, 2009).

¹⁰ Arizona Climate Action Initiative, Arizona Initiatives, <http://www.azclimatechange.gov/initiatives/index.html> (last visited Feb. 24, 2009).

¹¹ NEVADA CLIMATE CHANGE ADVISORY COMMITTEE, REPORT TO GOVERNOR GIBBONS 63 (2008), available at <http://gov.state.nv.us/Climate/FinalReport/ClimateChangeReport.pdf> (last visited Feb. 27, 2009).

¹² Western Climate Initiative, <http://www.westernclimateinitiative.org/> (last visited Feb. 17, 2009).

¹³ Western Governors' Association Working Groups, Climate Change, <http://www.westgov.org/wga/initiatives/climate/index.htm> (last visited Feb. 17, 2009).

¹⁴ NEV. REV. STAT. § 701B (2007), NEV. REV. STAT. § 540 (2007).

¹⁵ Phoebe Sweet, *Desalination Gets a Serious Look*, LAS VEGAS SUN, Mar. 21, 2008, available at <http://www.lasvegassun.com/news/2008/mar/21/desalination-gets-serious-look/> (last visited Feb. 27, 2009).

¹⁶ Henry Brean, *Mulroy Advice for Obama: Tap Mississippi Floodwaters*, LAS VEGAS REV.-J., Jan. 12, 2009, available at <http://www.lvrj.com/news/37431714.html> (last visited Feb. 27, 2009).

¹⁷ *Id.*

ENDNOTES: PLANNING FOR ADAPTATION TO CLIMATE CHANGE *continued from page 41*

²¹ See generally Caldwell & Segall, *supra* note 11 (highlighting Californian climate change planning and adaptation measures).

²² See Janet McDonald, *A Risky Climate for Decision-making: The Liability of Development Authorities for Climate Change Impacts*, 24 ENVTL. & PLANNING L. J. 205, 407-10 (2007) (outlining Queensland policies and measures). See also Jancaitis, *supra* note 8, at 186-94 (detailing similar state measures being adopted in the United States to adapt to potential sea level rise).

²³ Redland Shire Council, Strategic Plan, 1998, 4.4.3, available at <http://www.redland.qld.gov.au/Planning/Planning/Pages/default.aspx> (click "past planning instruments" then click "1998 strategic plan"). See Parliament of Austl., Inquiry into Climate Change and Env'tl. Impacts on Coastal Communities (2008), available at <http://www.aph.gov.au/house/committee/ccwea/coastalzone/index.htm> (A May 2008 Federal Parliament Committee Inquiry into climate change impacts on coastal communities looked the relevant strategic planning framework).

²⁴ See Charles & Howard Pty Ltd. v. Redland Shire Council (2007) (unreported) Queensl. C. A. 200, available at <http://www.austlii.edu.au> (noting conditions were subsequently upheld by the Queensland courts and there is now a strong trend to reconsider and tighten the 1 in 100 year flood measure as this was the standard engineering design pre-climate change).

²⁵ ME. REV. STAT. ANN. tit. 38 § 489D (2000); see also ME. REV. STAT. ANN. tit. 38 § 480-AA.

²⁶ See Jancaitis, *supra* note 8, at 191-94.

²⁷ See McDonald, *supra* note 3, at 131-34 (arguing that the Bryon Shire Council's policy of planned retreat shifts the adaptation burden onto the landowner but without conferring any right to undertake private adaptation measures. In the author's view this "strikes the wrong balance between cautious planning and property rights.").

²⁸ The two principal cases to date are reviewed below. Climate change adaptation has also been mentioned in other cases. *See, e.g.*, 14 Regent Street Pty Ltd. v. Hobart City Council (2004) Tas. Res. Mgmt. & Planning Tribunal 212 available at <http://www.austlii.edu.au>; *see also* Hain v Glen Eira (2006) (unreported) Vict. Civil & Admin. Tribunal (“VCAT”) 2493, available at <http://www.austlii.edu.au>; and Northcape Properties Pty Ltd. v. Dist. Council of Yorke Peninsula (2008) (unreported) S. Austl. Sup. Ct. 57.

²⁹ *See generally* England, *supra* note 17; *see also* Jacqueline Peel, *The Role of Climate Change Litigation in Australia’s Response to Global Warming*, 24 ENVTL. & PLANNING L. J. 90 (2007).

³⁰ *See generally* Australian Gov’t, Dep’t of the Env’t, National Strategy for Ecologically Sustainable Development (NSES) [hereinafter *NSES*], available at <http://www.environment.gov.au/esd/national/nsesd/index.html>.

³¹ Paul L. Stein, *Are Decision-Makers Too Cautious with the Precautionary Principle?*, 17 ENVTL. & PLANNING L. J. 3 (2000).

³² *See* Philippe Sands & Jacqueline Peel, *Environmental Protection in the Twenty-First Century: Sustainable Development and International Law*, in *THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY* 43 (Regina S. Axelrod et al. eds., CQ Press 2d ed. 2005) (summarizing international legal principles of sustainable development).

³³ *See generally* NSES, *supra* note 30.

³⁴ Walker v. Minister for Planning (2007) 157 Local Gov’t & Envtl. Reports of Austl. (“LGERA”) 124.

³⁵ *See Walker*, 157 LGERA at 133.

³⁶ *See, e.g.*, ENVTL. DEFENDER’S OFFICE N.S.W., FAILURE TO CONSIDER THE IMPACTS OF CLIMATE CHANGE [hereinafter *DEFENDER*], available at http://www.edo.org.au/edonsw/site/pdf/casesum/sandon_point_casenote.pdf.

³⁷ *EPA*, *supra* note 13, § 75M.

³⁸ *Id.* at cl. 8B.

³⁹ *See Gray v. Minister for Planning* (2006) 152 LGERA 258, 298.

⁴⁰ *See Walker*, 157 LGERA at 132.

⁴¹ *See id.*

⁴² *See id.* at 148.

⁴³ *See id.* 139-40.

⁴⁴ *See id.* at 129.

⁴⁵ *See id.*

⁴⁶ *See Walker*, 157 LGERA at 129.

⁴⁷ *See DEFENDER*, *supra* note 36.

⁴⁸ *See Walker*, 157 LGERA at 191.

⁴⁹ *See* Anthony Whealy & Isabella Ferguson, *Walker v Minister for Planning — implications coastal and flood liable land and major project development*, N.S.W. PLANNING, ENV’T & GOV’T UPDATE (Gadens Lawyers), Dec. 2007.

⁵⁰ *See Gippsland Coastal Bd. v S. Gippsland Shire Council* (2008) (unreported) VCAT 1545.

⁵¹ *See* ADMIN. REVIEW COUNCIL (AUSTL.), REPORT TO THE MINISTER FOR JUSTICE, BETTER DECISIONS: REVIEW OF COMMONWEALTH MERITS REVIEW TRIBUNALS, REPORT NO. 39, PARLIAMENTARY PAPER, 15-16 (1995) (noting the Tribunal’s decision involved merits review, not judicial review. In merits review, tribunals are able to “stand in the shoes” of the original decision maker and consider if the original decision was “correct or preferable”).

⁵² *See Gippsland Coastal Bd.*, (unreported) VCAT cl. 5.

⁵³ *See generally* SOUTH GIPPSLAND SHIRE COUNCIL, AGENDA, NOV. 21, 2007, available at <http://www.southgippsland.vic.gov.au/files/211107Sectionc6.pdf>.

