

Recalibrating the
Law of Humans with the
Laws of Nature:
Climate Change, Human Rights,
and Intergenerational Justice

by

Burns H. Weston

Director and Senior Researcher, Climate Legacy Initiative
Visiting Distinguished Professor of International Law and Policy
Vermont Law School
Bessie Dutton Murray Distinguished Professor of Law Emeritus
Senior Scholar, Center for Human Rights
The University of Iowa

and

Tracy Bach

Associate Director and Senior Research Fellow, Climate Legacy Initiative
Professor of Law
Vermont Law School



VERMONT LAW SCHOOL

 THE UNIVERSITY OF IOWA

2009

Copyright ©2009 by Vermont Law School

In Collaboration With

Peter Barnes

Senior Fellow of On the Commons (formerly Tomales Bay Institute); author of *Capitalism 3.0* and *Who Owns the Sky?*

Sharon C. Benzoni

Research Associate of The University of Iowa Center for Regional and Global Environmental Research (2007–2008), B.S. (Environmental Science) The University of Iowa '07

David A. Bollier

Editor, OntheCommons.org; author of *Silent Theft*; cofounder of Public Knowledge; Senior Fellow at Norman Lear Center, USC

Jonathan C. Carlson

Professor of Law and Senior Associate to the President, The University of Iowa

Richard H. Cowart

2008 Distinguished Visiting Energy Scholar, Vermont Law School; Director, The Regulatory Assistance Project

N. Bruce Duthu

Professor of Native American Studies, Dartmouth College

Michael H. Dworkin

Director of the Institute for Energy and the Environment and Professor of Law, Vermont Law School

Alyson Flournoy

Professor of Law and Director, Environmental & Land Use Law Program, University of Florida Levin College of Law

Joseph H. Guth

Legal Director, Science and Environmental Health Network (SEHN)

Maureen F. McCue

Global Health Studies Program and Center for Human Rights, The University of Iowa; Chair, Iowa Chapter, Physicians for Social Responsibility

Hari M. Osofsky

Associate Professor of Law, Washington & Lee University School of Law

Carolyn Raffensperger

Executive Director, Science and Environmental Health Network (SEHN)

Jerald L. Schnoor

Allen S. Henry Chair in Engineering, Professor of Civil and Environmental Engineering, Professor of Occupational and Environmental Health, The University of Iowa; Co-Director, Center for Global and Regional Environmental Research

Pamela J. Stephens

Professor of Law, Vermont Law School

Andrew L. Strauss

Professor of Law, Widener University School of Law

David A. Wirth

Professor of Law; Director of International Programs, Boston College Law School

Mary Chistina Wood

Philip H. Knight Professor of Law, University of Oregon School of Law

Tseming Yang

Professor of Law, Vermont Law School; Director, Vermont Law School-Sun Yat-sen University Partnership for Environmental Law in China

The Climate Legacy Initiative

Distinguished Advisors Panel

Harriet Barlow

Director, HKH Foundation and
the Blue Mountain Center

Richard Falk

Albert G. Milbank Professor of
International Law and Practice Emeritus,
Princeton University; Visiting Professor
of Global and International Studies,
University of California at Santa Barbara

Gary Hart

Co-Chair, Presidential Climate Action
Committee (PCAP) National Advisory
Committee; Wirth Chair Professor,
University of Colorado at Denver;
US Senator (CO - ret.); former candidate
for President of the United States

Roger Kennedy

Former Director of the National Park
Service; Director Emeritus, National
Museum of American History

Bill McKibben

Environmental author;
Scholar in Residence, Middlebury College

Bryan Norton

Professor of Philosophy, Georgia Tech
School of Public Policy, and a charter
member of the Environmental Economics
Advisory Committee of the Environmental
Protection Agency's Science Advisory Board

David Orr

Chair, Environmental Studies Program,
Oberlin College

James Gustave Speth

Carl W. Knobloch, Jr. Dean of the School
of Forestry & Environmental Studies and
Sara Shallenberger Brown Professor in the
Practice of Environmental Policy, School
of Forestry & Environmental Studies,
Yale University

Jörg (Chet) Tremmel

Founder and Director of the Foundation
for the Rights of Future Generations,
Germany

Edith Brown Weiss

Francis Cabell Brown Professor
of International Law, Georgetown
University Law Center

The Climate Legacy Initiative

Consultants Working Group

Peter Barnes

Senior Fellow of On the Commons (formerly Tomales Bay Institute); author of *Capitalism 3.0* and *Who Owns the Sky?*

David A. Bollier

Editor, OntheCommons.org; author of *Silent Theft*; cofounder of Public Knowledge; Senior Fellow at Norman Lear Center, USC

John E. Davidson

Professor of Political Science, University of Oregon

Alyson Flournoy

Professor of Law and Director, Environmental & Land Use Law Program, University of Florida Levin College of Law

Joseph H. Guth

Legal Director, Science and Environmental Health Network (SEHN)

Maureen F. McCue

Global Health Studies Program and Center for Human Rights, The University of Iowa; Chair, Iowa Chapter, Physicians for Social Responsibility

Nancy Myers

Lead author and editor of SEHN's how-to book on the precautionary principle, *Precautionary Tools for Reshaping Environmental Policy*

Hari M. Osofsky

Associate Professor of Law, Washington & Lee University School of Law

Matthew Pawa

Attorney at Law

Carolyn Raffensperger

Executive Director, Science and Environmental Health Network (SEHN)

Andrew L. Strauss

Professor of Law, Widener University School of Law

David A. Wirth

Professor of Law; Director of International Programs, Boston College Law School

Mary Chistina Wood

Philip H. Knight Professor of Law, University of Oregon School of Law

The Climate Legacy Initiative

Research Assistants

Vermont Law School

Justin Brown, JD '09
Betsy Catlin, JD '08
Jonathan DeCarlo, JD '09
Joe Starnes, JD '10
Nicholas Mangold, JD '10
Mave Gasaway, JD '09
Katherine Moll, JD '09
Christina Switzer, JD '08

The University of Iowa

Jacob J. Larson, JD '08
Kara K. Moberg, JD '09
Suzan M. Pritchett, JD '08
Wan-chun Dora Wang, JD '10
Michelle A. Wheelhouse, JD '09

Contents

Preface	ix
Foreword	x
Introduction: Our Climate Legacy	13
I. Climate Change and Intergenerational Justice: Creating a Legal Framework for Ensuring Accountability to Future Generations in Climate Change Lawmaking	17
II. How Does Existing Law Conserve Options for Future Generations?	28
III. How Does Existing Law Conserve Quality for Future Generations?	38
IV. How Does Existing Law Conserve Access for Future Generations?	46
V. Challenges to Intergenerational Justice: Risk Management, Scientific Uncertainty, and Long Time Frames.	54
VI. Summary and Recommendations	60
A. Threshold/Organic <i>Recommendation 1: Define and Develop a Law of the Ecological Commons for Present and Future Generations.</i>	63
B. National/Subnational 1. Constitutive <i>Recommendation 2: Adopt Model Provisions to Amend State Constitutions for the Purpose of Establishing Environmental Rights for Present and Future Generations.</i>	65
2. Legislative <i>Recommendation 3: Adopt Model State Statute to Implement Constitutionally Established Environmental Rights for Future Generations.</i>	67
<i>Recommendation 4: Adopt Model State Environmental Act - NEPAs</i>	70
<i>Recommendation 5: Adopt Model National Environmental Legacy Act—NELA</i>	72

<i>Recommendation 6: Institute Cap and Trade Regulatory Strategies for Allocations to Energy Efficiency</i>	75
<i>Recommendation 7: Create Sky Trusts and Other Environmental Stakeholder Trusts to Sustain and Safeguard Common Assets</i>	77
3. Regulatory	
<i>Recommendation 8: Advance the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations.</i>	78
<i>Recommendation 9: Foster Diagonal Regulatory Initiatives</i>	80
<i>Recommendation 10: Adopt a Model Executive Order Establishing an Office of Legal Guardian for Future Generations and Provide for the Training and Certification of Legal Guardians.</i>	81
4. Judicial	
<i>Recommendation 11: Build Environmental Values into the Law, Including the Common Law</i>	83
<i>Recommendation 12: Arrange for Court-Appointed Special Masters and Experts: A Unique Role for Legal Guardians of Future Generations</i>	84
C. International (Global/Regional)	
1. Normative	
<i>Recommendation 13: Adopt Draft UN General Assembly Declarations on [a] The Ecological Rights and Responsibilities of Present and Future Generations, [b] The Right to a Clean, Healthy, Ecologically Balanced, and Sustainable Environment, and [c] The Recognition of the Atmosphere as Part of the Global Commons for the Benefit of Present and Future Generations.</i>	85
2. Institutional/Procedural	
<i>Recommendation 14: Strengthen Kyoto Institutions and Mechanisms to Reduce Greenhouse Gas Emissions for the Benefit of Present and Future Generations</i>	89
<i>Recommendation 15: Attune WTO Trade Rules to the Ecological Needs and Interests of Future Generations</i>	90
<i>Recommendation 16: Give the International Court of Justice Compulsory Advisory Jurisdiction on Matters Concerning Climate Change and the Needs and Interests of Future Generations.</i>	91

Preface

The seed for the Climate Legacy Initiative (CLI) was planted when David W. Orr, the Paul Sears Distinguished Professor of Environmental Studies and Politics at Oberlin College, spoke at Vermont Law School (VLS) in September 2006 on the topic “Climate Change and Human Rights.” In the audience was human rights scholar and activist Burns H. Weston, then a visiting professor at VLS and responsible for Professor Orr’s visit. Inspired by Professor Orr’s lecture and encouraged by him as well, Professor Weston envisioned a project that would look deeply into the question of climate change and intergenerational justice. The project would research and analyze how current law conceptualizes and codifies the ethical duties and rights that exist between current and future generations in the face of climate change’s predicted harms. It would seek to answer intriguing legal questions: Is it possible for U.S. law, the law of other countries, indigenous peoples’ law, or international law to define rights of future generations to a clean, healthy, and sustainable environment? Likewise, can law impose a duty on current generations to pass on a specific climate legacy?

The following CLI Policy Paper documents this research and more, offering a legal framework for constructing intergenerational rights and duties and recommendations that seek to implement it. When we began this project, understanding and discussion of climate change was scarcely evident beyond the experts and those who heard them. However, with Al Gore’s “An Inconvenient Truth,” the Intergovernmental Panel on Climate Change’s Fourth Assessment report, and the Nobel Prize recognizing their collective contribution to our understanding of climate change, the sociopolitical and psychological climate began to change dramatically—and rapidly, too. Now, as this policy paper goes to press, many leading climate scientists seek to save our planet from the harms caused by the world’s collective failure to curb growing greenhouse gas emissions by using the latest technology as an emergency “Plan B.” The need for a paradigm shift in the way law and nature interact, which is at the heart of this policy paper, could thus not be more urgently needed.

A project as ambitious as the Climate Legacy Initiative would not be possible without the generosity of those who envision how the world should be and act to make it so. We thank all of them: our contributors, who provided provocative research, analysis, and writing; the members of our Distinguished Advisors Panel, who gave generously of their time and effort in insightful review; our thirteen hard-working research assistants at VLS and The University of Iowa; Courtney Collins, our talented CLI Program Coordinator; and, for their unwavering support, VLS President and Dean Geoffrey B. Shields, VLS Associate Dean for the Environmental Program and Director of the Environmental Law Center Marc Mihaly, University of Iowa Associate Provost and Dean of International Programs Downing A. Thomas, Dean Carolyn C. Jones of The University of Iowa College of Law, and last, but not least, the staff of The University of Iowa Center for Human Rights. We particularly thank Adam J. Lewis and the HKH Foundation for their belief in our project and their superbly generous financial commitment to it.

Foreword

Two generations ago, to the derision of some who could not accept a new truth, Wendell Willkie responded to worldwide wars and depression by insisting that ours is indeed One World—the symbol of which was an old-fashioned globe on a stand.

Nuclear weapons soon showed how dangerous that one world had become. The symbol for that perception was a mushroom-shaped cloud.

A generation ago, Stewart Brand, later best known for the Whole Earth Catalogue and his leadership of The Long Now Foundation, persuaded NASA to release the Apollo satellite image of the entire earth as seen from space, perceiving that the image of our planet, “a little blue, white, green and brown jewel-like icon amongst a quite featureless black vacuum,” might be a powerful symbol.

Recognizing the continents and oceans of our habitation as very small and fragile, Brand and his peers urged understanding that consumption should consider limitations of supply, and that exploitation of that Whole Earth would encounter limits. The earth as a sphere does not have infinite dimensions or contain infinite resources. The Whole Earth as a blue planet became its own symbol.¹

In our generation, a series of shocks of recognition are leading to the acceptance of an undeniable though inconvenient truth—human activity on this one world, on this whole earth, is not only encountering limits but is also producing changes that are irreversible and affecting everyone. Repeated climatic events of unprecedented consequence to human life, and information arrayed by computer-facilitated science, have provided ample evidence to stimulate each of us to epiphanous recognitions of our circumstances.

We are now seeking to accelerate the pace at which our species may respond to this third modern epiphany, this third shocked recognition of our circumstances.

The contributions to this policy paper manifest, in their complexity, diversity, and magnitude, why it is so difficult to respond as a resilient and adaptive species to the unprecedented circumstances before us. The increasing damage ensuing from human-induced climate change is at once general and incremental. It is everyone’s problem and everyone’s responsibility. It cannot be confined within any jurisdiction or time frame.

Therefore, action is required of everyone, every jurisdiction, every court, every legislature—and across time—along a very long “now.” Justice can only be served by distributing the costs of alleviation and remedy across all those who would otherwise suffer and who will, instead, benefit—a list of beneficiaries that has no exceptions. Unlike all preceding allocations of rights and duties, this one is specific and, at the same time, general.

The response of the contributors to this policy paper is to move ahead, persuaded that there is already sufficient acceptance of these precepts to justify the hope of remedial action that chances of success will improve, but that events may overwhelm intention unless we are expeditious. We think universal responsibility will be accepted once it is explained, and that participation in cost-sharing will likewise occur when it is explained. We are not starting alone or without encouragement. Prophets, saints, and sages have not required Twentieth Century shocks

of recognition to urge upon humankind the precepts underlying the general distribution of responsibility across generations and across jurisdictions proposed in these papers. Buddha and St. Francis both based systems of belief and of life on the integral interdependence of life on this planet.

On this continent, Jonathan Edwards in the Eighteenth Century and George Perkins Marsh in the Nineteenth warned their fellow citizens that all resources on a planet are limited, and that there would be no escaping the consequences of waste and heedless exploitation. Edwards provided us with a theology of respect for limits; Marsh bestowed upon us a history-grounded secular philosophy of intergenerational responsibility. He came to that philosophy through direct observation of the consequences of over-grazing and promiscuous lumbering in Vermont and of waste and improvidence upon the once-fertile but barren lands lying along the shores of the Mediterranean. Some of Vermont could be salvaged; it was too late for Tunisia, Sicily, and Sardinia after too many generations had pressed beyond what the earth would permit.

The planet earth does not suffer and submit beyond a point. Thereafter, it rejects species that do not comply with its rules, which supervene all legal systems. The earth is the ultimate court of appeals.

The meaning of Rachel Carson's work was that the loss of other species warns us of what can happen to our own when circumstances alter sufficiently to terminate the cycle of life.

So now, having been given adequate warning, we seek to bring our constitutional and legal systems into realistic relationship with our circumstances. We need not be abashed by the fact that much of the constitutional and legal machinery lying about us is not sufficient to deal with our circumstances. Most of us happen to be lawyers. We know what the old machinery looks like. It was made to do old tasks. But lawyers are never just lawyers. We are citizens as well, and as citizens we are attempting to work with that familiar machinery—and a few new parts—to render it useful to new necessities.