⁵⁴ *See id.* at 130.

⁵⁵ *See Gippsland Coastal Bd.*, (unreported) VCAT cls. 32-33.

⁵⁶ *See id.*

⁵⁷ *See id.* at cl. 21.

⁵⁸ *See id.* at cl. 48.

⁵⁹ *See id.* at cl. 40.

⁶⁰ *See id.* at cls. 45 & 48.

⁶¹ *See Gippsland Coastal Bd.*, (unreported) VCAT cl. 42.

⁶² *See generally Gippsland Coastal Bd.*, (unreported) VCAT.

⁶³ *See id.* at Summ.

⁶⁴ *See McDonald*, *supra* note 22, at 406-407.

⁶⁵ *But see Telstra v. Hornsby Shire Council* (2006) 146 LGERA 10 (imposing a stringent standard for application of the principle based on demonstration of a scientifically verifiable risk. *Gippsland Coastal Board* suggests this standard may be eased in climate change cases where there is strong scientific support at a general level, although this often cannot be translated to exact local regions).

⁶⁶ *See e.g.* ENVIRONMENTAL LAW FOR SUSTAINABILITY (Benjamin Richardson & Stepan Wood eds., Hart Publishing 2006).

ENDNOTES: DIRTY FUEL INCENTIVES IN THE BAILOUT BILL *continued from page 42*

³ *Id.*

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

⁹ LENNY BERNSTEIN ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 26, 45 (2007), available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf (last visited Feb. 28, 2009).

¹⁰ *Id.* at 37.

¹¹ *See id.* at 30 (explaining that eleven of the past twelve years rank among the twelve warmest years in instrumental record).

¹² *See id.* (indicating that heat waves and heavy rainfalls have become more common).

¹³ Environmental Protection Agency, Basic Information: Climate Change, <http://www.epa.gov/climatechange/basicinfo.html> (last visited February 27, 2009).

¹⁴ *See BERNSTEIN*, *supra* note 9, at 56 (giving adaptation and reduction of greenhouse gases as the two solutions to climate change).

¹⁵ Natural Resources Defense Council, Repower America with Clean Energy: Don’t Choose Dirty Fuels Such As Tar Sands, Oil Shale or Liquid Coal, <http://www.nrdc.org/energy/dirtyfuels.pdf> (last visited February 27, 2009).

¹⁶ Toman et al., *Unconventional Fossil-Based Fuels: Economic and Environmental Trade-Offs*, 2008 RAND i, xiii, available at http://www.rand.org/pubs/technical_reports/2008/RAND_TR580.pdf (last visited Feb. 28, 2009).

¹⁷ Natural Resources Defense Council, *supra* note 15.

¹⁸ Toman, *supra* note 16, at 27.

¹⁹ *Id.* at 44.

²⁰ *Id.* at 23.

²¹ *See* 26 U.S.C. § 48B, amended by H.R. 1424, 110th Cong. (2d Sess. 2008) (raising the amount of creditable investment to \$350 million, plus \$250 million for gasification projects that include equipment for separating and sequestering at least 75% of the project’s total carbon dioxide emissions).

²² *See* 26 U.S.C. § 179C, amended by H.R. 1424, 110th Cong. (2d Sess. 2008) (providing a tax deduction of up to fifty percent of the cost of facilities refining tar sands or oil shale into transportation fuel).

²³ *See* 26 U.S.C. § 6426, amended by H.R. 1424, 110th Cong. (2d Sess. 2008) (extending the alternative fuel credit to coal-based fuels produced at a gasification facility that separates and sequesters a certain percentage of carbon dioxide emissions).

²⁴ See *id.* at xvi-xvii (finding that uncertainties remain regarding the benefits of SCO and CTL).

²⁵ See Natural Resources, *supra* note 15 (arguing that the United States needs to focus on clean and renewable fuels rather than dirtier fossil fuels derived from unconventional sources).

²⁶ See Jad Mouawad, *In Bailout Plan, Senate Binds House With Non-Renewable Energy Credits, Too*, N.Y. TIMES, Oct. 2, 2008, available at [http://](http://greeninc.blogs.nytimes.com/2008/10/02/in-bailout-plan-senate-binds-house-with-non-renewable-energy-credits-too)

greeninc.blogs.nytimes.com/2008/10/02/in-bailout-plan-senate-binds-house-with-non-renewable-energy-credits-too (last visited Feb. 28, 2009) (describing the conflict between the Senate and the House over the Senate's addition of tax credits for non-renewable unconventional fuels).

²⁷ Gret Hitt & Deborah Solomon, *Historic Bailout Passes As Economy Slips Further*, WALL ST. J., Oct. 4, 2008, at A1, available at <http://online.wsj.com/article/SB122304922742602533.html> (last visited Feb. 28, 2009).

ENDNOTES: EUROPEAN UNION COHERENCE IN UNFCCC NEGOTIATIONS UNDER THE NEW TREATY OF LISBON (REFORM TREATY) *continued from page 47*

²⁷ *Id.*

²⁸ *Climate Negotiations*, *supra* note 19, at 1-2.

²⁹ *Climate Negotiations*, *supra* note 19, at 4.

³⁰ Egenhofer & Cornillie, *supra* note 26, at 9. See also Nuno S. Lacasta et al., *Consensus Among Many Voices: Articulating the European Union's Position on Climate Change*, 32 GOLDEN GATE U. L. REV. 351, 413 (2002); Grubb & Yamin, *supra* note 22, at 275.

³¹ This was convincingly demonstrated by the CO₂ energy/tax debate in the early 1990s.

³² Lacasta et al., *supra* note 30, at 414.

³³ Michael Grubb & Joyeeta Gupta, *Implementing European Leadership, in CLIMATE CHANGE AND EUROPEAN LEADERSHIP: A SUSTAINABLE ROLE FOR EUROPE?* 303 (Joyeeta Gupta & Michael Grubb, eds., 2000).

³⁴ Lacasta et al., *supra* note 30, at 414.

³⁵ Grubb & Gupta, *supra* note 31, at 303; Vogler, *supra* note 20, at 70.

³⁶ See Grubb & Gupta, *supra* note 31, at 306.

³⁷ *Climate Negotiations*, *supra* note 19, at 9.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ See Reform Treaty, *supra* note 1, art. 2(174).

⁴¹ *Climate Negotiations*, *supra* note 19, at 4.

⁴² *Id.* at 7.

⁴³ EU CONSENT, INSTITUTE FOR EUROPEAN POLITICS, EU-25/27 WATCH No. 5 at 12-13 (2007), available at http://www.eu-consent.net/library/eu25watch/EU-25-27_Watch_No5.pdf (last visited Feb. 26, 2009).

⁴⁴ CHARLOTTE BRETHERTON & JOHN VOGLER, *THE EUROPEAN UNION AS A GLOBAL ACTOR* 97 (2006).

⁴⁵ OBERTHÜR & OTT, *supra* note 17, at 90.

⁴⁶ *Climate Negotiations*, *supra* note 19, at 7.

⁴⁷ *Climate Negotiations*, *supra* note 19, at 6.

⁴⁸ *Id.*

⁴⁹ Lacasta et al., *supra* note 30, at 367.

⁵⁰ See *id.* at 382-83. The United Kingdom was opposed to the use of fiscal mechanisms at EU level as a matter of principle. It was vehemently opposed to any European intervention in tax matters, invoking the subsidiary principle. For more on the carbon/energy tax. See *id.*

ENDNOTES: CREATING A U.S. CARBON MARKET *continued from page 48*

¹ See Jackie Calmes, *Obama Plans Major Shifts in Spending*, N.Y. TIMES, Feb. 26, 2009, at A1; see also President Barack Obama, Remarks of President Barack Obama – As Prepared for Delivery Address to Joint Session of Congress (Feb. 24, 2009), http://www.whitehouse.gov/the_press_office/Remarks-of-President-Barack-Obama-Address-to-Joint-Session-of-Congress/ (“So I ask this Congress to send me legislation that places a market-based cap on carbon pollution and drives the production of more renewable energy in America.”) (last visited Feb. 28, 2009).

² The EUETS currently consists of twenty-seven EU member states plus Iceland, Liechtenstein, and Norway. EUROPEAN COMMISSION, *EU ACTION AGAINST CLIMATE CHANGE: THE EU EMISSIONS TRADING SYSTEM 25* (Office of Official Publications of the European Communities 2008), available at http://ec.europa.eu/environment/climat/pdf/brochures/ets_en.pdf (last visited Feb. 28, 2009).

³ See Kevin Doran & Alaine Ginocchio, *United States Climate Policy: Using Market-Based Strategies To Achieve Greenhouse Gas Emission Reductions*, 3 ENVTL. & ENERGY L. & POL’Y J. 31, 61 (2008); see also Council Directive 2003/87/EC, annex 1, 2003 O.J. (L 275) 32, 42, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:EN:PDF> (last visited Feb. 22, 2009).

⁴ See Cameron Hepburn et al., *Auctioning of EU ETS Phase II Allowances: How and Why?*, 6 CLIMATE POL’Y. 137, 140 (2006). See e.g. J.P.M SIM ET AL., ENERGY RESEARCH CENTER OF THE NETHERLANDS, *THE IMPACT OF THE EU ETS ON ELECTRICITY PRICES* (ENERGY RESEARCH CENTER OF THE NETHERLANDS 2008), available at <http://www.ecn.nl/docs/library/report/2008/e08007.pdf> (last visited Feb. 28, 2009).

⁵ EUROPEAN COMMISSION, *supra* note 2, at 12.

⁶ *Id.* at 17.

⁷ *Id.* at 12.

⁸ Regional Greenhouse Gas Initiative, Inc. [RGGI, Inc.], Participating States, <http://rggi.org/states> (last visited Feb. 22, 2009).

⁹ RGGI, Inc., About RGGI, <http://rggi.org/about> (last visited Feb. 22, 2009).

¹⁰ RGGI, Inc., CO₂ Auctions, <http://rggi.org/co2-auctions> (last visited Feb. 22, 2009).

¹¹ REGIONAL GREENHOUSE GAS INITIATIVE MODEL RULES § XX-10.1 (2008) [hereinafter MODEL RULES], available at <http://rggi.org/docs/Model%20Rule%20Revised%2012.31.08.pdf> (last visited Feb. 22, 2009). Offset projects include methane capture from landfills and carbon sequestration from power plants. See *id.* § XX-10.3.

¹² See NEW SOUTH WALES GOVERNMENT, *INTRODUCTION TO THE GREENHOUSE GAS REDUCTION SCHEME 4* (2008), available at <http://www.greenhousegas.nsw.gov.au/documents/Intro-GGAS.pdf> (last visited Feb. 22, 2009).

¹³ *Id.*

¹⁴ See, e.g., *id.* at 8.

¹⁵ Doran & Ginocchio, *supra* note 3, at 62. See also EUROPEAN COMMISSION, *supra* note 2, at 17.

¹⁶ EUROPEAN COMMISSION, *supra* note 2, at 25.

¹⁷ *Id.*

¹⁸ See Cameron Hepburn et al., *Auctioning of EU ETS Phase II Allowances: How and Why?*, 6 CLIMATE POL’Y. 137, 140 (2006). See e.g. J.P.M SIM ET AL., ENERGY RESEARCH CENTER OF THE NETHERLANDS, *THE IMPACT OF THE EU ETS ON ELECTRICITY PRICES* (ENERGY RESEARCH CENTER OF THE NETHERLANDS 2008), available at <http://www.ecn.nl/docs/library/report/2008/e08007.pdf> (last visited Feb. 28, 2009).

¹⁹ *Northeast Carbon Auction Kicks Off* (WNPR- Connecticut Public Radio aired Sept. 25, 2008), available at <http://www.cpb.org/program/episode/regional-greenhouse-gas-initiative-ready-auction-carbon-dioxide> (last visited Feb. 28, 2009).

²⁰ *Commission Proposal for a Directive of The European Parliament and of The Council Amending Directive 2003/87/EC*, at 9, COM (2008) 16 Final (Jan. 23, 2008), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0016:FIN:EN:PDF> (last visited Feb. 28, 2009).

²¹ See REGIONAL GREENHOUSE GAS INITIATIVE, OVERVIEW OF RGGI CO₂ BUDGET TRADING PROGRAM 9 (2007), available at http://rggi.org/docs/program_summary_10_07.pdf (last visited Feb. 28, 2009).

²² See FEDERAL MINISTRY FOR THE ENVIRONMENT, NATURE CONSERVATION AND NUCLEAR SAFETY, RENEWABLE ENERGY AND THE CLEAN DEVELOPMENT MECHANISM: POTENTIAL, BARRIERS AND WAYS FORWARD A GUIDE FOR POLICY-MAKERS 13 (Meike Söker & Ellen von Zitzewitz eds., 2007) (explaining that the CDM, an offset mechanism, encourages the use and development of renewable energy technology), available at http://www.ren21.net/pdf/virtual_lib_local/CDM-EE-Netz.pdf (last visited March 1, 2009).

²³ Mark C. Trexler et al., *A Statistically-Driven Approach to Offset-Based GHG Additionality Determinations: What Can We Learn?*, SUSTAINABLE DEV. L. & POL'Y, Winter 2006 at 30, 31, available at http://www.wcl.american.edu/org/sustainabledevelopment/2006/sdlp_winter_2006.pdf (last visited Feb. 28, 2009) (explaining that the concept of additionality means that offsets would not reduce emissions because an offset allowance would allow a company to emit more GHG while not encouraging reductions beyond what the company would have done without the offset).

²⁴ THE CLIMATE TRUST, 2007 RFP: ADDITIONALITY & BASELINE GUIDANCE (2007), available at http://www.climatetrust.org/solicitations_2007_Additionality.php (last visited Feb. 28, 2009).

²⁵ *Id.*

²⁶ Electricity Supply Act, as amended 2003, art. 10 (N.S.W.), available at <http://www.greenhousegas.nsw.gov.au/documents/Rule-DSA-Dec08-Gazette.pdf>.

²⁷ *Id.*

ENDNOTES: CLIMATE CHANGE, ENERGY, AND SUSTAINABLE DEVELOPMENT IN SOUTH AFRICA *continued from page 53*

²⁶ Compare S. AFR. CONST. 1996, § 24, with South Africa Department of Minerals and Energy, *supra* note 24.

²⁷ DAVIDSON ET AL., *supra* note 8, at 7-8

²⁸ *Id.* at 8.

²⁹ *Id.* at 11.

³⁰ *Id.* at 19.

³¹ *Id.*

³² *Id.*

³³ United Nations Framework Convention on Climate Change, May 9, 1982, 1771 U.N.T.S. 107, 165; S. Treaty Doc No. 102-38 (1992); U.N. Doc. A/AC.237/18 (Part II)/Add.1; 31 I.L.M. 849 (1992).