Achieving our intentions will require of us that we:

- (1) Draw forth from familiar concepts, convention, law, practice, and habitual thinking those elements that can be composed into a theory shaped to meet our current necessities.
- (2) Find familiar routes leading from theory to practice through which such a newly-invigorated, coherent, capacious, and more sharply relevant theory may be brought toward practice.
- (3) Suggest action in each stage of that three-step progression from theory to constitution and then to law that is present in some legal systems, or, when there are only two—in the absence of constitutions—act at both of the two.

We must get on with this. Time is running out.

—Roger Kennedy
Climate Legacy Initiative Distinguished Advisors Panel Member
Former Director, National Park Service
Director Emeritus, National Museum of American History

Introduction: Our Climate Legacy

Climate change threatens the basic elements of life for people around the world—access to water, food, health, and use of land and the environment. . . . The consequences of climate change will become disproportionately more damaging with increased warming. Higher temperatures will increase the chance of triggering abrupt and large-scale changes that lead to regional disruption, migration, and conflict. There is still time to avoid the worst impacts of climate change, if we take strong action now.

Sir Nicholas Stern, *The Economics of Climate Change*²

The special interests seek to maintain short-term profits with little regard to either the long-term impact on the planet that will be inherited by our children and grandchildren or the long-term economic well-being of our country.

Dr. James E. Hansen, NASA Goddard Institute for Space Studies³

In August 2008, while celebrating the accomplishments of the Intergovernmental Panel on Climate Change’s first twenty years, United Nations Secretary-General Ban Ki-moon declared that “after 20 years of the work of the IPCC, we have the science. We know what needs to be done.”⁴ Scientists around the world agree that climate change is real, that it is caused by human behavior, and that major changes in how humans inhabit the planet are required both to mitigate some impacts and adapt to those that cannot be undone.⁵ Even the United States Government, which has been slow to recognize anthropogenic climate change, announced in May 2008 (in a court-ordered report) that “most of the recent global warming is *very likely* due to human-generated increases in greenhouse gas concentrations. . . . It is *likely* that there has been a substantial human contribution to surface temperature increases in North America.”⁶ This recognition is long overdue. As NASA scientist James Hansen puts it, “the world is in a state of planetary emergency.”⁷

Until recently, we humans have assumed that each succeeding generation would inherit a world that was better than the one before it. Our models of economic development have presumed infinite and free natural resources. They never questioned the feasibility of indefinite economic and human growth. Likewise, our current laws, created to advance the operational needs of industrial society, reflect these foundational beliefs.

But the theory of technological and material progress that has been with us ever since the Enlightenment is now in serious doubt. As Peter Barnes observes in *Capitalism 3.0*, our current version of capitalism was born in the industrial revolution, when capital was scarce and natural resources were plentiful. Now that the inverse is true, he argues, a new operating system is needed.⁸

The latest scientific findings about climate change make it abundantly clear that we are entering a radically different period of human history. One generation's legacy to the next is no longer assured. We must somehow engineer a dramatic break with our recent past and current practices.

Climate change forces us to reconsider business as usual, including how policy makers use the law to make required but radical changes. Past strategies to contain human harms to the environment have focused on the point of degradation. In the United States, separate pieces of federal legislation adopted in the 1960s and 1970s have addressed air and water pollution, surface land development, and waste disposal. While each set of command-and-control regulatory schemes have curbed the worst problems, the piecemeal approach has failed to address the organic interconnections of actual ecosystems, their dynamic interplay and the cumulative, long-term impacts of pollutants like carbon dioxide.

Now we face the fact that our personal and industrial practices have, over several generations, led to climatic conditions that could make our planet uninhabitable for future generations. The only rational response is to host a frank and comprehensive evaluation of our past attempts to use law to place humans and nature in equipoise. This CLI Policy Paper argues that we will not be able to recalibrate the law of humans with the laws of nature unless we explicitly recognize the accountability of one generation to the next. Carbon buildup in our atmosphere occurs over generations and so requires new legal principles that recognize this intergenerational connection among human societies. We must develop new legal principles to articulate the rights and corresponding duties that underpin intergenerational equity, and develop new ways to use law to translate ethical norms into practice.

National legal systems have traditionally included mechanisms for protecting future interests of one sort or another. In the United States, for example, long-term ground leases and short-term leasehold contracts require the return of property in good condition for use by future tenants. Private and public trusts impose fiduciary duties on trustees to protect the trust corpus for future beneficiaries. Federal legislation has conserved vast tracts of private land as parks for the use and enjoyment of future Americans. Each type of law—the private law made by contract between parties; court interpretation of common law norms of stewardship; the bold conservation legislation of federal and state lawmakers—takes affirmative steps in the present to ensure the well-being of those in the future. This capacity to define a legacy through law provides the starting point for crafting effective policy to mitigate climate change and facilitate adaptation to it.

For over thirty years, international law has explicitly linked intergenerational accountability and the environment. The 1972 Stockholm Declaration on the Human Environment proclaimed “the common conviction” that humanity “bears a solemn responsibility to protect and improve the environment for present and future generations.”⁹ Fifteen years later, the UN World Commission on Environment and Development (WCED) built on this conviction by declaring that sustainable socioeconomic development must “meet the needs of

the present without compromising the ability of future generations to meet their own needs.”¹⁰ This statement helped to lay the groundwork for the 1992 Rio Declaration on Environment and Development and its companion Agenda 21, both of which made the well-being of “present and future generations” a high priority.¹¹ Both provide international recognition of the need to balance human economic development with environmental protection, and the needs of current generations with those of the future.

Many countries and American states share this tradition of using environmental law to recognize explicitly and expressly the legal interests of future generations. Several state constitutions include a clause like that in Montana’s Constitution mandating “[t]he state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations.”¹² The preamble of the U.S. National Environmental Policy Act (NEPA) declares that the law must “create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”¹³ Modern constitutions in new democracies often grant enforceable environmental rights to current and future generations alike, as in South Africa’s right “to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures.”¹⁴ In these ways, domestic laws have recognized that individual citizens, both current and future, have enforceable rights to a clean and healthy environment.

Legislative ambitions, however, may not be effective in practice. Litigation under current federal and state law has done little to spur climate change mitigation and adaptation. Even the 2007 Supreme Court decision in *Massachusetts v. EPA*, ruling that the Clean Air Act gives the federal agency authority to regulate greenhouse gas emissions, has not forced the federal government’s Environmental Protection Agency to take action. Congressional debate about energy policy and cap-and-trade bills has stalled. While state legislatures and agencies have actively created climate change law to fill the federal void, the reach and ultimate efficacy of state initiatives are problematic. For example, California’s attempts to set higher vehicle emissions standards have stalled in the face of a federal preemption challenge. Likewise, the United States’ continued disregard of the United Nations Framework on Climate Change and its Kyoto Protocol has hamstrung U.S. lawmakers.

This policy paper agrees with Secretary-General Ban Ki-moon’s observation and asserts that lawmakers must respond to the IPCC’s findings by creating new law that explicitly accounts for the intergenerational impact of climate change. Just as the global commons calls for a *spatial* solidarity among the peoples of the globe, regardless of East/West, North/South, developed/developing country divides, a framework for intergenerational justice calls for a *temporal* solidarity across past, present, and future generations.

Chapter I lays the theoretical groundwork for a new body of law committed to intergenerational justice. It first defines future generations, then outlines principles and rationales

for intergenerational justice and clarifies their relationships to social justice theory. The chapter concludes by invoking Edith Brown Weiss's three principles of intergenerational justice—conservation of options, conservation of quality, and conservation of access—as the basis for a new framework of climate change law.

Chapters II, III, and IV explore each of these intergenerational justice principles in turn, defining them in more detail and illustrating them with examples drawn from U.S., Native American, foreign, and international law. Each chapter concludes by examining the strengths and weaknesses of these different legal systems and how they have sought to put intergenerational justice principles into practice. We ask, in short, what lessons might we learn from them when creating law to mitigate and adapt to climate change?

Chapter V takes on the main arguments made against focusing on intergenerational justice. It looks hard at the role that cost-benefit analysis has played in impeding regulation to protect the environmental legacy of future generations, especially the application of discounting to the long time frames of climate change. This chapter critiques discounting in the intergenerational context, and offers three alternatives to it.

Chapter VI sums up our primary challenge: to build a new body of climate change law on the foundation of the three intergenerational justice principles previously considered and the legal norms that have developed around them. We argue that the threat of global climate change poses an extraordinary moral challenge to the United States and the rest of humanity. We further argue that, to help meet this challenge, we must aggressively find the means to develop new legal and policy tools that can meet our long-ignored ecological obligations to future generations.

In this policy paper, therefore, we propose sixteen legal initiatives. The recommendations seek to nurture a more legally robust framework for protecting of the ecological rights and interests of future generations. We offer them as way to stimulate fresh debate, policy innovation, and effective action.

In an op-ed highlighting the need for appropriate financial regulation after the sub-prime mortgage crisis, *New York Times* columnist Thomas Friedman warned, “We need to get back to investing in our future and not just betting on it.”¹⁵ Notions of sustainability and intergenerational equity have been at the heart of the environmental movement since its birth. But now, the urgent realities of climate change require us to take our intergenerational obligations more seriously. We must more clearly articulate them in law and make them enforceable. The ultimate inconvenient truth is not that climate change exists, but that we, the current generation, are failing to meet our moral obligations to untold future generations. We lawyers, legislators, and judges, acknowledging the scientific consensus, must step up to the magnitude of this challenge. We must come to recognize the deficiencies of our current legal tools and devise new ones. We must shift from betting on future generations to investing in them.

I. Climate Change and Intergenerational Justice: Creating a Legal Framework for Ensuring Accountability to Future Generations in Climate Change Lawmaking¹⁶

[I]n the final analysis, our most basic common link is that we all inhabit this small planet. We all breathe the same air. We all cherish our children's future. And we are all mortal.

John F. Kennedy, Commencement Address
American University, 1963¹⁷

Ask almost anyone about climate change and they will agree: we have a moral responsibility to give the next generation a global environment at least no worse than the one we received from our predecessors. What parent, grandparent, or great-grandparent would disagree? What child, grandchild, or great-grandchild will not feel resentful to inherit a planet whose climate and ecosystems are destabilized to the point of cataclysm? Somewhere deep inside, all of us know that life is a precious gift that must be shared among a long chain of humanity, past, present, and future. We are a temporary part of life's pageant and, whatever our ancestors' failings, we must reach beyond our egoistic selves to ensure that the earth will, with fairness, sustain today's children and those of the future.

But when asked if future generations have a *legal* right to protection from climate change harms and, if so, whether present generations have *legal* obligations relative to them, some theorists demur. Future persons, they argue, cannot have rights because they do not yet exist and therefore cannot have anything, including rights. Future human beings are indeterminate and contingent, not actual, and so lack identity.

We cannot know their names or collective size, or their needs, desires, or tastes. Indeed, we cannot even be sure that "they" ever will exist. Therefore, mindful of the truism that legal duties do not exist absent corresponding legal rights, skeptics say that current generations cannot have legal obligations to future generations for the simple reason that future generations cannot have legal rights.

This chapter takes the opposite view. It summons an array of legal theories to support the argument that future generations do have a legal right to ecological protection and that, as a consequence, they should be entitled to demand ecological protection as a matter of law.

A. Future Generations Defined: "The 200 Year Present"

How might we reasonably define "future generations"? Sociologist Elise Boulding recommends the idea of the "two-hundred-year present," a period of time that "begins one

hundred years ago today, on the day of the birth of those among us who are centenarians, celebrating their one hundredth birthday today. The other boundary of this present moment is the hundredth birthday of the babies being born today.” Boulding describes the “200 year present” as

a continuously moving moment, always reaching out one hundred years in either direction from the day we are in. We are linked with both boundaries of this moment by the people among us whose lives began or will end at one of those boundaries, three and a half generations each way in time. It is our space, one we can move around in directly in our lives, and indirectly by touching the lives of the linkage people, young and old, around us.¹⁸

Conceiving our temporal space in this way makes our understanding of what we have inherited from the past more personal and interconnected with the generations yet to come. It drives home the fact we are inextricably linked to other generations and that our legacy to the next generation occurs when our present becomes its past. A 200 year present also brings those potentially vague future persons into meaningful focus. Yet it is also dynamic, constantly moving the outer boundary of the present to include the generation that will exist 100 years down the road, during our grandchildren’s and great-grandchildren’s time. The concept of a 200 year present helps cast the ecological rights of future generations as *generational* rights—contemporary rights that are held in relation to other generations—past, present and future.¹⁹

Most fundamentally, by clarifying the vagueness of generational identity, the 200 year present can strengthen our conviction that future generations can and should have rights. It can help us to see how theories of social justice readily transfer from *intragenerational* to *intergenerational* settings. Thinking in this temporal frame, the odds are greater that we will strive for a legacy as good or better than the one we inherited. In the context of climate change, this could make all the difference.

Thus this policy paper rests on a definition of “future generations” that reflects our personal linkages, both direct and indirect, among the three and a half generations of persons that exist from this day forward. In so doing, we include children (i.e., persons under the age of eighteen) because they usually are poorly positioned to determine their future and thus, like future generations, require others to represent their interests.

B. Intergenerational Ecological Justice

Dr. Jörg (Chet) Tremmel, founder of the German-based Foundation for the Rights of Future Generations (FRFG), has observed that “[t]he concept of intergenerational justice may very well become an intellectual leitmotif of the new century.”²⁰ Such justice exists, he continues, “when the accumulated capital, which the next generation inherits, is at least as high as what the

present generation inherited.”²¹ This capital comes in several forms: *natural capital*, which is the stock of environmental assets important for supporting human life, such as biodiversity and the atmosphere; *real capital*, such as consumer goods and infrastructure; *financial capital*, such as financial claims and debt between countries; *social capital*, which derives from solidarity within society, stable relationships between individuals and groups, and values; *human capital*, derived from our health, education, skills, and knowledge; *cultural capital*, including institutions such as the political, economic, and legal systems; and *knowledge capital*, which is the accumulation of individual knowledge within a society.²²

Some philosophers would narrow Tremmel’s definition of intergenerational justice, while others would expand it. Brian Barry, for example, believes that it would be unfair to leave all non-renewable resources undiminished for the sake of future generations and thus favors leaving future generations “no worse off (in terms of productive capacity) than they would have been without the depletion.”²³ The late John Rawls would have argued that present generations should not just maintain their legacy but also improve it before passing it on to the next generation.²⁴

International environmental law scholar Edith Brown Weiss advances three basic principles of intergenerational ecological equity in her celebrated book, *In Fairness to Future Generations*.²⁵ Together they provide a foundation for determining when law adequately protects future generations from climate change harms. Brown Weiss starts with the premise that each generation receives a natural legacy in trust from its predecessors, which it then holds in trust for future generations. This trust relationship imposes duties on the current generation and grants rights to beneficiaries in future generations. To determine one generation’s ecological legacy to the next, we should assess how what is passed on conserves 1) *options*, 2) *quality*, and 3) *access* for the next generation.