³⁴ Kyoto Protocol to the United Nations Framework Convention on Climate Change art. 12(1)(a), Dec. 10, 1997, U.N. Doc FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (1998).

³⁵ Debbie Sparks, *Energy and the Environment, in ENERGY POLICIES FOR SUSTAINABLE DEVELOPMENT IN SOUTH AFRICA: OPTIONS FOR THE FUTURE* 88, 101 (Harald Winkler ed., 2006), available at http://www.iaea.org/OurWork/ST/NE/Pess/assets/South_Africa_Report_May06.pdf (last visited Feb. 26, 2009).

³⁶ Shaun Benton, *SA adopts 'bold' climate change policy*, SOUTHAFRICA.INFO, July 30, 2008, <http://www.southafrica.info/about/sustainable/climate-300708.htm> (last visited Feb. 4, 2009).

³⁷ *Id.*

³⁸ See generally Tim De Wet, *South Africa: Improved Environmental Law Enforcement – The Era of the Environmental Law Bounty-Hunter?*, MONDAQ, Oct. 20, 2005, available at <http://www.mondaq.com/article.asp?articleid=35600> (last visited Jan 26, 2009).

³⁹ SouthAfrica.info, *SA gets tough on air pollution*, SOUTHAFRICA.INFO, June 27, 2005, <http://www.southafrica.info/about/sustainable/air-pollution-2106005.htm> (last visited Feb. 26, 2009).

⁴⁰ Themba Gadebe, *Climate Change Body Launched*, SOUTHAFRICA.INFO, Oct. 20, 2005, http://www.southafrica.info/ess_info/sa_glance/sustainable/update/climate2010.htm.

⁴¹ See Department of Minerals and Energy: Designated National Authority, available at <http://www.dme.gov.za/dna/index.stm> (last visited Feb. 15, 2009); see also Gadebe, *supra* note 40.

⁴² See Gadebe, *supra* note 40.

⁴³ Sibongile Khumalo, *Climate change proposal includes carbon tax*, IOL NEWS FOR SOUTH AFRICA, http://www.iol.co.za/index.php?set_id=1&click_id=13&art_id=nw20080803082221974C18277.

⁴⁴ Ingi Salgado, *SA's First Carbon Tax Sets Precedent*, BUSINESS REPORT, <http://www.busrep.co.za/index.php?fSectionId=563&fArticleId=4265871>.

⁴⁵ *Id.*

⁴⁶ Posting of Ingi Salgado to Environment News and Forums of South Africa, http://www.environment.co.za/topic.asp?TOPIC_ID=1999 (May 26, 2008).

⁴⁷ Sanchia Temkin, *South Africa: Deloitte Warns on Carbon Tax*, BUSINESS-DAY, Jan. 19, 2009, <http://allafrica.com/stories/200901190024.html>.

⁴⁸ See Khumalo, *supra* note 43.

⁴⁹ South Africa Department of Minerals and Energy, White Paper on the Energy Policy of the Republic of South Africa (Dec. 1998), <http://www.info.gov.za/whitepapers/1998/energywp98.htm> (last visited Feb. 4, 2009).

⁵⁰ South Africa Department of Minerals and Energy, White Paper on Renewable Energy (Nov. 2003), http://www.dme.gov.za/pdfs/energy/renewable/white_paper_renewable_energy.pdf (last visited Feb. 4, 2009).

⁵¹ *Id.*

⁵² TRADE KNOWLEDGE NETWORK, *supra* note 23, at 10.

⁵³ *Id.* at 19.

⁵⁴ Agence Française de Développement, AFD and Combating Climate Change, <http://www.afd.fr/jahia/Jahia/site/proparco/lang/en/pid/3976> (last visited Feb. 18, 2009).

⁵⁵ See RICHARD L. OTTINGER, GLOBAL CLIMATE CHANGE KYOTO PROTOCOL IMPLEMENTATION: LEGAL FRAMEWORKS FOR IMPLEMENTING CLEAN ENERGY SOLUTIONS PACE LAW FACULTY PUBLICATIONS 24 (2000). See also DAVIDSON & WINKLER, *supra* note 4, at 31.

⁵⁶ SouthAfrica.info, *Fighting Climate Change at Home*, SOUTHAFRICA.INFO, Feb. 14, 2006, <http://www.southafrica.info/services/consumer/kyoto-140206.htm> (last visited Feb. 4, 2009).

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ Lucky Khumalo, *Biofuels to Power Eastern Cape*, SOUTHAFRICA.INFO, March 9, 2007, <http://www.southafrica.info/business/investing/opportunities/biofuels-080307.htm> (last visited Feb. 7, 2009).

⁶⁰ Shaun Benton, *South Africa goes for green fuels*, SOUTHAFRICA.INFO, Feb. 13, 2006, available at <http://www.southafrica.info/about/sustainable/biofuel-13130206.htm> (last visited Feb. 7, 2009).

⁶¹ BALGIS OSMAN ELASHA ET AL., BACKGROUND PAPER ON IMPACTS, VULNERABILITY AND ADAPTATION TO CLIMATE CHANGE IN AFRICA, Prepared for the African Workshop on Adaptation Implementation of Decision 1/CP.10 of the UNFCCC Convention, Accra, Ghana, Sept. 21–23, 2006, at 14.

⁶² *Id.* at 15.

⁶³ See South African Government Information, Science and Technology, <http://www.info.gov.za/aboutsa/science.htm> (last visited Feb. 26, 2009).

⁶⁴ South Africa.info, Government, business join climate change, SOUTH AFRICA.INFO, Oct. 18, 2005, http://www.southafrica.info/ess_info/sa_glance/sustainable/update/climate1810.htm.

⁶⁵ EM-DAT: Emergency Events Database, http://www.emdat.be/Activities/other_data_subnational.html (last visited Feb. 16, 2009).

⁶⁶ Disaster Mitigation for Sustainable Livelihoods Programme, <http://www.egs.uct.ac.za/dimp/> (last visited Feb. 16, 2009).

⁶⁷ UNITED NATIONS DEVELOPMENT PROGRAM BUREAU FOR CRISIS PREVENTION AND RECOVERY, REDUCING DISASTER RISK: A CHALLENGE FOR DEVELOPMENT at 43, available at http://www.undp.org/cpr/whats_new/rdr_english.pdf (last visited Feb. 16, 2009).

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ See Combating Climate Change: Clinton Climate Initiative, <http://www.clintonfoundation.org/what-we-do/clinton-climate-initiative/what-we-ve-accomplished> (last visited Feb. 15, 2009); see also Emily Visser, *Joburg,*

Clinton climate initiatives, SOUTHAFRICA.INFO, Jan. 4, 2008, available at <http://www.southafrica.info/about/sustainable/clintonclimateinitiative.htm> (last visited Feb. 7, 2009).

⁷² Visser, *supra* note 71.

⁷³ *Id.*

⁷⁴ Kuyasa Low Income Urban Housing Energy Upgrade Project, ICLEI, <http://www.iclei-europe.org/index.php?id=kuyasa> (last visited Feb. 15, 2009); see also Mary Alexander, *From Kyoto to Khayelitsha*, SOUTHAFRICA.INFO, Feb. 22, 2005, <http://www.southafrica.info/about/sustainable/kuyasa-121205.htm> (last visited Feb. 7, 2009).