Intergenerational equity is achieved, Brown Weiss argues, when each living generation conserves *options* for future generations by “not unduly restrict[ing] the options available to future generations in solving their problems and satisfying their own values.”²⁶ By adhering to this principle, the current generation recognizes that future generations are “entitled to diversity [of natural and cultural resources] comparable to that of previous generations.”²⁷ Inherent in this obligation is conserving “[i]mprovements made by prior generations in the natural and cultural resource base of the planet” because this duty “is consistent with a view of human society as a partnership extending to all generations.”²⁸

To conserve *quality*, the current generation must “maintain the quality of the planet so that it is passed on in no worse condition than [that generation] received it.”²⁹ Through this principle, the current generation recognizes that future generations are “entitled to a quality of the planet comparable to the one enjoyed by previous generations.”³⁰ But notably, mere conservation is not always sufficient: “[i]f one generation fails to conserve the planet at the level of quality received, succeeding generations have an obligation to repair this damage, even if it is costly to do so.”³¹

Finally, to conserve *access*, the current generation must “provide its members with equitable rights of access to the legacy from past generations” and “conserve this access for future generations.”³² By using these principles to constrain the actions of current generations, we may achieve “a minimum level of equality among generations.” The next generation can then enjoy a “planet and cultural resource base at least as good as” the one enjoyed by the preceding generation.³³

C. Rationales for Seeking Intergenerational Justice

Philosophers, political scientists, sociologists, and others offer a variety of rationales for adhering to the three principles of intergenerational justice just discussed. These rationales include:

- The earth is held by past, present, and future generations in common, as a species forming the community of humankind as a whole;³⁴
- As living members of a community, we benefit from the sacrifices and investments made by prior generations;³⁵
- Succeeding generations cannot harm preceding ones and so current generations should not inflict harm on their successors;³⁶
- Future generations are under-represented in legal and political processes and thus the power of present generations to affect adversely their quality of life is imbalanced;³⁷
- A social contract requires each generation to pass on to the next one the gifts it has jointly inherited from the past;³⁸
- No generation should be deliberately favored or disadvantaged over another;³⁹
- No generation should have to envy the impersonal resources enjoyed by predecessor generations;⁴⁰
- The impact of environmentally degrading policies in the present tends to be long-term and therefore threatens future generations disproportionately;⁴¹
- Present actions may not only inflict disadvantages on future generations but also deprive them of benefits;⁴²
- Scientific and technological advances have expanded the sphere of human control and thus present generations have a greater capacity to offset future risks;⁴³
- Future generations will have properties tomorrow, even if they do not have them now, and these will be shaped substantially by the values practiced by present generations;⁴⁴

- The policies of present generations will affect not only the interests of future generations, but also their rights and the obligations their affected rights will impose on their contemporaries;⁴⁵ and
- Even if all individuals do not want offspring, all societies need and therefore have affection for their children, grandchildren, great-grandchildren, and thus care about their future well-being at a minimum.⁴⁶

Our own interest in the sustainability of our planet and the survival of our species, it must be added, or of only our own societies or descendants, depends on our achieving ecological justice for future generations.

But is it possible that we need not give special attention to future generations because their protection is implied in laws that protect present generations? In all legal systems that recognize and value custom, predictability, stability, and coherence, legal decision-making is as much about the future as it is about the past. Furthermore, in our pursuit of happiness, authenticity, and freedom, constitutional law scholar Jed Rubenfeld reminds us, modernity directs us to live in the present.⁴⁷ The future, we are commonly advised, will take care of itself.

As climate change poignantly illustrates, however, living in the present has its limitations. Without explicitly accounting for the harms that future generations are likely to suffer, there is no guarantee that short-term solutions will safeguard the future. At least three pragmatic reasons explain why it is better to be far-sighted when responding to climate change:

1. Future generations will be more severely damaged by climate change than present generations, given the cumulative effect of carbon dioxide concentration;
2. Climate change mitigation and adaptation plans are necessarily focused on the well-being of future generations, given the cumulative impact of climate change; and
3. Our experience with nuclear waste disposal and ozone depletion has shown that disregarding the interests of future generations and intergenerational justice only aggravates the problem.

There are, thus, sound reasons why the interests and needs of future generations must be given respect and attention, even if doing so is costly to present generations.

D. Social Justice Theories and Intergenerational Justice

To be intellectually persuasive, legal rights and duties must be anchored in coherent theories of social justice. Ethical and pragmatic values are essential components of effective

intergenerational social justice, but they are not sufficient without a theory (or theories) of justice upon which intergenerational justice may be convincingly founded.

Theories of social justice tend to divide between “libertarian” and “liberal” theories. Libertarian theories of social justice, sometimes called “conservative,” view government’s role as protecting private property and enforcing people’s “negative” rights to be free from governmental intrusions. Libertarian theorists are wary of social or political agendas that invite governmental intervention. Most assert that it is conceptually impossible for future generations to have rights. Their argument is summarized in the following syllogism:

1. Any coherent theory of social justice involves conferring rights on people;
2. Future generations, being unborn, are not yet people;
3. Therefore, the interests of future generations cannot be promoted or protected according to any theory of justice.

This is a restatement of the theory that intergenerational justice is a conceptual impossibility because of the non-identity of future generations. Thus, future generations merely have interests and the living have only moral, but no legal, obligations to respect those interests.

John Austin, founder of analytical jurisprudence and legal positivism, has asserted, however, that *absolute* moral duties can exist independently of any corresponding rights and that these duties can apply to persons who are not determinate, such as members of a body politic generally or humanity at large.⁴⁸ Yet if future interests can generate *moral* obligations that present-day duty-bearers must fulfill, then surely proxy rights-holders can cause future interests to be treated as *legally recognized* rights. The difference between future interests that summon moral duty and those that evoke legal entitlement is a function of precisely that which distinguishes the “ought” from the “is” in law: a degree of simultaneously authoritative and effective control. The philosopher Annette Baier has observed, “The ontological precariousness of future generations that some see as a reason for not recognizing any rights of theirs is not significantly greater than that of the future state of present persons.”⁴⁹

That “precariousness” of future generations does not of itself excuse us from assuming legal responsibility to them. As philosopher Hans Jonas admonished, “the critical vulnerability of nature to Man’s technological intervention—unsuspected before it began to show itself in damage already done—requires a commensurate ethics of foresight and responsibility, which is as new as are the issues with which it has to deal. * * * Novel powers to act require novel . . . rules and perhaps even a new ethics.”⁵⁰

Liberal theories view government as promoting “positive” rights to socioeconomic and cultural well-being, in addition to enforcing political “freedom from” rights. Within liberal theories of social justice, people are seen as entering into a theoretical covenant or free and

rational agreement with all relevant parties, forging an “ideal contract”; and from such a contract, according to contractarian theories, societies develop legal norms, institutions, and procedures. Most contractarian theorists who address matters of intergenerational justice argue that just social arrangements “are those that could be the object of a free and rational agreement [and therefore] are often called hypothetical contractarian conceptions of justice.”⁵¹

Three contractarian theories of social justice—distributive, reciprocity-based, and respect-based—provide different philosophical pathways for arriving at the same point. Future generations, they confirm, can have legal as well as moral rights to an environmental legacy that leaves them no worse off, more or less, than the generation preceding them.

Distributive justice theories are concerned with the allocation of social goods, and are both substantive and procedural in kind. Substantive theories of distributive justice assert that the allocation must be fair to all, as if the result of an ideal contract freely and rationally negotiated. Fairness can be measured by equality (to everyone the same welfare, resources, or capabilities), by priority (to each according to one’s contribution or need), or by sufficiency (to everyone enough to pursue one’s aims and aspirations without major distress or dissatisfaction). In each case, however, the goal is to ensure fair results for the rights-holders and the duty-bearers who are parties to the social contract. Procedural theories of distributive justice focus on the administration of distributive justice and thus are concerned with the fairness and transparency of decisions about resource allocation. In the intergenerational context—recalling that legal duties do not exist absent corresponding legal rights—authorized proxies are needed to represent the interests of future generation rights-holders.

While there are numerous variants of distributive justice, the essential concern is fairness—in the quantity and quality of resources distributed, and in the access that one generation provides to the next. The central question is how a fair distribution is to be *measured*—what Rawls called the “fair share” or “just saving” question. What and how much should present generations save for the benefit of future generations?⁵² The exact measure of “fair share” is of course open to differing interpretations. Brown Weiss’ three conservation principles, focusing on quantity (as measured by options), quality, and access, further define the yardstick for allocating natural resources over time.

Reciprocity-based theories of social justice likewise support the Brown Weiss definition of intergenerational ecological justice. As Rawls put it, “We are not to gain from the cooperative labors of others without doing our fair share.”⁵³ A self-interested interpretation of this contribution principle is that the good that one gives to others must be also good for oneself. Otherwise, norms of reciprocity will fail to generate consensus and cooperation among competing parties. Even though this interpretation is not currently favored by Western theorists, it is nonetheless possible to see how the self-interest that resides in conserving resources, safeguarding ecological diversity, or curbing climate change for one’s own sake or the sake of one’s family,

descendants, or country can generate consensus and cooperation. It also is possible to see how such environmentally defined self-interest can serve the interests of future generations at the same time.

But since it is impossible for future generations to reciprocate, we need to see how reciprocity-based fairness operates over time. Invoking a “stewardship model” of intergenerational reciprocity, it is reasonable to contend that intergenerational rights and duties reciprocate through each generation giving to the next a fair share of the fair share it received from the generation preceding.⁵⁴ Similarly, one can invoke a “chain of concern model” of intergenerational reciprocity,⁵⁵ made famous by Rawls in relation to familial consanguinity (“fathers looking out for the interests of their sons”). Under this theory, intergenerational rights and duties are held for one’s blood descendants for the same purpose. As Jörg (Chet) Tremmel has written, “It is possible to apply the principle of reciprocity indirectly. Most people would argue that it is ‘just’ to give back to future generations what we received from former generations (just like we owe back our children what we received from our parents).”⁵⁶

Each of these modeled arguments turns on a sense of fair reciprocity between the generations. The contractarian theory, along with its distributive cousin, may follow different lines of logic, but each supports a climate legacy of intergenerational equity.

Respect-based justice depends on neither identity nor reciprocity, but rather on a transgenerational global social contract founded on the notion of human solidarity. Respect-based justice builds on two distinct but conceptually related intellectual traditions: (a) the relational metaphysics and “process philosophy” of the British philosopher and mathematician Alfred North Whitehead;⁵⁷ and (b) international human rights law and policy, whose core value of respect honors difference, freedom of choice, equality of opportunity, and aggregate well-being in value processes.⁵⁸ According to Whitehead, “every generation is related to all preceding and succeeding generations, which collectively form the community of [humankind] as a whole.”⁵⁹ Moreover, the “common good” is not merely the sum of individual goods (as individualistic and liberal theories of society would have it), but, rather, “a state of equilibrium in the interplay of individual goods” that resides in all of humankind—which must be understood as the good of humankind as a whole, including past, present, and future generations.⁶⁰

In this manner, the “common heritage” of Earth’s natural resources, fresh water systems, oceans, atmosphere, and outer space, belongs to all generations in an intertemporal partnership. No generation can properly exclude another from its fair share of that heritage. If personal identity is a factor, it is in an ethos of species identity; if reciprocity is at all pertinent, it is in the mutual caring that arises from species identity. And at the heart of it all, as in the case of distributive and reciprocity-based theories of social justice, is the fundamental ideal of “justice as fairness.”⁶¹

International human rights law and policy—the apotheosis of respect-based justice in the modern world—similarly provides a foundation for building intergenerational justice. The Universal Declaration of Human Rights proclaims its “recognition of the inherent dignity and of the equal and inalienable rights of *all members of the human family* [as] the foundation of freedom,

justice and peace in the world.”⁶² Multiple human rights instruments—from the International Covenant on Economic, Social and Cultural Rights⁶³ and the International Covenant on Civil and Political Rights⁶⁴ to the Convention on the Rights of the Child⁶⁵—articulate “a fundamental belief in the dignity of all members of the human society and in [an] equality of rights, which extends in time as well as space.”⁶⁶

Inspired by the first Earth Day in March 1970 and NASA’s “blue marble” photo of “spaceship earth” in December 1972, human rights came to embrace claimed group rights, such as the right to self-determination and the right to a clean, healthy, ecologically balanced, and sustainable environment. These rights are seen as supplementing earlier proclaimed civil and political rights, on the one hand, and social, economic, and cultural rights, on the other. In asserting such rights, the Inter-American Court of Human Rights recently underscored the point that human solidarity reaches across time and space:

Human solidarity manifests itself not only in a spatial dimension—that is, in the space shared by all the peoples of the world—but also in a temporal dimension—that is, among the generations who succeed each other in the time, taking the past, present and future altogether. . . . It is the notion of human solidarity, understood in this wide dimension, and never that of State sovereignty, which lies on [sic] the basis of the whole contemporary thinking on the rights inherent to the human being.⁶⁷

But how can human rights be justified as a foundation upon which to build intergenerational justice? International human rights law contains a measure of ambiguity and indeterminacy and is not yet firmly rooted in individual countries’ practice (even in the West to which it owes its early origins). The answer is found via a Rawlsian “veil of ignorance” social construct: a generation not knowing where along the spectrum of time it is situated, but acting rationally in its own self-interest, would likely hope for a bequest of accumulated social capital from its predecessor that would most guarantee the fairest distribution of basic wants (rights) and needs (capabilities) among all human beings. Such a distribution would ensure that all would benefit as much as possible and suffer the least possible disadvantage.

Herein lies, indeed, the theoretical justification for human rights and, on the basis of it, a foundation upon which to build a theory of intergenerational justice. Throughout the history of human rights, from antiquity to the present day, we find a kind of share-and-share-alike Golden Rule chosen by all generations to satisfy the fundamental requirements of socioeconomic and political justice. It is a rule that articulates the minimum conditions for a life of dignity.

Thus, while intergenerational justice clearly can be grounded on distributive or reciprocity-based social justice theory, respect-based social justice theory provides stronger support because it avoids having to grapple with the non-identity and non-reciprocity issues that haunt other theories of social justice applied in the intergenerational context. Respect for others—

deceased, living, or unborn—is eminently possible without the need for personal acquaintance or knowledge. Respect for others is ordinarily practiced free of charge, without reciprocal preconditions. It is possible for present generations to choose a legacy of respect for the ecological rights of future generations without expectations of return. “The [fundamental] question at issue,” writes environmental science philosopher Bryan Norton, “is a question about the present; it is a question of whether the community will, or will not, take responsibility for the long-term impacts of its actions,” and in so doing “rationally choose and implement a bequest package—a trust or legacy—that they will pass on to future generations.”⁶⁸

E. Respect-Based Social Justice in Climate Change Practice

Putting respect-based justice into practice within the three principles of intergenerational justice developed by Brown Weiss leads to the following two propositions:

- Each generation has the right to expect the preceding generation to (1) conserve its options, (2) conserve quality, and (3) conserve access; and
- Each generation has an obligation to the next generation to (1) conserve its options, (2) conserve quality, and (3) conserve access.

These two propositions avoid the “non-identity” and “non-reciprocity” problems of distributive theories of social justice. They conceive the rights of future generations as correlates of the duties of present generations, thus demonstrating how a respect-based theory of social justice can ignore the “non-identity” problem. In addition, they conceive the rights of future generations as payback for the accumulated capital that predecessor generations bequeathed to them, thus demonstrating how a respect-based theory of social justice can ignore the “non-reciprocity” problem.

This two-part definition of intergenerational ecological justice has four key strengths. First, it gives future generations the “flexibility to achieve their goals according to their own values...[and does not] require one generation to predict the values of future generations.”⁶⁹ Second, it “encourage[s] equality among generations, neither authorizing the present generation to exploit resources to the exclusion of future generations, nor imposing unreasonable burdens on the present generation to meet indeterminate future needs.”⁷⁰ Third, this definition is “reasonably clear in application to foreseeable situations.”⁷¹ Fourth, it is “shared by different cultural traditions and . . . generally [is] acceptable to different economic and political systems.”⁷²

Nor is it unreasonable or irrational to assume that the same “original position” decision-makers would demonstrate and promote respect for future generations of people. Paraphrasing Rawls, Brown Weiss agrees:

[A]ssume the perspective of a [rational] generation that is placed somewhere along the spectrum of time, but does not know in advance where it will be

located. Such a generation would want to inherit the common patrimony of the planet in as good condition as it has been for any previous generation and to have as good access to it as previous generations. This requires that each generation pass the planet on in no worse condition than it received it and provide equitable access to its resources and benefits.⁷³

Thus does Brown Weiss demonstrate the universality of her three principles of intergenerational ecological justice.

Embedded in these statements is a contractarian viewpoint akin to Whitehead's process philosophy of human solidarity across space and time as a basis of justice for the global common good. Brown Weiss's underlying (and persuasive) point is that we humans are "integrally linked with other parts of the natural system" and that we also are inherently linked to one another over time, one generation to another, past to present and present to future, in a continuing partnership of shared responsibility for "the common patrimony of earth."⁷⁴ She writes:

In describing a state as a partnership, Edmund Burke observed that "as the ends of such a partnership cannot be obtained in many generations, it becomes a partnership not only between those who are living but between those who are living, those who are dead, and those who are to be born." The purpose of human society must be to realize and protect the welfare and well-being of every generation.⁷⁵

This requires, Brown Weiss concludes, "sustaining the life-support systems of the planet, the ecological processes, environmental conditions, and cultural resources important for the survival and well-being of the human species, and a healthy and decent human environment."⁷⁶

There is, thus, ample theory to establish that future generations can have legal as well as moral rights to protection from climate change harms, and that the ecological rights of future generations define the ecological duties of present generations. Brown Weiss's three principles of intergenerational equity (conservation of options, quality, and equity) provide a coherent legal framework for evaluating a law of climate change mitigation and adaptation.

What remains is the important work of building an ecological legacy on this theory, one that will be national and international alike; that will benefit our children, grandchildren, great-grandchildren, and other future generations; and that can inspire pride in us, the living.

II. How Does Existing Law Conserve Options for Future Generations?

We are looking ahead, as is one of the first mandates given to us as chiefs, to make sure [that] every decision we make relates to the welfare and well-being of the seventh generation to come, and that is the basis by which we make decisions in council. We consider: Will this be to the benefit of the seventh generation. This is a guideline.

Iroquois Nation maxim⁷⁷

As we take the next steps to build a law that responds to climate change in a way that achieves a legacy of intergenerational justice, we can learn from legal structures already in place in domestic, Native American, foreign, and international jurisdictions. A number of existing laws governing property, inheritance and environmental remediation take account of the interests of future generations. The laws stem from constitutional provisions, legislative acts, administrative regulations, and court decisions. If we are to develop a framework of intergenerational justice principles and put them into practice, we should begin by examining existing legal norms in order to identify what works well, what does not, and how we might adapt useful provisions into a new body of effective climate change law.

The principle of conserving options “requires that on *balance* the diversity of the resource base be maintained.”⁷⁸ The goal is for the current generation to “not unduly restrict the options available to future generations in solving their problems and satisfying their own values.”⁷⁹ By adhering to this principle, the current generation recognizes that future generations are “entitled to diversity [of natural and cultural resources] comparable to that of previous generations.”⁸⁰ Inherent in this obligation is conserving “[i]mprovements made by prior generations in the natural and cultural resource base of the planet” because this duty “is consistent with a view of human society as a partnership extending to all generations.”⁸¹

We seek to conserve options because having a diverse natural and cultural resource base “is designed to give our descendents a robust and flexible heritage with which to try to achieve a decent and healthy life.”⁸² Ecosystems are more stable, for example, if there is a biological diversity of plants, insects, and microorganisms, just as trusts and national economies are likely to be more stable with diverse types of investments.⁸³ Maintaining a diversity of options supports the dynamic, evolving needs of an ecosystem. It means that a generation is better able to adjust to changes that necessarily take place in a resource base over time.⁸⁴

Present-day choices frequently jeopardize the goal of conserving options for future generations, however. If nonrenewable resources are depleted, for example, the real price of these resources will increase, which may rule out certain options in the future. If the quality of renewable resources is degraded, important options may be eliminated.⁸⁵ Brown Weiss cites how the current generation is reducing future options by clear-cutting tropical areas, developing crop

monocultures without conserving wild cultivars, and exhausting nonrenewable resources like oil and helium bearing natural gas.⁸⁶ It bears noting that new technology can sometimes produce substitutes for depleted or eliminated natural resources, and so the principle's application rests on how the diversity of the resource base is maintained on *balance*.

Below, we look at several ways in which national and subnational governments and international intergovernmental institutions have structured their laws to maintain a diversity of the natural resource base for future generations. Notably, many of the laws described embody more than one of the three intergenerational principles, even though they are highlighted here for their conservation of options features.

A. Conserving Natural Resource Diversity in Constitutions

The United States does not recognize environmental and intergenerational rights in its constitution. Some foreign countries do, however. The Basic Law (constitution) of Germany, for example, establishes that future generations have a right to a protected natural environment. Article 20a originally required that “[t]he State, in light of its responsibility for future generations, shall protect the natural bases of life within the framework of the constitutional order by legislation, and in accordance with the law by enforcement power and case-law.”⁸⁷ A

CLI Recommendation 2
Adopt Model State Constitutional Provisions to Implement an Environmental Right for Present and Future Generations

few years ago, however, Germany amended the constitutional provision, which now reads “[t]he state takes responsibility for protecting the natural foundations of life and animals in the interest of future generations.”⁸⁸ The phrase “foundations of life” “embraces all components of the environment which are necessary for the maintenance of life over

long periods.”⁸⁹ The new provision places responsibility for protection of the natural environment squarely on the state. In this manner, the highest law in Germany announces the country's intention to conserve options for future generations, by safeguarding a diversity of resources so that it may pass on a “robust and flexible heritage.”

Despite this progressive language, the provision is treated only as “an objective.”⁹⁰ It does not stipulate required levels of environmental protection, instead ceding that to legislative discretion. Nor does the provision create an “actionable right to the citizen,” and so it is not considered “a fundamental environmental right”⁹¹ that citizens may enforce through legal action. Article 20a remains, nonetheless, an aspirational objective—a favorable policy that broadly influences German laws, judicial decisions and administrative practice, but not in specific, discernible ways. This is surely because the constitutional provision mirrors Germany's already-strong environmental ethos.⁹²

At the subnational level in the United States, the State of Hawaii devotes an entire state constitutional article to conserving natural resource diversity, protecting an array of natural

resources, including land, marine systems, and other water systems. Entitled “Conservation, Control, and Development of Resources,” Article XI contains eleven provisions relating to the environment and natural resources.⁹³ Several of them create environmental rights and duties that courts may enforce. The most important of these provisions, section 9 of Article XI, creates enforceable “environmental rights” by declaring that “[e]ach person has the right to a clean and healthful environment.”⁹⁴ This provision is self-executing,⁹⁵ relaxes traditional, standing requirements,⁹⁶ and defines “clean and healthful environment” as no other constitution has done.⁹⁷ This provision, as well as several others contained in the Hawaii Constitution, shows how some states have established a constitutional right to a healthy environment and a diverse natural resource base for its present and future generations.⁹⁸ Again, since the United States Constitution does not recognize environmental rights, state constitutional law can play a significant role.

CLI Recommendation 3
 Adopt Model State Statute to
 Implement Environmental Rights for
 Future Generations

B. Conserving Natural Resource Diversity in Tribal Codes

Many Native American tribes have code provisions that explicitly recognize the need to conserve natural resources for future generations. These provisions are important because United States law recognizes Indian tribes as distinct political bodies with the power to govern their lands and members. Tribal governmental authority also extends to non-members of the tribes who occupy or own lands within the tribal community, particularly when non-member activities pose serious threats to the “political integrity, the economic security, or the health or welfare of the tribe.”⁹⁹ Tribes have regularly exercised their governmental powers as environmental stewards since the 1970s, when the federal government began encouraging tribal self-determination. Not surprisingly, the tribes have looked to their traditional ecological knowledge, beliefs and practices in writing their tribal codes.

For example, the Dine or Navajo Nation explicitly recognizes the rights of future generations and the legal duties imposed upon the Nation in managing its natural resources. In its opening clauses, the Dine Natural Resources Protection Act (DNRPA) of 2005 embraces the environmental ethic of sustainability:

The Navajo Nation Council finds that the wise and sustainable use of natural resources in Navajo Indian Country traditionally has been, and remains, a matter of paramount governmental interest of the Navajo Nation and a fundamental exercise of Navajo tribal sovereignty.¹⁰⁰

In the succeeding clause, the DNRPA references Dine Natural Law and the duty and responsibility owed to future generations:

The Navajo Nation Council finds that the Fundamental Laws of the Dine . . . support preserving and protecting the Navajo Nation's Natural Resources, especially the four sacred elements of life—air, light/fire, water and earth/pollen—for these resources are the foundation of the peoples' spiritual ceremonies and the Dine life way, and that it is the duty and responsibility of the Dine to protect and preserve the natural world for future generations.¹⁰¹

Interestingly, these traditional ecological principles have become the flashpoint for an ongoing intra-tribal battle among Dine citizens. The tribal council proposed building a massive 1,500 MW coal-fired power plant on the New Mexico portion of the Navajo Reservation. But opponents within the tribe suggest that reliance on alternative renewable energy sources like wind or solar power would be more consistent with traditional Dine ecological principles. According to Dine Fundamental law, the wind spirit, or "Nilch'i," is a life force that, if accorded due "respect and offering," may be embraced within sustainable practices. Opponents of the coal-fired power plant maintain that using wind energy "in sustainable practices does not imply contaminating the air with harmful toxins[;] rather, the natural movement of Nilch'i produces a force compatible and accommodating to modern sustainable living."¹⁰²

In the Great Lakes region, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC)¹⁰³ infused a distinctly Anishinaabe cultural ethic into its environmental management regime in 1992. It modified its mission statement by invoking the "Anishinaabe Way:"

The "Anishinaabe Way" underlies the unique approach to resource management which is brought by tribal people into the critical, modern day decisions regarding natural resources. Traditional thought directs management to be holistic and integrated, respectful of all creation. An understanding of the universal order and recognition of man's dependence on all other life forms, rather than his dominance, assures holistic management. Traditional thought also demands long-term vision, protecting the well-being, not just of the next generation or two, but of the "Seventh Generation," thus extending responsibility for the impact of management decisions far into the future.¹⁰⁴

While giving voice to a uniquely indigenous worldview, the GLIFWC's work in practice is often circumscribed by competing state interests and/or authority, particularly for off-reservation fishing resource management. Nonetheless, the GLIFWC's statement serves as powerful testament to the enduring force of traditional ecological knowledge and indigenous environmental ethics in action. It is worth noting here that the Menominee Tribe of Wisconsin also embraces the "Seventh Generation" principle in its forest management plan, which calls on managers to "remember that we are borrowing the forest from our grandchildren."¹⁰⁵ In these ways, the law of many Native American tribes seeks to conserve a diversity of national resources and to ensure that future generations will have the same options as earlier generations.

C. Conserving Natural Resource Diversity in State Public Trusts

Recognizing that non-renewable natural resources will not last forever, some state governments have created trusts to ensure the sustainability of natural resources and the revenues they generate. There are many benefits to using a trust framework: (1) a trust is a well-established legal tool with enforceable legal obligations and rights; (2) a trust ensures that a resource will be protected into the future for the sake of a beneficiary; and (3) the creators of a trust have extremely broad latitude in establishing the terms of a trust. Any individual trust has specific goals and objectives, of course, but all trusts reflect an understanding that natural resources are finite and must somehow be shared with future generations.

A trust creates two owners of property. One owner, the *trustee*, owes a duty to the other owner, the *beneficiary*, to manage the property according to trust principles. As a relationship, a trust is more than a duty owed by the trustee to the beneficiary; it also entails a set of “rights, privileges, powers and immunities which [sic] the beneficiary has against the trustee and the rest of the world.”¹⁰⁶ The legal terms include preventing fiduciaries (trustees) from delegating performance of their duties to third parties and from profiting at the beneficiary’s expense. Beneficiaries have the right to ask courts to set aside transactions that are unfair to them.¹⁰⁷

The Alaska Permanent Fund (“APF”) is one of the most prominent publicly created natural resource trusts. When a large surplus of oil was discovered in Alaska’s Prudhoe Bay in 1967, the state government received a \$900 million oil windfall from drilling leases. A consensus

CLI Recommendation 7
Create Sky Trusts and Other
Environmental Stakeholder Trusts
to Sustain and Safeguard
Common Assets

quickly developed among politicians and citizens that this money was spent too frivolously and too quickly.¹⁰⁸ This experience led to the public realization that oil was a finite resource that needed to be managed responsibly to “assure that its current good fortune would bring long-range benefits.”¹⁰⁹

As a result, the people of Alaska approved a constitutional amendment in 1976, which mandated that at least 25 percent of all “mineral lease rentals, royalties, royalty sale proceeds, federal mineral revenue sharing payments and bonuses received by the State shall be placed in a permanent fund.”¹¹⁰

Today, under the Permanent Fund Act of 1980, the Alaska Permanent Fund Corporation (“APFC”) manages the APF in accordance with the “prudent-investor rule.”¹¹¹ The APFC is governed by a Board of Trustees, and is a quasi-independent entity managed separately from the state treasury, yet still accountable to the Alaskan people via annual reports to, and budget approval by, the legislature. The Fund Act directs the APF’s management to serve three objectives: (1) “The fund should provide a means of conserving a portion of the state’s revenue from mineral resources to benefit all generations of Alaskans;” (2) “The fund’s goal should be to maintain safety of principal while maximizing total return,” and (3) “The fund should be used

as a savings device managed to allow the maximum use of disposable income from the fund for purposes designed by law.”¹¹²

The first of these objectives—that oil revenues should be conserved to “benefit all generations of Alaskans”—reinforces the driving principle behind these trusts: Non-renewable natural resources are finite and should therefore be managed for the benefit of all generations. The 1980 Act also created a distribution scheme that provides a dividend to each eligible Alaskan for his or her share of the realized earnings that year (a so-called “birthright share”).¹¹³

The APF provides a good example of using trust law to support the concept that “the State’s natural resources belong to the people and should provide benefit to all the people whenever they are exploited.”¹¹⁴ Here the state chose to place property—not the natural resource itself, but, rather, the revenues from selling it—into a fund to be managed according to specific directions. By using a quasi-independent agency to insulate the fund from political influence while still reserving some oversight for the legislature, the APF seeks to manage the fund for the beneficiaries with strict fiduciary responsibility and undivided loyalties. As one of the more successful and well-organized government natural resource trusts, the APF provides a model for countries or states looking to ensure that non-renewable resources continue to provide options for future generations.

D. Conserving Natural Resource Diversity in Federal Legislation and Subsequent Judicial Interpretation

New Zealand enshrines the rights of future generations in nineteen legislative acts that address such environmental concerns as conservation land and hazardous materials.¹¹⁵ The far-reaching Resource Management Amendment Act (RMA) of 1996, which seeks “to promote the sustainable management of natural and physical resources,”¹¹⁶ is credited as the first statutory

CLI Recommendation 15
Make Trade Rules Attuned to the
Ecological Needs and Interests of
Future Generations

planning regime to incorporate the principle of sustainability.¹¹⁷ The Act highlights the need to manage resources in a way that “enables people and communities to provide for their social, economic, and cultural well being and for their health and safety” and at the same time “[s]ustain the potential of natural and physical resources (excluding minerals)

to meet the reasonably foreseeable needs of future generations; [s]afeguard the life-supporting capacity of air, water, soil, and ecosystems; and [a]void, remedy, or mitigate any adverse effects of activities on the environment.”¹¹⁸

Under the RMA, Councils manage the natural and physical resources of the region.¹¹⁹ Like most other countries, New Zealand requires environmental impact assessment before conducting an activity which may have harmful effects on the environment. One of the matters considered is whether the proposed activity would have “[a]ny effect on natural and physical

resources having aesthetic, recreational, scientific, historical, spiritual, or cultural, or other special value for present or future generations.”¹²⁰ Thus, on paper, the rights of future generations must be considered. The principle of passing on a “robust and flexible” natural heritage is also duly evaluated as a matter of law.