⁷⁵ Alexander, *supra* note 74.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ See generally CONSULTANCY AFRICA INTELLIGENCE, EVALUATING THE CHALLENGE OF CLIMATE CHANGE: SOUTHERN AFRICAN ADAPTATION MEASURES, available at <http://www.consultancyafrica.com/africa-watch/newsletter/november-2008> (last visited Jan. 26, 2009).

ENDNOTES: MONGOLIA *continued from page 56*

⁴ Stefan Lovgren, *Climate Change Driving Mongolian From Steppe to Cities*, NAT'L GEOGRAPHIC NEWS, February 21, 2008, available at <http://news.nationalgeographic.com/news/2008/02/080221-mongolia-herders.html> (last visited Feb. 25, 2009).

⁵ *Id.*

⁶ See generally William Kennedy, *Survey: Bad News Around the bend for Mongolia's Water Supply*, UB POST, Dec. 4, 2008.

⁷ THE WORLD BANK, LAND RESOURCES AND THEIR MANAGEMENT: MONGOLIA ENVIRONMENT MONITOR iii (2003).

⁸ L. OCHIRKHUYAG & R. TSOLMON, ISPRS, MONITORING THE SOURCE OF TRANS-NATIONAL DUST STORMS IN NORTH EAST ASIA 835 (2008), available at http://www.isprs.org/congresses/beijing2008/proceedings/7_pdf/5_WG-VII-5/17.pdf (last visited Feb. 25, 2009) (The increased dust storms carry air pollutants from China and Mongolia to neighboring states, damaging human and animal health. Dust storms have also been responsible for grounding aircraft and closing businesses and schools).

⁹ UN ENV'T PROGRAM [UNEP], MONGOLIA STATE OF THE ENVIRONMENT 2002 53 (2002), available at, http://www.ircap.unep.org/reports/soe/mongolia_part1.pdf (last visited Feb. 25, 2009).

¹⁰ N. Enkhbayar, President of Mongolia, Climate Change Concerns in Mongolia, Address at Columbia University World Leaders Forum (Oct. 29, 2007), available at <http://www.ambassademongolie.fr/Article/89-climate-change-concerns-in-mongolia.html> (last visited Feb. 25, 2009).

¹¹ *Id.*

¹² *Id.*

¹³ P. Batima et al., *supra* note 1, at 5. See also UNEP, *supra* note 9.

¹⁴ UNEP, *supra* note 9.

¹⁵ See generally Maria Fernandez-Gimenez & B. Batbuyan, *Law and Disorder in Mongolia: Local Implementation of Mongolia's Land Law*, 35 DEV. AND CHANGE 1 (2002).

¹⁶ THE WORLD BANK, MONGOLIA ENVIRONMENT MONITOR 2003: LAND RESOURCES AND THEIR MANAGEMENT 16 (2003) [hereinafter LAND RESOURCES], available at <http://siteresources.worldbank.org/MONGOLIAEXTN/Resources/MEM2003.pdf> (last visited Feb. 25, 2009).

¹⁷ See Maria Fernandez-Gimenez, *Sustaining the Steppes: A Geographical History of Pastoral Land Use in Mongolia*, 89 THE GEOGRAPHICAL REV. 3 (1999).

¹⁸ LAND RESOURCES, *supra* note 16, at 17.

¹⁹ Stefan Lovgren, *supra* note 4.

²⁰ P. Batima et al., *supra* note 1 (There are two types of *dzud*, *white dzud* and *black dzud*, in a *white dzud* the snow and ice is so thick that animals are unable to forage for food. In a *black dzud* there is so little snow and ice that livestock have no water to drink).

²¹ THE WORLD BANK, ENV'T AND SOC. DEV. DEP'T, DISCUSSION PAPERS: MONGOLIA: A REVIEW OF ENVIRONMENTAL AND SOCIAL IMPACTS IN THE MINING SECTOR vii (2006) [hereinafter WORLD BANK], available at <http://siteresources.worldbank.org/INTMONGOLIA/Resources/Mongolia-Mining.pdf> (last visited Feb. 25, 2009).

²² P. BATIMA, AIACC, CLIMATE CHANGE VULNERABILITY AND ADAPTATION IN THE LIVESTOCK SECTOR OF MONGOLIA (2006) [hereinafter CLIMATE CHANGE], available at http://www.aiaccproject.org/Final%20Reports/Final%20Reports/FinalRept_AIACC_AS06.pdf (last visited Feb. 25, 2009).

²³ P. Batima et al., *supra* note 1, at 24.

²⁴ CLIMATE CHANGE, *supra* note 22, at xvii.

²⁵ LAND RESOURCES, *supra* note 16, at 22, 27.

²⁶ Olivier Mahul, Senior Insurance Specialist, The World Bank, Insurance for the Poor Program, Address at Regional Workshop on Microinsurance: Index-Based Livestock Insurance in Mongolia (Jan. 17, 2008) (on file with the author).

²⁷ See generally Fernandez-Gimenez & Batbuyan, *supra* note 15.

²⁸ See *id.* at 2.

²⁹ LAND RESOURCES, *supra* note 16, at 31.

³⁰ *Id.*

³¹ *Id.*

³² *Id.* at 3.

³³ *Id.* at 31.

³⁴ P. Batima et al., *supra* note 1, at 5. See also Dashnayam Nachin, Natural Disasters in Mongolia and Some Experiences on Strengthening Disaster Protection Capacity (July 2006) (unpublished abstract for presentation at 2006 APEA Conference) (on file with the author).

³⁵ The World Bank, Rural Development & Agriculture in Mongolia: Overview, <http://go.worldbank.org/YKHTMU79W0> (last visited Feb. 17, 2009).

³⁶ Lovgren, *supra* note 4.

³⁷ See MONGOLIA WEB NEWS, *Herders report 120,000 animals lost in January* (Feb. 23, 2009), available at <http://www.mongolia-web.com/content/view/2248/2/> (last visited Feb. 25, 2009); see also Fang Yang, *Over 60,000 livestock die in hard winter in Mongolia*, XINHUA NEWS, Feb. 2, 2009, available at http://news.xinhuanet.com/english/2009-02/02/content_10752836.htm (last visited Feb. 25, 2009).

³⁸ SETH VORDZORGBE, CLIMATE CHANGE AND RISK MANAGEMENT IN AFRICA: MAJOR ISSUES 2 (2007).

³⁹ CIA, The World Factbook, Mongolia, <https://www.cia.gov/library/publications/the-world-factbook/geos/mg.html> (last visited Feb. 17, 2009).

⁴⁰ THE WORLD BANK, MONGOLIA MINING SECTOR: MANAGING THE FUTURE 24 (2005), available at http://siteresources.worldbank.org/MONGOLIAEXTN/Resources/Mongolia_Mining_sector_report_ENG.pdf (last visited Feb. 25, 2009) (In addition to the environmental concerns related to mining, Mongolian artisanal miners live in some of the worse and most dangerous conditions in Mongolia. In 2002 more than 100 artisanal miners reportedly died in mining accidents although this number is likely to be grossly underestimated because accidents are only recorded when the Mine Rescue Service is called for help).

⁴¹ See D. ELLIOTT ET AL., NATIONAL RENEWABLE ENERGY LABORATORY, WIND ENERGY RESOURCE ATLAS OF MONGOLIA (2001), available at <http://www.nrel.gov/wind/pdfs/28972.pdf> (last visited Feb. 25, 2009).