The environment court established under the RMA¹²¹ has interpreted the Act to require affirmative consideration of intergenerational justice. Most notably, in a case pertaining to global climate change, *Genesis Power Limited v. Franklin District Council*, the court stated, “Climate change is a silent but insidious threat that scientists tell us threatens to improperly deprive future generations of their ability to meet their needs.”¹²² The court concluded that climate change must be addressed, and that in this case, one way to do so was through renewable energy.¹²³

Australia has also used its environmental review powers to account for intergenerational justice in the climate change context. During the past five years, a grassroots movement has spearheaded a campaign to address climate change reform through litigation. In so doing, these environmental advocates have pushed the courts to interpret the Environment Protection and Biodiversity Conservation Act of 1999 (EPBC) so that it would apply to climate change. Through a series of cases, courts have decided that environmental impact assessments, required under the EPBC and relevant state environmental planning statutes, must consider climate change and its intergenerational effects. The courts have also ruled that Paragraph 3A of the EPBC affirms “the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.”¹²⁴ While this principle of intergenerational equity was initially viewed as hortatory language, the courts have used it to assert the government’s responsibility to assess even the indirect impacts of environmentally harmful activities.

For example, in *Gray v. The Minister for Planning*,¹²⁵ the court ordered consideration of intergenerational equity during the environmental assessment of a coal mine expansion project. It required that the impact assessment account for additional GHG emissions resulting from the burning of the additional coal extracted, and not just emissions produced in the extraction process. To reach this conclusion, the court relied explicitly on ecologically sustainable development principles that it found in the EPBC, particularly the intergenerational equity and the precautionary principle.¹²⁶ The court reasoned that environmental impact assessments not only serve the public interest, they enable the “present generation to meet its obligation of intergenerational equity by ensuring the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.”¹²⁷

E. Conserving Natural Resource Diversity in Judicial Decisions

In 1993, the Supreme Court of the Philippines, in the case of *Oposa v. Factorian*,¹²⁸ brought international attention to the intergenerational justice language of the country’s environmental policy. Filipino law officially declares that “it is the continuing policy of the State

. . . to fulfill the social, economic and other requirements of present and future generations of Filipino.”¹²⁹ In its ruling in *Oposa*, the Supreme Court sought to ensure conservation of options for future generations by claiming the right to “the full benefit, use and enjoyment of the natural resource treasure that is the country’s virgin tropical rainforest.” It also sought an order for the

CLI Recommendation 11
Build Environmental Values into the Law, Including the Common Law

Secretary of Environment and Natural Resources to cancel all existing timber license agreements (TLAs).¹³⁰ On appeal from the trial court’s dismissal, the Supreme Court took a strong position on the ability of future generations to enforce their rights in the courts: “We find no difficulty in ruling that they

can, for themselves, for others of their generation and for the succeeding generations, file a class suit. Their personality to sue on behalf of the succeeding generations can only be based on the concept of intergenerational responsibility insofar as the right to a balanced and healthful ecology is concerned.”¹³¹

It is from this dictum that *Oposa* has gained international fame for intergenerational justice. The Supreme Court reversed the district court and found a cause of action by relying on the Declaration of Principles and State Policies of the Constitution, which provides that “the State shall protect and advance the right of the people to a balance and healthful ecology in accord with the rhythm and harmony of nature.” The Court explained that this right carries the correlative duty to refrain from impairing the environment, and implies a duty to judiciously manage the country’s forest. By reading its environmental policy in this way, the Court valued the need to pass on to the next generation at least the same options of diverse habitat, not decreased ones.

F. Conserving Natural Resource Diversity in International Agreements

One way to conserve ecological options for future generations is for national governments to sign and ratify international conventions. A well-known example is the Convention on Biological Diversity,¹³² which seeks to conserve biodiversity in order to preserve

CLI Recommendation 13A
Adopt Draft UN General Assembly Declaration on the Ecological Rights and Responsibilities of Present and Future Generations

the unknown potential use value of all current species of plants and animals. It is not enough to save a few species of usable plants and animals; this treaty affirms a broader principle, that current generations should not limit the options of future generations.

In the same spirit, the International Treaty on Plant Genetic Resources for Food and Agriculture¹³³ seeks to conserve the genetic diversity of plants to ensure that future generations have as many food source options as possible. In its preamble, the treaty signers acknowledge that “plant genetic resources for food and agriculture are the raw material indispensable for crop genetic improvement, whether by means of farmers’ selection, classical plant breeding or modern

biotechnologies, and are essential in adapting to unpredictable environmental changes and future human needs.”¹³⁴ Both examples show how international obligations may be structured via treaties to honor the principle of conserving natural resources options for future generations.

G. Conclusion: What Existing Law Teaches Us about Implementing the Principle of Conserving Options

Governments at all levels can use a variety of legal tools to build laws that give life to the intergenerational justice principle of conserving options for future generations. Constitutional provisions at the national and subnational levels can have the most impact on how a society actually puts the legal obligation into practice, but such measures are usually the most politically difficult to achieve. Constitutional rights to a clean and healthy environment, including a diverse array of natural resources, can have many significant legal consequences. Governments are more likely to abide by them when creating policy and funding programs; individuals can assert their constitutional rights on behalf of themselves or their future descendants, to improve the environment around them. Perhaps most importantly, constitutional rights establish expectations that influence future lawmaking, regulations, business practices and cultural attitudes.

National and subnational legislation may be more easily enacted than constitutional provisions, and effectively conserve the ecological options of future generations. Administrative rules and regulations put them into practice and judicial opinions extend their application to new scenarios. The New Zealand and Australian environmental statutes, while originally intended to protect natural resource diversity, gained new legs as courts interpreted their words in light of the developing science of climate change. Legislatures have created programs such as natural resource trusts, which explicitly aim to conserve ecological options in the face of nonrenewable resource depletion. Likewise, the governments of individual countries may bind themselves to international obligations to conserve options for future generations.

Probably the least sturdy legal tool for securing intergenerational justice is judicial decision-making (as opposed to statutory interpretation by the judiciary). To be sure, courts can be dynamic agents of change, given their receptivity to issues raised by individuals and the failure of legislatures to act. But the actual impact of individual court decisions can be quite limited. Clear-cutting of tropical forests continued unabated in the Philippines after *Oposa* despite the clear enunciation of intergenerational principles on paper. The standing of future generations has so far never again been asserted by plaintiffs seeking to assure a “robust and flexible” natural heritage for future generations. Courts play a role in announcing and refining legal principles that can conserve options for future generations, but of the legal tools available to those seeking intergenerational justice in climate change, litigation is a very resource-intensive strategy generally of limited impact.

Fundamentally, these examples show how law has already been shaped to implement the principle of conserving options for future generations. Overall, however, they are limited in scope and practice, and thus are insufficient to meet the challenge of intergenerational justice in

the context of such large-scale environmental hazards as climate change. Nevertheless, by studying the variety of legal tools used to calibrate human law to environmental conditions, we can more fully envision the contours of new lawmaking that recognizes the stake future generations have in climate change mitigation and adaptation.

III. How Does Existing Law Conserve Quality for Future Generations?

The earth was designed as the permanent abode of man through ceaseless generations. Each generation, as it appears upon the scene, is entitled only to use the fair inheritance. It is against the law of nature that any waste should be committed to the disadvantage of the succeeding tenants. . . . That one generation may not only consume or destroy the annual increase of the products of the earth, but the stock also, thus leaving an inadequate provision for the multitude of successors which it brings into life, is a notion so repugnant to reason as scarcely to need formal refutation.

U.S. argument in the 1893 Bering Sea Fur Seals Arbitration¹³⁵

Our purpose in this chapter is the same as in Chapter II respecting Principle 1: to learn from legal structures already in place in domestic, Native American, foreign, and international jurisdictions how we might build a law that responds to climate change in a way that achieves a legacy of intergenerational justice. We focus now on Principle 2: conserving quality for future generations.

The principle of conserving quality requires current generations to “maintain the quality of the planet so that it is passed on in no worse condition” than it was received.¹³⁶ Through this principle, the current generation recognizes that future generations are “entitled to a quality of the planet comparable to the one enjoyed by previous generations.”¹³⁷

But this principle does not mean that no changes occur. To keep the current generation from using the natural resources received would limit its access and thus violate the third principle of Brown Weiss intergenerational justice trilogy. Instead, conserving the quality of natural resources requires trade-offs between economic development and conservation, and a reliable framework for assessing them.¹³⁸ Notably, mere conservation is not always sufficient: “If one generation fails to conserve the planet at the level of quality received, succeeding generations have an obligation to repair this damage, even if it is costly to do so.”¹³⁹

Conserving quality and options are related principles. The diversity of the natural resource base contributes to the quality of the natural environment, and vice versa. But these are distinct principles. While air and water pollution may reduce the overall quality of the natural environment, they do not necessarily decrease biodiversity nor diminish future options. Likewise, it may be possible for species extinction or loss of plant genetic diversity to occur without decreasing the overall quality of the planet (although this is harder to imagine).¹⁴⁰

Existing law provides examples of how to consciously structure governmental regulation to conserve quality for future generations, and so advance intergenerational ecological justice. The laws cited below illustrate some of the ways in which national governments and international intergovernmental institutions have done so. Notably, many of the laws presented in this chapter

embody more than one of the three intergenerational principles, even though they are highlighted here for their conservation of quality features.

A. Conserving Environmental Quality in Constitutions

Although the United States Constitution does not recognize environmental and intergenerational rights, those of some foreign countries do. The French Constitution was recently amended to include environmental rights and so it now states that “[e]ach one has the right to live in a balanced and respectful environment of health.”¹⁴¹ This constitutional provision is elaborated through principles in the French legal code, which provide that not only does “each person [have] a duty to safeguard and contribute to the protection of the environment,” but that “public bodies and private bodies must, in all their activities, comply with the same requirements.”¹⁴² One of these requirements is sustainable development, which is necessary to “protect the health of current generations without compromising the ability of future generations to meet their own needs.”¹⁴³ The same legal provision goes on to cite the precautionary principle as a guide to achieving this goal.¹⁴⁴ These overarching principles apply to the enactment and execution of the Code’s more specific laws.

Interestingly, French law regulating radioactive waste disposal provides a source of legal mandates to consider the needs of future generations. The French Civil Code states that “[h]igh-activity radioactive waste with a long life must be managed in full respect of the protection of nature, the environment and health, taking into consideration the rights of future generations.”¹⁴⁵ In conjunction with the Planning Act of 28 June 2006’s provisions on radioactive waste and materials,¹⁴⁶ the nuclear energy industry is required to submit feasibility studies to the French Government for the disposal of radioactive waste that actively consider future generations. Proposals have ranged from “reversible disposal” ideas that allow “future generations freedom of decision in waste management”¹⁴⁷ to the creation of an institutional “memory” for a site to “inform future generations about the existence and the contents of the site, especially with regard to the risk of human intrusions, in case the facility was forgotten . . . and to allow for future generations to make any decision concerning the future of the site, especially in response to technical and societal developments.”¹⁴⁸ Although many people would argue that the very decision to develop nuclear energy as a main power source intrinsically compromises the quality of future generations’ environmental health, these waste laws demonstrate how France has chosen to legislate in this industry under its constitutional and code principles. This inclusion of the rights of future generations clearly affects practice within industry and commerce.

CLI Recommendation 9
Foster Diagonal Regulatory Initiatives

In the United States, where the federal constitution lacks references to environmental rights, states have taken the lead. Montana case law interpreting its state constitutional

environmental safeguards has worked to conserve the quality of its water resources for future generations. Montana’s constitution specifically enumerates that “the state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations.”¹⁴⁹ This provision has been described as “the single strongest statement of conservation philosophy in the constitution of any state and, very likely, of any nation in the world.”¹⁵⁰

The Montana Supreme Court has given special force to this provision by holding that these environmental rights and duties are “interrelated and interdependent” fundamental rights. Courts must give strict scrutiny to any state action implicating them,¹⁵¹ and Montana citizens can judicially enforce them against the state. The Montana Supreme Court later expanded the environmental provisions to apply to private actions—and thus to private parties—as well.¹⁵² Now state and private action in Montana that could adversely affect the environment can be constrained under the state’s constitutional provisions. Given the absence of environmental rights in the United States Constitution, state constitutional provisions are crucial tools for conserving the quality of the environment for future generations.

B. Conserving Environmental Quality in Federal Legislation

Two U.S. federal statutes, the Federal Land Policy and Management Act (FLPMA)¹⁵³ and the National Forest Management Act (NFMA),¹⁵⁴ seek to protect lands and forests held by the federal government and thereby conserve the quality of these natural resources for future generations.

CLI Recommendation 5
Enact a National Environmental Legacy Act to Preserve a Public Natural Resource Legacy for Future Generations

One of FLPMA’s goals is to ensure that the principles of “multiple use” and “sustained yield” govern the management of federal land.¹⁵⁵ “Multiple use” means treating public lands in a manner that “will best meet the present and future needs of the American people.”¹⁵⁶ Under the statute, courts have issued injunctive relief to plaintiffs

challenging governmental action that could negatively affect public lands. For example, when the federal government tried to remove 180 million acres of land from government protection, the court enjoined the action because “denying the motion could ruin some of the country’s great environmental resources—and not just for now but for generations to come.”¹⁵⁷

Although the FLPMA’s language appears to protect future generations, enforcing the statute in such a manner has proven difficult. First, many advocates view the Bureau of Land Management (BLM), which administers the FLPMA, as not interpreting the “multiple use” and “sustained yield” requirements in “environmentally friendly” ways, as the statute intends.¹⁵⁸ Second, because the FLPMA does not otherwise state a private right of action, the sole avenue for private enforcement of the Act is through the Administrative Procedures Act.¹⁵⁹ A citizen challenging the BLM’s actions under the Act would have a tough time succeeding on a claim

brought under the APA because, once the BLM has at least considered those principles, the courts afford almost absolute deference to how the agency applies them.

The NFMA is very similar to the FLMPA in having explicit statutory language expressing concern for future generations. The NFMA requires that federal forests be managed according to “multiple use and sustained yield” principles.¹⁶⁰ Every ten years, the Secretary of Agriculture is required to prepare a Renewable Resource Assessment of federal forest land that analyzes present and future uses. The Secretary must also assess demand for, and supply of, the renewable resource, and analyze the potential effects of global climate change on the renewable resources in the federal forests.¹⁶¹ These reports have consistently documented that global climate change could affect the nation’s forests.¹⁶² These assessments also try to discern future uses of the forest resources to determine how best to manage the forests over the long term. Lastly, the Act requires the government to draft regulations for land management plans to ensure that environmental conditions in the area of timber harvesting will not be “irreversibly damaged.”¹⁶³

These two federal statutes, on paper, express a desire to conserve the quality of federal lands and forests for future generations. The challenge is to harness the political will to administer them in a way that fulfills this intergenerational justice principle.