⁴² See *id.*

⁴³ See Seung-Hoon Yoo, Electricity consumption and economic growth: evidence from Korea (Mar. 19, 2004) (unpublished paper for Hoseo University School of Business and Economics, Republic of Korea) (on file with the author).

⁴⁴ MARK BERNSTEIN ET AL., PEW CENTER ON GLOBAL CLIMATE CHANGE, DEVELOPING COUNTRIES & GLOBAL CLIMATE CHANGE (2006), available at http://www.rand.org/pubs/monograph_reports/2006/MR1102.pdf (last visited Feb. 25, 2009).

ENDNOTES: THE WORLD BANK CLEAN TECHNOLOGY FUND *continued from page 61*

¹⁹ See Charlotte Streck, *Making Markets Work: A Review of CDM Performance and the Need for Reform*, 19 EUR. J. INT'L L. 409, 420 (2008).

²⁰ See *id.*

²¹ See generally Carbon Finance at the World Bank: Prototype Carbon Fund, <http://carbonfinance.org/Router.cfm?Page=PCF> (last visited Nov. 11, 2008) (describing the Prototype Carbon Fund as the first carbon fund, with the “mission . . . to pioneer the market for project-based greenhouse gas emission reductions while promoting sustainable development and offering a learning-by-doing opportunity to its stakeholders”) [hereinafter Prototype Carbon Fund].

²² See Carr & Rosembuj, *supra* note 18, at 51, 55 (discussing the World Bank’s prototype purchasing of emission reductions five years prior to the entry into force of the Kyoto Protocol and the Bank’s “learning-by-doing”).

²³ See Prototype Carbon Fund, *supra* note 21.

²⁴ UNFCCC, *supra* note 7, art. 21, ¶ 3 (declaring the International Bank for Reconstruction and Development (World Bank) as the international entity entrusted with the operation of the GEF).

²⁵ JOZEF RITZEN, A CHANCE FOR THE WORLD BANK xvii (2005).

²⁶ See generally Diane Stone & Christopher Wright, *The Currency of Change: World Bank Lending and Learning in the Wolfensohn Era*, in THE WORLD BANK AND GOVERNANCE: A DECADE OF REFORM AND REACTION (Diane Stone & Christopher Wright eds., 2007).

²⁷ See *id.*; RITZEN, *supra* note 25.

²⁸ See, e.g., WORLD BANK, DEVELOPMENT AND CLIMATE CHANGE: A STRATEGIC FRAMEWORK FOR THE WORLD BANK GROUP 9-10 (2008) (“In line with its core mandate of growth and poverty reduction, the [World Bank] sees its primary role and comparative strength in helping its developing country partners . . . grow their economies under climate constraints.”).

²⁹ See Press Release, Board Approves CIF, *supra* note 1 (“The Clean Technology Fund will provide new, large-scale financial resources to invest in projects and programs in developing countries which contribute to the demonstration, deployment, and transfer of low-carbon technologies.”). See also CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 14 (establishing investment criteria); *id.* ¶ 17 (establishing country eligibility based on “ODA-eligibility (according to OECD/DAC guidelines)” and “an active MDB country program,” which occurs where an MDB has “a lending program and/or an on-going policy dialogue with the country”); *id.* ¶¶ 45-49 (establishing contribution guidelines).

³⁰ See, e.g., World Bank, *Private Sector Operational Guidelines*, ¶ 3, World Bank Doc. CTF/TFC.1/5 (Nov. 3, 2008) (defining “scale-up” as “a significant proliferation of the types of projects being supported—without a subsidy”) [hereinafter *Private Sector Guidelines*].

³¹ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 13 (establishing the objectives of the CTF).

³² See *id.* ¶¶ 27-34 (laying out the specifics of the Trust Fund Committee including “ensuring that the strategic orientation of the CTF is guided by the principles of the UNFCCC” in the Trust Fund Committee’s responsibilities).

³³ See *id.* ¶ 28(a) (laying out the composition of the Trust Fund Committee).

³⁴ See *id.* (“The Trust Fund committee will consist of eight representatives from donor countries . . . identified through a consultation among such donors, and eight representatives from eligible recipient countries or groups of such countries identified through a consultation among interested recipient countries”).

³⁵ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 18 (laying out the process for and MDB “joint mission,” involving additional stakeholders, that results in an investment plan that should “build on existing country-owned strategies,” which then goes to the Trust Fund Committee for plan approval and prioritization of projects). See also World Bank, *Clean Technology Fund Guidelines for Investment Plans*, World Bank Doc. CTF/TFC.1/2 (Nov. 3, 2008) (expanding on the standards set forth in the CTF founding document) [hereinafter *Guidelines for IPs*].

³⁶ See, e.g., *Private Sector Guidelines*, *supra* note 30, ¶ 5 (defining “projects” as using “more than \$50 million of CTF funds” and defining “programs” as “envelopes which aggregate several small and medium sized projects each utilizing less than \$50 million of CTF funds and all having a shared focus and objective”).

³⁷ See *id.* ¶ 6 (requiring that private sector proposals be “consistent with country investment plans”). See also *id.* ¶ 1 (describing the “significant” role the private sector has to play in GHG emission reduction).

³⁸ See World Bank, *Clean Technology Fund Financing Products, Terms, and Review Procedures for Public Sector Operations*, ¶¶ 10-24, World Bank Doc. CTF/TFC.1/4 (Nov. 3, 2008) (establishing a limited use of grants for “focused economic and sector work” and for “preparation grants” to increase the quality of the CTF’s investment portfolio. Such grants could support “feasibility studies, analytic work to inform a country’s policies and programs, environmental and social impact assessment,” and more, but not beyond \$1 million; establishing the CTF concessional lending program and splitting it into “harder” loans for projects with rates of return near the market threshold, but below risk premium for the project type, and “softer” loans that provide more favorable terms for projects with negative rates of return or rates below the market threshold; and “Guarantee instruments are used to improve conditions for investment in, or lending to, projects by mitigating risks that lenders and investors would not be willing or able to accept.”) [hereinafter *CTF Financing*].

³⁹ See World Bank, *Clean Technology Fund Investment Criteria for Public Sector Operations*, ¶¶ 9-12, World Bank Doc. CTF/TFC.1/3 (Nov. 3, 2008) (establishing that priority will be given to proposals with higher GHG reduction potential and laying out a “technology development status” classification that looks at factors of technical viability, commercial availability, and mitigation potential to determine which low carbon technologies are “at, or approaching, the ‘market takeoff’ phase”) [hereinafter *Public Sector Operations*].

⁴⁰ See *id.* ¶¶ 13-17 (requiring each proposal to include a baseline trajectory of GHG emissions in the relevant sector, a trajectory of reduced emissions with the proposed project, and a trajectory of reduced emissions if the proposed project were replicated throughout the relevant sector in order to show the potential “demonstration” effect the project could have on the sector).

⁴¹ See *id.* ¶¶ 18-21 (addressing the connection between the CTF and the contribution of low carbon technologies to the achievement of the UN’s Millennium Development Goals and citing efficiency gains, access to energy and transportation to the world’s poorest, and environmental co-benefits as important factors to be considered with CTF projects).

⁴² See *id.* ¶¶ 22-25 (offering three dimensions related to implementation to be assessed: Public policies and institutions, like sector regulatory institutions, to support implementation; “Ease of Doing Business” ranking from the International Finance Corporation, which measures various business indicators; and domestic public and private sector resources with the potential to be mobilized).

⁴³ See *id.* ¶¶ 26-29 (“CTF will finance the identifiable additional cost of an investment, or the risk premium required, in order to make the investment viable”); see also *Private Sector Guidelines*, *supra* note 47, ¶ 9 (noting that “investment criteria for private sector proposals are generally the same as those for public sector; however, the performance indicators for each may be different in certain cases”).

⁴⁴ See, e.g., CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 2 (citing UNFCCC, *supra* note 7, art. 3, ¶ 1); *id.* ¶ 4 (citing UNFCCC, *supra* note 7, art. 11); *id.* ¶ 5 (citing UNFCCC, *supra* note 7, art. 11, ¶ 5); *id.* ¶ 6 (citing UNFCCC, *supra* note 7, art. 4, ¶ 1(c)); *id.* ¶ 7 (citing UNFCCC, *supra* note 7, art. 4, ¶ 7); *id.* ¶ 8 (describing the CTF as “consistent with the provisions of the UNFCCC” and proceeding to quote the majority of the *Bali Action Plan*), and *id.* ¶ 12(e) (referring to the UN as “the appropriate body for broad policy setting on climate change” and requiring MDBs to not “preempt” the results of climate change negotiations).

⁴⁵ See, e.g., *Greens Criticize World Bank Climate Funds*, REUTERS, June 5, 2008 (“Some 121 environment and development groups . . . questioned the credibility of proposed World Bank funds to help the poor fight global warming”); *Examining the Administration’s Proposal to Establish a Multilateral Clean Technology Fund Before the H. Comm. On Financial Services*, 110th Cong. (2008) (statement of Brent Blackwelder, President, Friends of the Earth US) (noting two concerns with the World Bank’s involvement in the CTF: first, that the bank does not define what it means by “clean” technology, and second, that the banks “mandate and track record” mean that it is not the right institution to control the CTF); and SMITA NAKHOODA, WORLD RES. INST., CORRECTING THE WORLD’S GREATEST MARKET FAILURE: CLIMATE CHANGE AND THE MULTILATERAL DEVELOPMENT BANKS 9 (2008) (noting that in 2007, nearly fifty percent of the World Bank’s energy lending was made without any attention to climate change factors).

⁴⁶ See generally CLEAN TECHNOLOGY FUND, *supra* note 4.

⁴⁷ UNFCCC, *supra* note 7, art. 4, ¶ 3.

⁴⁸ CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 12(c).

⁴⁹ See UNFCCC, *Review of the Implementation of Commitments and of Other Provisions of the Convention*, at 91-96, UN Doc. FCCC/CP/1999/7 (Feb. 16, 2000) (providing guidelines that countries “shall indicate what ‘new and additional’ financial resources they have provided” pursuant to Article 4, para. 3, and “shall clarify how they have determined such resources as being ‘new and additional’ in their national communications”) [hereinafter *Implementation of Commitments*].

⁵⁰ CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 48.

⁵¹ See *CTF Financing*, *supra* note 38, ¶ 3(f) (requiring that “all sources of funds will be co-mingled for administrative and investment purposes”).

⁵² See *Implementation of Commitments*, *supra* note 49, at 91 (requiring parties to clarify how they determined funds to be new and additional).

⁵³ See, e.g., AUSTRALIAN GOV’T, DEP’T OF ENV’T AND HERITAGE, AUSTRALIAN GREENHOUSE OFFICE, AUSTRALIA’S FOURTH NATIONAL COMMUNICATION ON CLIMATE CHANGE 90-107 (2005) (exemplifying a report on financial resources and transfer of technology to the UNFCCC).

⁵⁴ See *Public Sector Operations*, *supra* note 39 (establishing investment criteria).

⁵⁵ Cf. *Clean Technology Fund*, *supra* note 4, ¶ 39 (setting the objective of following MDB processes “instead of establishing separate institutional structures” as a way to keep transaction costs low).

⁵⁶ UNFCCC, *supra* note 7, art. 18, ¶ 1 (“each party to the Convention shall have one vote”).

⁵⁷ Cf. Ved P. Nanda, *Selected Aspects of International Trade and the World Trade Organization’s Doha Round: Overview and Introduction*, 36 DENV. J. INT’L L. & POL’Y 255, 257 (2008) (discussing that in previous World Trade Organization negotiations, developed nations engaged in separate negotiations in which they made decisions that impacted all members).

⁵⁸ See, e.g., GLOBAL ENVIRONMENT FACILITY, INSTRUMENT FOR THE ESTABLISHMENT OF THE RESTRUCTURED GLOBAL ENVIRONMENT FACILITY 12-15 (2004) (establishing the governance structure of the Global Environment Facility, including an Assembly consisting of representatives from all participants, a council of thirty-two members equally representing developed and developing countries and appointed the “participants” from each constituency, and laying out term limitations) [hereinafter GEF INSTRUMENT]; and UNFCCC, *Modalities and Procedures for a Clean Development Mechanism*, Annex, UN Doc. FCCC/KP/CMP/2005/8/Add.1, at 8 (Dec. 10, 2008) (establishing the Executive Board of the CDM, including ten members from Kyoto party countries: “one mem-

ber from each of the five United Nations regional groups, two other members from the Parties included in Annex I, two other members from the Parties not included in Annex I, and one representative of the Small Island Developing States”) [hereinafter *CDM Modalities*].

⁵⁹ See, e.g., *Profile: G8*, BBC NEWS, Sept. 17, 2008, http://news.bbc.co.uk/2/hi/americas/country_profiles/3777557.stm (last visited Nov. 14, 2008) (profiling the G8 membership as the “world’s leading industrialized nations” and noting that “there are no African or Latin American members”).

⁶⁰ G8, Climate Change, Clean Energy, and Sustainable Development, <http://www.g7.utoronto.ca/summit/2005g8/eagles/climatechange.pdf> (last visited Feb. 27, 2009).

⁶¹ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 28 (establishing the make-up of the Trust Fund Committee).

⁶² See *id.* ¶ 32 (“Consensus does not necessarily imply unanimity. A dissenting decision maker, who does not wish to block a decision, may state an objection by attaching a statement or note to the decision.”).

⁶³ See *id.* ¶ 28(a) (establishing that members are “identified through consultation among such donors, and . . . among interested recipient countries”).

⁶⁴ See *id.* (using only the word “consultation” to describe the member selection process).

⁶⁵ *Id.*, ¶ 9 n.7.

⁶⁶ CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 28(a).

⁶⁷ See Press Release, Countries Selected, *supra* note 5 (describing the process as the finalizing of choices for representatives by donor and developing countries).

⁶⁸ *Id.*

⁶⁹ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 33(a) (establishing approval of “programming and pipeline priorities” as a responsibility of the Trust Fund Committee).

⁷⁰ See, e.g., *US Contributions to a World Bank Administered Clean Technology Fund Before the H. Comm. On Financial Services*, 110th Cong. (2008) (statement of Jacob Werksman, Director, Institutions and Governance Program, World Resources Inst.) (noting the importance of ensuring “that developing country perspectives are adequately represented in decision-making on how to use the funds”).

⁷¹ See, e.g., UNFCCC, *supra* note 7, art. 3, ¶ 1 (“on the basis of equity”).

⁷² See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶¶ 36-38 (establishing the Partnership Forum as a meeting of stakeholders to provide “dialogue on the strategic directions, results and impacts of the [Climate Invest Funds],” but also establishing that the forum “will not lead to written outcomes, such as agreed texts or declarations”).