The U.S. Clean Water Act (CWA), enacted to prevent water pollution and maintain water quality, also seeks, implicitly, to conserve quality for future generations. For example, the CWA contains a provision that allows the government to designate a particular body of water an “Outstanding Natural Resource Water.”¹⁶⁴ This designation provides the maximum amount of protection that is available under the CWA for that particular body of water because it ensures that “no permanent degradation of water quality can occur”—a standard that protects healthy watersheds for future generations.¹⁶⁵ The courts have held that when the EPA sets industry-wide effluent limitations under its CWA authority, “the health and safety gains that achievement of the Act’s aspirations would bring to future generations will in some cases outweigh the economic dislocation it causes in the present generation.”¹⁶⁶ Under the CWA, the EPA can place the interests of protecting future generations in front of economic interests of present generations in some situations.¹⁶⁷

Other countries have enacted statutes that explicitly seek to maintain the quality of the environment for future generations. In Japan, for example, a major environmental statute enacted in 1993—the Basic Environmental Law—states:

[E]nvironmental conservation shall be conducted appropriately to ensure that the present and future generations of human beings can enjoy the blessings of a healthy and productive environment and that the environment as the foundation of human survival can be preserved into the future, in consideration that preserving the healthy and productive environment is indispensable for healthy and cultured living for the people, and that the

environment is maintained by a delicate balance of the ecosystem and forms the foundation of human survival, which is finite in its carrying capacity and presently at risk of being damaged by the environmental load generated by human activities.¹⁶⁸

The statute introduced three basic propositions to Japanese environmental law: first, “the Japanese people must realize that the environment must be preserved for future generations;” second, industry and citizens should strive for sustainable development; and third, “Japan must affirmatively address the concept of global environmental preservation.”¹⁶⁹ Japan has used this law’s ideals when enacting new laws.¹⁷⁰

Japan built on this legislative tradition when it enacted the “Law Concerning the Promotion of Measures to Cope with Global Warming,” recognizing “that global warming will have severe impacts on the global environment . . . [and] aims to promote the measures to cope with global warming . . . ensuring healthful and cultural lives of present and future generations of people, and to contribute to the welfare of all human beings.”¹⁷¹ Similarly, the Environmental Impact Assessment Law, which requires certain facilities and projects to conduct environmental review,¹⁷² announces that it seeks to “ensure that proper consideration is given to environmental protection issues relating to such a project and, ultimately, to ensure that present and future generations of this nation’s people enjoy healthy and culturally rewarding lives.”¹⁷³ Both laws strive to put in practice the fundamental goal of ensuring that present and future generations enjoy the blessings of a healthy environment.

C. Conserving Environmental Quality in State Public Trust Statutes

Some states in the United States have adopted statutes that restate public trust principles and apply them broadly to natural resources. The laws seek to conserve the quality of the natural environment for future generations without focusing exclusively on individual natural resources. These types of statutes, deemed “environmental rights statutes” by one commentator, arose from Professor Joseph Sax’s work.¹⁷⁴ Public trust-based statutes are different from most other environmental protection statutes because they are not based on specific environmental standards or permitting requirements. Instead, these statutes grant citizens an enforceable right to a clean environment overall, without defining pollution in specific terms.

These public trust statutes derive from the common law public trust doctrine, which establishes a governmental duty to protect certain public resources so that they will be available to future generations. That duty gives the government a legal basis to restrict the actions of private parties who would otherwise exploit the public resource. But perhaps more importantly, when the government takes on the role of trustee, managing resources for the benefit of the public, then the public has enforceable rights against the government. The public trust doctrine gives citizens a

tool to constrain the government’s management of natural resources to protect the quality of these resources for future generations.

The many commentators who have advocated the public trust doctrine as an environmental protection tool typically point to early Roman law as the source of the public trust idea: quoting Justinian, “the air, running water, the sea, and consequently the sea-shore” are

CLI Recommendation 8
Advance the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations

“by natural law common to all.”¹⁷⁵ While Justinian’s reference to the air looks like a promising source for climate change work, the public trust notion that originated in England and moved to this country was firmly grounded in the Eighteenth Century concerns about promoting the free flow of commerce; the public trust doctrine was a way to keep navigable

waters and the land surrounding them open to public use. As the Supreme Court explained in *Illinois Central Railroad Company v. Illinois*,¹⁷⁶ “The possession by private individuals of lands under them could not be permitted except by license of the crown, which could alone exercise such dominion over the waters as would insure freedom in their use so far as consistent with the public interest.”¹⁷⁷ The Court held that the State cannot “abdicate its trust over property in which the whole people are interested” any more “than it can abdicate its police powers in the administration of government and the preservation of the peace.”¹⁷⁸ Just as fiduciary rules prohibit a private trustee from delegating its duties, so too the Court reasoned that a state cannot delegate its trust duties to a private party, or even absolutely to a municipality.¹⁷⁹

The constraint on the states’ ability to alienate public trust land in *Illinois Central* shows the doctrine’s concern about acting to favor future generations. Because the conditions of the public and of the harbors will change over time, the legislature, as trustee for the public, must maintain the power to govern the use of the natural resource. If the State were allowed to make an absolute grant of trust land to a private party, then the government would lose the ability—and thus abrogate its responsibility—to regulate the trust land as currently needed by the public. The public trust doctrine insists that “[e]very legislature must, at the time of its existence, exercise the power of the state in the execution of the trust devolved upon it.”¹⁸⁰

Two sentences from *Illinois Central*, often paired together, have given hope to those who seek to expand the doctrine beyond waterways. The Court opined that “the State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them, as to leave them entirely under the use and control of private parties.”¹⁸¹ A little later in this passage, the Court reinforced these policy concerns by announcing that “so with trusts connected with public property, or property of a special character, like lands under navigable waters; they cannot be placed entirely beyond the direction and control of the state.”¹⁸² In both sentences, the references to navigable waters are set off by commas, and thus look like dependent clauses used to illustrate one example of this kind of public property. Read this way,

navigable waters and the land beneath them seem like a starting point for applying the public trust doctrine, not an ending point.¹⁸³

However, U.S. courts have firmly limited the public trust, a purely common law doctrine, to its historical roots in water resources, with some narrow exceptions for public lands and parks. Nonetheless, some legal academics believe public trust principles can be expanded to combat climate change harms. Professor Mary Christina Wood,¹⁸⁴ for example, argues eloquently for atmospheric trust litigation in several recent articles.¹⁸⁵ But as of now, no courts have signaled a willingness to release the public trust from its common law moorings in water resources.¹⁸⁶ The doctrine has occasionally been applied to Native Americans and public lands, but those cases present a distinct set of issues, given the undisputed public ownership of the land.

Thus, in terms of resource protection, the public trust doctrine, as one standard reference guide puts it, “remains confined restlessly to submerged lands, the foreshore, which can be described as the bed of the sea, and other navigable waters, which can be understood to mean fresh waters of any consequence.”¹⁸⁷

There may be some promise for the doctrine as a litigation strategy to protect atmospheric resources. But that possibility can be pursued only in states that have codified public trust principles to protect all natural resources or air in particular, or that have guaranteed citizens a clean and healthy environment. One major procedural benefit of statutory enactments of public trust principles is that some of them have been interpreted to establish standing for any citizen concerned about environmental harms, or at least to ease the standing burden for citizens.¹⁸⁸ In such instances, at least, the public trust doctrine could be more fully used to conserve ecological quality for future generations.

CLI Recommendation 13B

Adopt Draft UN General Assembly Declaration on the Right to a Clean, Healthy, Ecologically Balanced, and Sustainable Environment

trust principles to protect all natural resources or air in particular, or that have guaranteed citizens a clean and healthy environment. One major procedural benefit of statutory enactments of public trust principles is that some of them have been interpreted to establish standing for any citizen concerned about environmental harms, or at least to ease the standing

D. Conserving Environmental Quality in International Agreements

National governments have bound their people to obligations to conserve ecological quality for future generations by signing international conventions. Most notably, the Montreal Protocol on Substances that Deplete the Ozone Layer, which strictly regulates the production of these chemicals, is a multilateral treaty ratified by almost every country in the world.¹⁸⁹ The treaty’s worldwide ban on useful but environmentally dangerous chemicals sought to conserve the quality of the environment passed on to future generations by ensuring that the atmosphere would continue to protect humans from harmful solar radiation.

CLI Recommendation 14

Strengthen Kyoto Institutions and Mechanisms to Reduce Greenhouse Gas Emissions

The Convention on Long-Range Transboundary Air Pollution and its related protocols also seeks to conserve environmental quality for future generations.¹⁹⁰ Although this series of treaties targeting air pollution across Europe and North America does not mention future generations explicitly, it embodies this principle of intergenerational justice by creating obligations to eliminate or reduce specific kinds of air pollution.

E. Conclusion: What Existing Law Teaches Us about Implementing the Principle of Conserving Quality

Our conclusion here is essentially the same as our conclusion in Chapter II respecting Principle 1. Governments at all levels can use a variety of legal tools to build laws that give life to the intergenerational justice principle of conserving quality for future generations. Although usually the most politically difficult to achieve, constitutional provisions at the national and subnational levels can have the most impact on how a society actually puts the legal obligation into practice. Constitutional rights to a clean and healthy environment, inherently focused on ecological quality, have impacts wide and deep: governments abide by them (or are forced to) when creating policy and funding programs; individuals assert them, on behalf of themselves or their future descendents, to improve the environment around them; and importantly, expectations are established and then drawn on by norm-creating law- and policy-makers, thereby shaping behavior.

National and subnational legislation may be more easily enacted and can have deep impacts on future generation's ecological quality as administrative rules and regulations put them into practice and judicial opinions extend their application to new scenarios. Recent enforcement of the U.S. federal land and forest statutes underscores how statutory language requires continued political will for robust enforcement. The state public trust statutes provide a more holistic, less pollution-specific model for conserving environmental quality while also putting the relationship between the government and the governed front and center. The many international conventions currently in force show how national governments may work together to tackle environmental degradation that crosses national boundaries, to conserve environmental quality for future generations.

Fundamentally, these examples show how law has already been shaped to implement the principle of conserving quality for future generations. Overall, however, as in the case of Principle 1, they are limited in scope and practice, and thus are insufficient to meet the challenge of intergenerational justice in the context of such large-scale environmental hazards as climate change. Still, by studying the variety of legal tools used to calibrate human law to environmental conditions, we can more fully envision the contours of new lawmaking that recognizes the stake future generations have in climate change mitigation and adaptation.

IV. How Does Existing Law Conserve Access for Future Generations?

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.

UN Framework Convention on Climate Change
Article 3¹⁹¹

As in Chapters II and III respecting Principles 1 and 2, our purpose is, once again, to learn from legal structures already in place in domestic, Native American, foreign, and international jurisdictions about how we might build a law that responds to climate change in a way that achieves a legacy of intergenerational justice. This last time, we focus on Principle 3: conserving access for future generations.

The principle of conserving access requires current generations to “provide its members with equitable rights of access to the legacy from past generations” and to “conserve this access for future generations.”¹⁹² This principle grants “a reasonable, nondiscriminatory right,” meaning that members of the current generation “can use these resources to improve their own economic and social well-being provided that they respect their equitable duties to future generations and do not unreasonably interfere with the access of other members of their generation to these same resources.”¹⁹³ In this way, this principle applies *between* generations as well as *within* the current one.

Existing law provides examples of how to seek intergenerational ecological justice by consciously structuring governmental regulation to conserve access for future generations. The laws cited below illustrate ways in which national governments and international intergovernmental institutions have structured their laws to provide members of the current generation reasonable rights of access to the natural legacy received and to preserve this access to future generations. Notably, many of the laws presented in this chapter embody more than one of the three principles, even though they are highlighted here for their conservation of access features.

A. Conserving Access via Environmental Impact Review

The U.S. National Environmental Policy Act (NEPA) contains language that has the potential to protect future generations’ access to their environmental legacy. In the purpose section of the statute, Congress declared that its national environmental policy was to “create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.”¹⁹⁴ It also mandated the federal government to “fulfill the responsibilities of each generation as trustee

of the environment for succeeding generations”¹⁹⁵ and to “preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.”¹⁹⁶

To implement this policy, NEPA requires an Environmental Impact Statement (EIS) for any “major Federal actions significantly affecting the quality of the human environment.”¹⁹⁷ Regulations define “effects” as those which are “direct, indirect, or cumulative,” and “cumulative impacts” as “past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.”¹⁹⁸

To decide whether an action will have a significant impact, agencies must first prepare an Environmental Assessment (EA). If an agency determines that there may be a significant impact, then an EIS must be completed and must analyze the “relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity.” The EIS must also assess “any irreversible and irretrievable commitments of resources which would be involved in the proposed action,” including adverse affects of the proposed action; alternatives to the proposed action; and irreversible commitments to resources.¹⁹⁹ In other words, NEPA requires federal agencies to take a “hard look” at the environmental consequences of their proposed actions.²⁰⁰ In this manner, NEPA seeks to conserve access for future generations by providing them a seat at the table.

CLI Recommendation 4
Adopt Model State
Environmental Act

Courts play a role in this process by reviewing whether the government has met its NEPA obligations to consider the future environmental harms of federal actions. For example, courts have invalidated an EIS for failing to consider potential environmental harms that may have occurred more than seven years into the future.²⁰¹ One court stated that the EIS “fails to ensure that the environment will be preserved and enhanced for the present generation, much less for our descendants.”²⁰² When considering whether an EIS was needed for a Nuclear Regulatory Commission (NRC) permit allowing a nuclear reactor to increase storage capacity, the D.C. Circuit required that future harms be considered.²⁰³ The court instructed the agency to consider “reasonably foreseeable environmental effects” and required the NRC to consider the environmental impacts of the amendment beyond the plant’s closing date in 2011.²⁰⁴

In one NEPA case, a court even held that plaintiffs had standing to sue in an action that would negatively affect future generations.²⁰⁵ The case involved an environmental group that sued—in a representative status in a class action suit on behalf of future generations—to prevent the dredging and development of an island off the coast of New Jersey. It sought injunctive relief and “the safeguarding of these natural resources and environment for future generations.”²⁰⁶ The court held that the plaintiffs had standing to sue and that standing extends “representatively also to the class which it purports to represent [future generations].”²⁰⁷

More recently, NEPA has become a tool for climate change litigation. A few courts have recently held various EISs insufficient for their failure to consider the harms of global climate change.²⁰⁸ In 2003, for example, a court held for the first time that EPA's decision not to prepare an EIS for a new Corporate Average Fuel Economy (CAFE) Standard was invalid; it ordered EPA to conduct one that considers the regulation's effect upon global climate change.²⁰⁹ Three years later, a court ruling upheld the sufficiency of a Supplemental EIS (SEIS) for a coal mining railway expansion, reasoning that the project would only slightly increase national coal consumption and thus lead to only a small increase in national greenhouse gas (GHG) emissions.²¹⁰ While this decision positively reflects a required review of GHG emissions under NEPA, it also causes concern because taken this way, most EISs will show only minimal increases, since few projects individually are likely to increase GHG emission levels significantly.²¹¹ A case pending in federal court as of this writing alleges that the Export Import Bank (EIB) and the Overseas Private Investment Corporation (OPIC) should have conducted an EIS when financing overseas fossil fuel projects.²¹² The court will have to determine whether the projects are "major federal actions" subject to NEPA, and if so, whether the agencies must consider the future domestic effects of global warming caused by these international projects.

Taken together, this NEPA-based climate change litigation is inviting courts to determine the level of emissions that will ultimately trigger the threshold of significance. Because no GHG emission thresholds currently exist under NEPA—and climate change is a global problem in which any single U.S. project is unlikely to produce consequential global emissions—it is an open question whether courts will be willing to equate GHG emissions with significant impact determinations.