⁷³ Compare *id.*, with GEF INSTRUMENT, *supra* note 58, at 13 (establishing that the GEF Assembly “shall (a) review the general policies of the Facility; (b) review and evaluate the operation of the Facility on the basis of reports submitted by the Council; (c) keep under review the membership of the Facility; and (d) consider, for the approval by consensus, amendments to the present Instrument on the basis of recommendations by the Council”).

⁷⁴ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 36.

⁷⁵ See generally UNFCCC, *supra* note 7, prmb.

⁷⁶ Int’l Bank for Reconstruction and Development [World Bank], *IBRD Articles of Agreement*, art. V, sec. 2 (Feb. 16, 1989) (establishing the Board of Governors of the World Bank and vesting in them “all powers of the Bank,” including to “adopt such rules and regulations as may be necessary or appropriate to conduct the business of the Bank”) [hereinafter *Articles of Agreement*].

⁷⁷ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 12(g) (“each MDB should remain accountable to its governing body”); and *id.* ¶ 19 (“further processing of a program or project will follow the MDB’s policies and procedures for appraisal, MDB board approval and supervision”); see also *CTF Financing*, *supra* note 38, ¶ 27 (reaffirming the same assertion, that MDBs will follow their own policies).

⁷⁸ Compare *Clean Technology Fund*, *supra* note 4, ¶ 33(g) (including monitoring and evaluation of MDB “performance and financial accountability” in the responsibilities of the Trust Fund Committee), and *id.* ¶ 33(b) (obligating the Trust Fund Committee to ensure the CTF is guided by the principles of the UNFCCC), with *CTF Financing*, *supra* note 38, ¶ 27 (establishing that MDBs will follow their own fiduciary standards and environmental and social safeguards).

⁷⁹ *Clean Technology Fund*, *supra* note 4, ¶ 33(g). See also *id.* ¶ 35.

⁸⁰ *Id.* ¶ 40.

⁸¹ See *id.* Annex A, ¶ 14 (proposing that each operation “follow the investment lending policies and procedures of the MDB, including its fiduciary standards and environmental and social safeguards”).

⁸² See *Clean Technology Fund*, *supra* note 4, ¶ 27 (“a CTF Trust Fund Committee will be established to oversee the operations and activities of the trust fund”).

⁸³ See *id.*, ¶ 11 (“Recognizing that UNFCCC deliberations on the future of the climate change regime include discussions on a future financial architecture and funding strategy for climate change, this fund is an interim measure for the MDBs to fill an immediate financing gap”).

⁸⁴ See *id.*, ¶¶ 56-57.

⁸⁵ See *id.*, ¶ 11 (referencing the sunset clause as included in the CTF founding document because of the recognition that the UNFCCC is working to establish a new financial architecture and funding strategy for climate change).

⁸⁶ See Martin Kohr, *World Bank Climate Funds Under Fire from G77 and China*, THIRD WORLD NETWORK, Apr. 4, 2008 (quoting Berneditas Muller, coordinator for the G77 and China in the UNFCCC’s ad hoc working group on long-term cooperative action, as remarking “that the resources for climate funds outside the Convention come from the same developed country parties that could have given those resources to the financial mechanism under the Convention to enable developing countries to implement mitigation and adaptation measures and contribute to achieving the objectives of the Convention”).

⁸⁷ See CLEAN TECHNOLOGY FUND, *supra* note 4, ¶ 57.

⁸⁸ *Id.*

⁸⁹ See World Bank, Summary of the CIF Pledging Meeting Annex B (Sept. 29, 2008) (listing Australia, France, Germany, Japan, Netherlands, Norway, Sweden, Switzerland, United Kingdom, and the United States as donor countries and reporting that \$6.141 billion was donated to the CTF at a meeting of donors held on Sept. 29, 2008) [hereinafter Pledging Summary].

⁹⁰ See Kohr, *supra* note 86 (quoting Berneditas Muller as saying “the amounts [of CTF funding] are so huge they would dwarf the funds under the UNFCCC”).

⁹¹ Such power playing would not be a new addition to the UNFCCC negotiating process. See, e.g., HUNTER ET AL., *supra* note 6, at 679-80 (examining the negotiation process which eventually lead to the Kyoto Protocol. The US pushed for lower standards, which were agreed to despite the fact that the US would never ratify the Protocol).

⁹² Compare Pledging Summary, *supra* note 89 (reporting that the United States has donated \$2 billion to the Climate Investment Funds), with UNFCCC, KYOTO PROTOCOL STATUS OF RATIFICATION (reporting that the United States is not among the 185 countries to have signed onto the Kyoto Protocol, which also means that the United States does not participate in the funding mechanisms associated with the protocol, including the Clean Development Mechanism).

⁹³ Cf. Carr & Rosembuj, *supra* note 18, at 57 (discussing the World Bank’s purchasing of “post-2012” emission credits as a way to contribute to market stability for projects that need revenue beyond the Kyoto Protocol’s commitment period). See also *id.*, at 61 (discussing the relevance of market continuity in the context of the CDM).

⁹⁴ Juliet Eilperin, *Next Climate Summit May Turn on Rich Nations’ Approach to Poor Ones*, WASH. POST, Dec. 14, 2008, at A08.

⁹⁵ See, e.g., Pierre-Marie Dupuy, *Soft Law and the International Law of the Environment*, 12 MICH. J. INT’L L. 420, 420-35 (1991) (discussing the evolution of soft law in international environmental protection, asserting that soft law defines “the standards of good behavior” in the international field).

⁹⁶ Yvo de Boer, Executive Sec’y, UNFCCC, Summary of Daily Press Briefing (Dec. 2, 2007) (video available at http://unfccc.int/meetings/cop_13/items/4231.php (follow hyperlink to video under “2 December”) (“What we need is political will. The big question for me is: ‘Ministers, what is your political answer to what the scientific community is telling you so very clearly?’”).

SUBSCRIPTION INFORMATION

Sustainable Development Law & Policy (ISSN 1552-3721) publishes three issues each year. Subscriptions are \$30 per year. Because our goal is to make *Sustainable Development Law & Policy* available to practitioners in related fields, if a non-profit organization is unable to meet the subscription price, the publication may be available at no cost upon request. All subscriptions will be renewed automatically unless timely notice of cancellation is provided.

To subscribe, please contact us by email (preferred) or at:

Managing Editor

Sustainable Development Law & Policy

American University Washington College of Law

4801 Massachusetts Ave., NW Suite 631

Washington, DC 20016

Email: sdlp@wcl.american.edu

SDLP

AMERICAN UNIVERSITY
WASHINGTON COLLEGE OF LAW
4801 MASSACHUSETTS AVENUE, NW SUITE 631
WASHINGTON, DC 20016-8180

FORWARDING SERVICE REQUESTED

Non-Profit
U.S. Postage

PAID

Hagerstown, MD
Permit No. 93

WCL's International Legal Studies Program. Where the World Meets to Study Law.



One of the top international LL.M. programs in the U.S., we offer a truly international setting and unparalleled resources in **WASHINGTON, D.C.**

- More than 45 international law courses each semester.
- A world-renowned faculty.
- A student body from over 70 countries and graduates from more than 100 nations.
- LL.M. research scholarships available.
- Also offering a Doctor of Juridical Science (S.J.D.) program.



AMERICAN
UNIVERSITY

WASHINGTON COLLEGE of LAW



For information: **202.274.4110**

www.wcl.american.edu/ilsp
email: llminfo@wcl.american.edu

AA/EEO

4801 Massachusetts Avenue, NW
Washington, DC 20016-8189