One overarching limitation to NEPA is that the remedy for a NEPA violation is solely procedural; if an EIS is found to be insufficient, the relief is limited to performing another one.²¹³ Moreover, if a reviewing court determines that an EIS is proper, then NEPA's purpose is achieved. Thus, despite the overtly ambitious nature of NEPA's preamble language about protecting future generations, courts cannot look into the substantive decisions that agencies make based on an EIS.²¹⁴ NEPA's impact is also undercut by its lack of a citizen-suit provision; courts have consistently held that NEPA does not provide a private right of action for violations of its provisions.²¹⁵ Plaintiffs must sue under the APA, which authorizes a suit where a person has suffered because of agency action or inaction.²¹⁶ Given that the only agency action that can be compelled under the APA is one that is legally required under its enabling statute, it is difficult to challenge any agency action that is considered discretionary.²¹⁷

B. Conserving Access via Federally Legislated Citizen Suits

The U.S. Resource Conservation and Recovery Act (RCRA), which regulates the transportation and disposal of hazardous waste, implicitly protects future generations through its citizen suit provision. RCRA, in this sense, is another law that conserves access. RCRA allows

citizens to sue to enforce RCRA when the government fails to do so.²¹⁸ This provision allows a citizen to sue anyone who has contributed to handling hazardous or solid waste that “may present

CLI Recommendation 10
Adopt a Model Executive Order Establishing an Office of Legal Guardian for Future Generations and Provide for the Training and Certification of Legal Guardians

an imminent and substantial endangerment to health or the environment.”²¹⁹ Some courts have held that “[p]laintiffs need not show actual harm to health or the environment, only threatened harm”;²²⁰ “[a] finding of ‘immanency’ does not require a showing that actual harm will occur immediately so long as the risk of threatened harm is present”;²²¹ and “imminent and substantial endangerment also may

exist when dangerous conditions are present, even if actual harm is uncertain or far in future.”²²² Thus, the statute implicitly protects future generations because it allows citizens to sue for harms that have yet to occur but may occur in the future.

Citizen suit provisions can be found in many federal environmental statutes. They provide a potent procedural mechanism for conserving access for future generations because they protect groups of affected citizens from the harms the act was intended to prevent. While the Clean Air Act—whose purpose is to protect the Nation’s air quality in order to “promote the public health and welfare and the productive capacity of its population”²²³—contains no express reference to future generations,²²⁴ it authorizes citizens to sue any violator of the CAA or the EPA Administrator if the government fails to enforce the CAA.²²⁵ Recently, in *Massachusetts v. EPA*, plaintiffs sued the EPA for failure to enforce the CAA by not regulating GHG emissions.²²⁶ The Supreme Court held that the CAA authorizes the EPA to regulate GHG emissions from new motor vehicles, and that if the agency chooses not to do so, it must give a statutorily permissible reason.²²⁷ Although the EPA has not yet regulated GHG emissions, if it does so, it will be a direct result from this citizen suit power.²²⁸

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which mandates the clean-up of certain hazardous waste sites to deal with the long-

CLI Recommendation 12
Arrange for Court-Appointed Special Masters and Experts: A Unique Role for Legal Guardians of Future Generations

term effects of hazardous waste dumps,²²⁹ allows a citizen to bring suit against any person who is violating the statute²³⁰ and the EPA for failure to enforce it.²³¹ Similarly, the Surface Mine Control and Reclamation act (SMCRA), which seeks to “reclaim and restore land and water resources adversely affected by past coal mining,”²³² requires operation

permits to minimize future harm to land and requires reclamation of the land so that future generations can benefit from its use.²³³ Like the other acts, SMCRA permits citizen suits against any person whose is alleged to have violated the statute or the government for failure to enforce.²³⁴ In this way, the citizen suit provision found in most U.S. environmental statutes is a procedural legal tool for conserving future generation’s access to an equitable environmental legacy.

C. Conserving Access via Public Utility Law

The utility industry has long recognized the concept of intergenerational equity when distributing the cost of building and operating power plants among customers. At times, intergenerational equity means deferring costs that are presently incurred, such as power plant construction costs, to the generation which realizes the benefits of the project. At other times, it means accelerating the future costs of a project so that the present generation, which is reaping the benefits of it, will pay for its benefits, such as the case of nuclear power plant decommissioning. These examples reveal a long-standing tradition of ensuring temporal equity between benefits and costs in the field of utility regulation. These examples serve as a starting point for devising a sound legal framework to deal with climate change. The goal should be to impose future costs on the current generation, which is benefiting from anthropogenic sources of greenhouse gases.

In the United States, electricity is regulated in terms of both its rates to customers and the permitting of new generation, transmission, and distribution facilities. Electricity sales fall into two classes: retail and wholesale. Retail sales occur when regulated utilities—or competitive non-utility suppliers—sell to end users, such as homes, offices, and industrial plants. Wholesale transactions occur between two utilities, which do not themselves use the electricity but instead resell it to retail customers.

The Federal Power Act of 1935 granted the Federal Energy Regulatory Commission (FERC) jurisdiction to regulate the terms, rates, and conditions of wholesale service,²³⁵ and left retail rate regulation to the individual states.²³⁶ In contrast, the permitting of new electricity generation plants is mostly a state government function. The one very important exception to this rule is nuclear generation, which the federal Nuclear Regulatory Commission (NRC) regulates.²³⁷ Notably, both state and federal regulators apply intergenerational equity concepts—and they apply them both when making decisions about rates and about construction-permitting.

The importance of intergenerational equity in electricity regulation stems from the very long life expectancy of power sources. Coal plants are chosen for construction on the basis of expected financial returns for periods of about a decade of planning, permitting, and construction, followed by thirty years of bond payments. Natural gas plant investors seek recoveries on the basis of thirty-year bonds and five-year permit/construction periods. Nuclear plants have been licensed for forty years. These design expectations, however, are routinely extended into the future; many believe that large generating units may operate for a century. In practice, coal-fired plants have shown site-life expectancy of fifty to one hundred years, with equipment replaced over about three to four decades, but with site use continuing. Nuclear plants are routinely seeking—and usually getting—twenty-year extensions of their original forty-year licenses. Natural gas plants have a life expectancy of three to six decades.

When establishing appropriate rates for electricity sales, regulators seek to match the investment recovery period to the life expectancy of the plant—thus, they are routinely trying

to compare near-term construction costs with multi-decade periods of benefit. When setting electricity rates, regulators must consider the impact of these long recovery periods on current

CLI Recommendation 6
 Institute Cap and Trade Regulatory
 Strategies for Allocations to Energy
 Efficiency

rate payers, to ensure temporal equity between rate payers. One of the fundamental goals of ratemaking as a whole is ensuring “that costs associated with electric power plants [are] paid by the ratepayers who benefit from the plant.”²³⁸ As one commentator explains, regulators use the term intergenerational equity

when matching costs “to the period in which the service is provided that [gave] rise to the cost.”²³⁹

Thus, costs that accrue over the life of the plant should be allocated evenly among all customers, both present and future.

Over thirty state public utility commissions discuss intergenerational equity in their decisions in electricity cases.²⁴⁰ The kinds of issues that raise intergenerational equity concerns are those that either benefit future customers at the expense of current customers or burden future customers to subsidize current customers. In certain contexts, intergenerational equity is applied implicitly, and in other cases regulators explicitly cite intergenerational equity as a driving concern. Reflecting the existing legal framework for electricity regulation, ratemaking accounting methods already consider the interests of future generations. These familiar principles suggest that new power plant permitting decisions should account for the future costs of greenhouse gas emissions.

D. Conserving Access via Government Commission

Several countries have created a public entity to act as a watchdog for future generations. They explicitly recognize the rights of future generations and seek to represent their interests in environmental policymaking. To bring the views of future generations into the legislative process, at the parliamentary and governmental level, the Israeli Knesset created the Commission for Future Generations in 2001.²⁴¹ In the enabling law’s explanatory notes, the founders expressed concern about the ineffectiveness of “band-aid” approaches which may have a negative effect on future generations: “Politicians have a tendency to seek resolution to problems that are currently of concern to their electors, in the hope that in the long term, the matters will resolve themselves and in any event will become the problem of a different government and different Knesset.”²⁴² The law also recognized the difficulty of fully understanding the future effects of current policies: “It is sometimes difficult to calculate the effect of a legislative act in a few years time, not to mention its effect in a generation or two.”²⁴³

Until it was disbanded in 2007, the Commission gave opinions about proposed laws’ impacts on the interests of future generations and advised Knesset members on issues of particular relevance to future generations.²⁴⁴ It had authority over specified subjects, including the environment (but excluding defense and foreign affairs),²⁴⁵ which enabled it to demand information from any governmental entity, including ministries, public companies, state

institutions, and government corporations.²⁴⁶ The Commission also had the authority to require parliamentary committees to give it reasonable time to prepare an opinion on the impact of pending bills.²⁴⁷

While the Commission exercised this advisory power, it lacked the ability to stop legislation that would place current generational interests above those of future generations. Thus the Commission's real power came from raising public awareness in a way that put pressure on the legislative committees discussing bills and on the voting parliamentarians.²⁴⁸ The mere existence of the Commission brought attention to the concept of intergenerational justice, and elevated its value in policymaking to both lawmakers and the voting public.²⁴⁹ Commission statements were often used in parliamentary debates and in decisions of the Supreme Court.²⁵⁰

In 2007, months after the Israeli Commission ended, the Hungarian Parliament created the Commissioner for Future Generations. This position serves as an ombudsman assigned to examine environmental issues and their effects on future generations.²⁵¹ To instigate an environmental inquiry, a petition must be brought to the commissioner, who then is empowered

CLI Recommendation 16
Give the International Court of Justice Compulsory Advisory Jurisdiction on Matters Concerning Climate Change and the Needs and Interests of Future Generations

to investigate and 1) call on parties to terminate their harmful behavior against the environment; 2) ask governmental agencies to act to protect the environment; or 3) otherwise express opinions on government actions that may affect the environment and future generations.²⁵² However, the commissioner cannot act when 1) a petitioner has failed to exhaust administrative remedies; 2) the petition requires

examining judicial and prosecutorial actions; or 3) the matter is beyond his or her competence.²⁵³ The first Commissioner for Future Generations, Dr. Sándor Fülöp, an environmental lawyer, was appointed in May 2008, so the scope and impact of the position is still evolving.²⁵⁴

E. Conserving Access via International Agreements

National governments have bound their people to obligations that conserve access for future generations by signing international conventions. For example, in the climate change context, the U.N. Framework on Climate Change explicitly acknowledges its intergenerational justice goals: "The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities."²⁵⁵ The obligation to future generations and the conservation of access principle are explicitly noted, and are fulfilled by each country's "common but differentiated responsibilities."

A variety of conventions seeking to protect sea creatures are implicit attempts to conserve equitable access across the globe. The conventions obligate signatories to use the common resources of the sea in a sustainable way. For example, the U.N. Convention on the Law

CLI Recommendation 13C
 Adopt Draft UN General
 Assembly Declaration on the
 Establishment of the Atmosphere as
 a Global Commons for Present and
 Future Generations

of the Sea requires coastal states to limit catches to the “maximum sustainable yield” to avoid overuse by some states and deprived use by others.²⁵⁶

Other treaties—the International Convention for the Regulation of Whaling,²⁵⁷ the Convention for the Conservation of Antarctic Seals,²⁵⁸ and the Convention on the Conservation of Migratory

Species of Wild Animals²⁵⁹—seek to regulate each country’s use of these common resources to ensure equitable distribution between them, both for current and future generations. These examples show how international obligations may be structured via treaties to recognize and act on the principle of conserving access for future generations.

F. Conclusion: What Existing Law Teaches Us about Implementing the Principle of Conserving Access

As in Chapters II and III respecting Principles 1 and 2, our conclusion, essentially the same, is that governments at all levels can use a variety of legal tools to build laws that give life to the intergenerational justice principle of conserving access for future generations. National and subnational legislation can have deep impacts on future generations’ ecological access as administrative rules and regulations put them into practice and judicial opinions extend their application to new scenarios. For example, national and subnational environmental impact assessment laws provide future generations access to the current generation’s economic development activities by factoring in their impacts on the natural environment. Likewise, citizen suits authorized by statute permit members of the current generation to enforce an enacted statute equitably, which then becomes part of the legacy passed on to future generations. Most directly, government commissions that have the ability to influence pending legislation by singularly advocating for future generations help to conserve access, by bringing these concerns directly to the lawmaking process. The many international conventions currently in force show how national governments may work together to regulate the use of common resources and thereby conserve environmental access for future generations.

Fundamentally, these examples show how law has already been shaped to implement the principle of conserving access for future generations. As in the case of Principles 1 and 2, however, they are, overall, limited in scope and practice, and thus, once again, not up to the challenge of intergenerational justice in the context of such large-scale environmental hazards as climate change. Nonetheless, by studying the variety of legal tools used to calibrate human law to environmental conditions, we can more fully envision the contours of new lawmaking that recognizes the stake future generations have in climate change mitigation and adaptation.

V. Challenges to Intergenerational Justice: Risk Management, Scientific Uncertainty, and Long Time Frames

If there is no action before 2012, that's too late. What we do in the next two or three years will determine our future. This is the defining moment.

Rajendra Pachauri, IPCC²⁶⁰

Even when everyone can agree that the current generation has an ethical obligation to leave a legacy of environmental options, quality, and access to succeeding ones, procedural questions remain. How shall we deal with questions of scientific uncertainty and risk management over long time frames? One of the most vexing issues involves the economic method of “discounting,” a debate that has been framed by the sharply contrasted positions of Sir Nicholas Stern of the British Treasury and Yale University economics professor William Nordhaus.²⁶¹ This chapter explores this discounting debate, its foundations in macroeconomic theory, and how climate change challenges the assumptions of discounting.²⁶²

A. The Utilitarian Calculus of Discounting

Cost-benefit analysis is a policy analysis technique that aspires to weigh the costs and benefits of governmental regulation in quantitative terms. In the past twenty years, it has come to dominate regulatory decision-making and its attempts to balance economic and environmental interests.²⁶³ By subtracting the costs of regulation (like compliance costs, job loss, and increased prices) from the value of its benefits (like saved lives, job creation, and wilderness preservation), this analytical tool “seeks to maximize the net benefits of regulation [to society].”²⁶⁴

Comparing the costs and benefits of governmental intervention which result in the benefits being enjoyed at one time while the costs are borne at another is especially complicated. Economists believe that benefits received in the future generally have less value than those received in the present, because people have a “positive pure time preference,” meaning that they prefer to receive benefits now rather than in the future. Economists also believe that because society will continue to become richer and consume more, benefits consumed now have greater marginal utility than those in the future, when any particular cost or benefit will constitute a smaller portion of society’s total wealth. In addition, economists highlight the “opportunity cost” of spending resources now rather than later. The cost of regulatory action now theoretically means forgoing the opportunity to invest the money instead, let it grow in value, and then have greater wealth with which to purchase benefits in the future. Or as the cartoon character Wimpy famously said to Popeye, “I will gladly pay you Tuesday for a hamburger today.”²⁶⁵

Discounting²⁶⁶ is the mathematical tool used in cost-benefit analysis “that marks down future dollars to translate them into present dollars”²⁶⁷ and thus “match[es] cash flows that occur in different periods.”²⁶⁸ In the United States, the Office of Management and Budget (OMB) requires that all government agencies discount future costs and benefits when designing significant regulations, using both a 3% and a 7% discount rates.²⁶⁹ Given this range, it is unsurprising that decisions that rely on cost-benefit analysis often turn on the exact discount rate chosen. A study of thirty years of environmental, health, and safety regulation has shown that many proposed rules that failed cost-benefit analysis (and thus were not promulgated) had positive cost-benefit ratios when the value of lives were not discounted so severely.²⁷⁰

This is exactly the case in the climate change context. The 2006 *Stern Review on the Economics of Climate Change* concluded that global warming would impose large costs on the future and warranted substantial immediate preventive action.²⁷¹ To reach this conclusion, Sir Nicholas Stern chose to use a 1.4% discount rate, which differed dramatically from the prevailing view of using a rate closer to the return on private investment, like Professor William Nordhaus’s choice of a 5.5% discount rate.²⁷² Working within the cost-benefit construct, both economists fundamentally sought to avoid the perverse results of failing to account properly for the opportunity cost of the resources spent.²⁷³ Yet the precise discount value chosen can result in very different regulatory choices.

B. Questioning the Utility of Discounting Events in the Distant Future

The use of any positive discount rate over long periods of time can produce its own set of anomalies. Most obviously, it “shrinks the future” by making even very large impacts on the distant future seem insignificant compared to present-day effects.²⁷⁴ Saving one life today can be made to seem worth more than the discounted value of saving billions of people in the future.²⁷⁵ Averting global climate change’s future devastation can appear unworthy of action today—depending upon the discount rate.

Such issues, however, do not even address questions of intragenerational fairness, such as how benefits and costs will be allocated between rich and poor societies, as well as between the rich and poor in any given society. These issues give many economists pause. As the organizers of a discounting workshop involving twenty leading economists put it:

[I]t is impossible to read these papers without getting a sense of the unease even the best minds in the profession feel about discounting, due to the technical complexity of the issues and to their ethical ramifications. This unease is expressed most directly by [Nobel Prize winner] Robert Solow. In his foreword, he writes, “Maybe the idea of a unitary decision maker—like an optimizing individual or a wise and impartial adviser—is not very helpful

when it comes to the choice of policies that will have distant-future effects about which one can now know hardly anything.”²⁷⁶

Discounting also causes unease because current and future people and their well-being are treated as fungible. In practice, people do not actually discount their future lives and health in the same way they might discount their investment and consumption habits (even if economists find it irresistible).²⁷⁷ To soften the impact of discounting, some economists use various methodological adjustments. They may use different positive rates for projects involving different time frames, for example.²⁷⁸ They may apply “hyperbolic discounting,” which varies the discount rate over the long time period involved,²⁷⁹ use negative discount rates for some circumstances,²⁸⁰ and even eliminate discount rates entirely where the impacts are “catastrophic” and “irreversible.”²⁸¹

C. Rejecting the Application of Cost-Benefit Analysis to Climate Change

A growing number of commentators have concluded instead that discounting across multiple generations is unethical because it intrinsically privileges the current generation’s cost-benefit trade-offs, which do not automatically apply across generations.²⁸² Most urge moving from a debate over discount rates to one over distributional equity in the present and future, and the need to prevent catastrophic environmental harms or save unique natural resources.²⁸³ Even Professor Cass Sunstein, a leading voice in the law and economics field, has observed that “the moral obligations of current generations should be uncoupled from the question of discounting, because neither discounting nor refusing to discount is an effective way of ensuring that those obligations are fulfilled. The moral issues should be investigated directly, and they should be disentangled from the practice of discounting.”²⁸⁴

Environmental philosopher and ethicist Bryan Norton, for example, believes that cost-benefit analysis, while useful for problems with relatively short timeframes, is an unhelpful decision rule when future generations are affected. The technique’s “utilitarian calculus” counts all beneficiaries as equals in trying to aggregate overall human welfare.²⁸⁵ Norton points out that applying cost-benefit analysis to problems that primarily affect future generations commits a “category mistake” because we cannot yet know who is a possible future victim or beneficiary to be factored into the equation.²⁸⁶ He posits that the real question is “whether the community will, or will not, take responsibility for the long-term impacts of its actions” and “rationally choose and implement a bequest package—a trust or legacy—that they will pass on to future generations.”²⁸⁷

Norton argues that we should instead begin the analysis by organizing intergenerational obligations according to the scale and irreversibility of the environmental damage. Rather than debating the appropriate discount rate, he believes we should first determine the appropriate temporal horizon of concern. How far into the future will the threatened impacts spread their damage?²⁸⁸ Norton then applies a mechanism or decision rule called the “safe minimum standard

of conservation”: the resource should be saved, provided the social costs are bearable.²⁸⁹ The first step requires careful delineation of what is being protected. The second step requires assessment of how much we are willing to pay to avoid a specified damage to it. In this way, having committed to a particular goal, society can then use economics to assess the best method of reaching it, doing a “cost-effectiveness” analysis.²⁹⁰

Interestingly, this approach resembles Professor Sunstein’s application of a market rate discount rate to global climate change regulation.²⁹¹ He concluded that placing the money that would be spent on abating global warming into a market-rate investment, and then transferring this wealth across generations, was a more cost-effective approach to intergenerational accountability for climate change harms than hard carbon emission limits or similar policies perceived as limiting current growth.²⁹²

But Sunstein recognizes that these sorts of calculations are largely theoretical and politically unlikely to be achieved. As one colleague observed: “The discounting model assumes that funds not invested in a regulatory program will be invested in financial instruments for the benefit of future generations, but that assumption is rarely (if ever) true. In contrast, the opportunity cost model compares actual alternative investments. Under this opportunity-cost framework, we would either consider the return on alternative mutually exclusive projects, or the contribution of the regulatory project to reductions in economic growth. This framework compares actual alternatives, rather than imaginary investments.”²⁹³

Environmental health lawyer and scientist Joseph Guth concludes that discounting—and cost-benefit analysis as well—are inadequate because they do not account for the reality that the interdependent ecosystems on Earth can assimilate only a maximum rate of ecological damage without becoming biotically impoverished.²⁹⁴ Once we overshoot this assimilative capacity, we inexorably diminish and eventually devastate the biosphere. He draws on the work of former World Bank economist Herman Daly, who described and debunked the starting assumptions for mainstream economics that underpin cost-benefit analysis: permanent and unlimited economic growth, infinite natural resources consumption, and continuous replacement of exhausted natural resources (like oil and fisheries) and pollutions sinks (like air and water) with human-made substitutes.²⁹⁵

This set of assumptions seemed reasonable a century or two ago, in an “empty” world with comparatively few people surrounded by seemingly boundless resources and pollution sinks. But in the Twenty-first century, Guth observes, many resources that we depend on for survival—arable land, fresh water, and fish stocks—have become finite. Also, environmental damage has become concentrated as it has accumulated within this fixed physical volume. Moreover, because living and non-living parts of the biosphere are so deeply interdependent, these forms of environmental degradation interact and compound each other’s effects. Scientists agree that human activities are now crossing thresholds of sudden, irreversible changes, causing collapse of

fisheries, dead zones in the sea, regional climate change, and loss of species.²⁹⁶ By some detailed estimates, humanity reached and surpassed the Earth's sustainable biocapacity in the 1980's.²⁹⁷

This overshoot has been documented across the United States in particular.²⁹⁸ History shows how past civilizations that have used their resources unwisely have collapsed.²⁹⁹ Guth argues that these examples should prod us to recognize that our supreme confidence in our ability to adapt, to develop substitute technologies and to develop new resources for those that we deplete, is hubris.

Under conditions of ecological overshoot, cost-benefit analysis can no longer be used to justify individual increments of environmental damage. Guth argues that when we do cost-benefit analysis of each increment, we end up allowing all increments of damage that individually pass the cost-benefit test. As the economy grows, this approach permits endless growth in the allowed increments of damage, to the point where the total damage exceeds that of the Earth's ecological capacities. In this way, each increment contributes to an immeasurable, infinite loss.

Guth proposes instead adopting a new legal framework that would seek to maintain an ecologically functioning biosphere as a paramount priority, by restraining the cumulative impact of these incremental, cost-benefit-justified units of damage. Guth envisions the definition of a standard of environmental or human health; legal barriers to all acts that contribute to invasion of such a standard; placing the burden of proof on those whose actions threaten the environment; recognizing broad standing to enforce such rules of law; and motivating the development of less-damaging alternatives. Under such new decision-making structures, cost-benefit analysis and even discounting might continue to help us choose among less damaging alternatives—but they would no longer be used to justify incremental contributions to ecological degradation.

Legal scholar Richard Revesz takes a different path, accepting the usefulness of cost-benefit analysis, but arguing that discounting simply does not apply to long-term problems like climate change. He distinguishes between individual discounting and generational discounting. The first delays benefits to present costs for the same individual, as with “long latency” environmental health regulations, like asbestos and lead limits. The second assigns costs and benefits to completely different individuals.³⁰⁰ Because the latter is conceptually different than the former, “Deciding how much to spend today in order to reduce environmental risks for future generations is not a question of time preferences for any group of people, but is an allocation question between people living at different times. Fundamentally, such allocation decisions are moral.”³⁰¹

Revesz concludes that discounting in the climate change context is “wrongheaded, and leads to the fallacy that we are worth more than our children.”³⁰² Because these allocation decisions are moral and not economic ones, they should be made according to principles like fairness and equality. He offers several approaches for determining intergenerational accountability: sustainable development, “a general utilitarian framework,” and “the corrective-justice approach.”

The first approach, defined per the Brundtland report as “meeting the needs of the present without compromising the ability of future generations to meet their own needs,”³⁰³ rests on an obligation to future generations of a defined environmental legacy. Although Revesz recognizes how this “underspecified obligation” can and has been abused, he acknowledges Edith Brown Weiss’s contribution through her framework of three principles adopted in this policy paper.³⁰⁴ Drawing on utilitarianism, the second approach begins by applying cost-benefit analysis to global climate change projects and pursuing those actions where calculated benefits exceeds costs. But “if the resulting distribution of resources were unattractive, the social decision maker would require redistribution.”³⁰⁵ The third approach, corrective justice, requires polluters to mitigate their adverse effects on the environment. Morally, this approach holds individuals and societies responsible for their actions and economically, it creates conditions that make those groups internalize these social norms.³⁰⁶

Revesz envisions that for intergenerational accountability to fully function, we will draw from all three approaches. As he concludes, “[t]hough hard choices remain about our obligations to future generations, we cannot avoid them by merely resorting to inapposite economic tools. . . . [Discounting] is the result of our desire to avoid difficult decisions regarding what we owe others, or, worse, of our desire to avoid owing much to others. Shirking a decision is a decision in itself.”

D. Conclusion

These three rationales provide different paths to the same conclusion: the discount rate is really a straw man. It cannot resolve the enduring debate about whether cost-benefit analysis can be meaningfully applied to the intergenerational justice problem of climate change. To point to discounting as a justification for not acting now to mitigate climate change harms to future generations is only a methodological subterfuge. It dodges the real question of our environmental legacy. We no longer can afford to hide behind formulas and imaginary investments when scientists tell us with a high degree of certainty that humans have overused the ecological resources of the Earth. Instead, taking Norton’s advice, we should embrace new measurement tools to help us move forward to “relate environmental science with social values in the search for rational policies.”³⁰⁷

VI. Summary and Recommendations

We cannot solve problems by using the same kind of thinking we used when we created them.

Albert Einstein³⁰⁸

The vast majority of the U.S. population—indeed, the vast majority of the world’s population—believes that we, the living, have an obligation to leave a livable world to future generations. The Preamble of our Constitution expresses concern for posterity, and provides a strong impetus to develop legal structures to protect the most vulnerable of all human populations, our children and their children. It is an aspiration that has found its way, too, in our state and foreign constitutions, in national and subnational legislation, regulation, and judicial decisions, and, indeed, in the emerging law of human rights that extends to all people everywhere. As observed, however, these expressions of intergenerational concern are, overall, much too limited in scope and practice to meet the challenge of intergenerational justice in the context of such large-scale environmental hazards as climate change. Climate change’s predicted pervasive impacts on human civilization call the assumption of legacy into question.

This policy paper has made the scholarly case that ecological protections for future generations and concomitant obligations to them are supported by plausible and persuasive theories of social justice. The basis for these corresponding rights and duties is especially clear when the legal theories are grounded on the value of respect, the core value of human rights. Yet, as noted, few legal and policy tools have been developed to address obligations that are unavoidable in every plausible theory of justice and fairness in the cross-generational setting. The laws highlighted in Chapters 2 through 4 represent a starting point, however. To create law that codifies the moral obligations that define our environmental legacy to future generations, we adopt the three intergenerational justice principles of Professor Brown Weiss—conservation of options, quality, and access—and apply them to the unprecedented circumstances at hand.

Worries about our obligations to future generations are no longer academic. They are all too real and urgent. Growing alarm regarding anthropogenic climate change has transformed philosophical and legal theorizing into a moral crisis. Present and impending climate change brings us face to face with stark, discomfiting images of a non-future.

If we accept the best science on the subject, this moral crisis comes at us with great urgency—and, inescapably, with huge amounts of uncertainty. While there is nothing new about uncertainty stitched into environmental threats, the scale of climate change, and its countless and complex repercussions, are unprecedented.³⁰⁹ Business-as-usual now appears as an irreversible experiment with the only atmosphere humans have. It is impossible to think that creative responses to these challenges can be successful without effective legal and policy action.

For too long, the U.S. Government has used appeals to uncertainty to impede progress in addressing climate change, advocating a “study-then-act” approach. Clearly an activist approach—“learn-by-doing”—is justified in the current situation. The urgency and the high degree of uncertainty attending climate change science and policy makes it all the more important that we *experiment* with multiple approaches to implementing policies that begin to address our intergenerational obligations. This approach, often called “adaptive management,” recommends the initiation of many small-scale and limited experiments (with controls) that both (a) offer likely relief to a perceived threat or some aspect of it; and (b) provide opportunities to learn and thereby reduce the uncertainty inherent in future situations.

The threat of global climate change provides an opportunity to explore legal and policy tools that address our long-ignored obligations to future generations. To this end, we have gathered together a number of the most creative minds in this realm, scholars and activists willing to think “out of the box” and to propose ideas that can be put into “real world” practice both immediately and over time.

The result: sixteen recommendations that address some of the aspects of our obligations to future generations. Given the nature of the enterprise, they vary in detail, nuance, and voice; and they are presented here, as intended by their authors, to stimulate discourse and innovation. So offered, in the context of adaptive approaches for responding to uncertainty, they therefore should be considered as small steps toward more robust protection of the interests of future generations and as opportunities to learn how to deploy law in addressing the challenge of climate change.

We begin in Recommendation No. 1 by advocating for a set of core principles that a modern Law of the Commons requires to affect all forms and levels of ecological decision-making. This recommendation, necessarily a work-in-progress, joins a “commons discourse” that seeks to recognize and regulate the common resources required by humans all over the world. In the face of unprecedented global climate change, an open-minded willingness to rethink fundamental assumptions is mandatory, however much it may challenge conventional Western thought.

Many if not all of the remaining fifteen recommendations are also initial forays into the prescription and application of a Law of the Ecological Commons as broadly outlined in Recommendation No. 1. Some are amenable to implementation in the near term, others in the longer term. But as different contexts typically produce different conclusions, we leave this choice to the policy- and decision-makers—outside as well as inside government—who are charged to make determinations of this sort. Here, therefore, we divide our recommendations among the following categories of perceived jurisdictional relevance and utility:

- *National/Subnational Initiatives* (Constitutive, Legislative, Judicial, Regulatory); and
- *International Initiatives* (Normative and Institutional/Procedural).

In these ways, we hope to leave a legacy of ecological justice for future generations secured, in Brown Weiss's terms, in the legal right to the *conservation of environmental options* comparable to that of previous generations, *the conservation of environmental quality* no worse than that enjoyed by their predecessors, and the *conservation of equitable access* to the environmental options and qualities left to them from the past.

CLI RECOMMENDATION NO. 1 (Abstract)

Define and Develop a Law of the Commons for Present and Future Generations*

The commons “embraces all the creations of nature and society that we inherit jointly and freely, and hold in trust for future generations.”³¹⁰ It encompasses common assets, common property, and common wealth. Given the multiple threats posed by climate change to all these commons sectors, an obviously essential commons for present and future generations is the atmosphere.

In this recommendation, we propose ten tenets or foundational principles of law derived from small seeds in existing law, primarily though not exclusively with reference to Earth’s atmosphere. We further propose multidimensional—i.e., multilayered, multisectoral, and multisystemic—attention to their implementation as pillars of the positive law, both national and international, that must be established to honor the ecological rights of present and future generations. The ten tenets or foundational principles are:

1. A life-sustaining, community-nourishing, and dignity-enhancing ecological commons is a fundamental human right of present and future generations.
2. It is the duty of each generation to pass the commons on to future generations unimpaired by any degradation or depletion that compromises the ability of future generations to secure their rights and needs.
3. The services and infrastructure of the Earth necessary for humans and other living beings to be fully biological and communal creatures shall reside within the domain of the commons.
4. All commoners (the public or a defined community) have rights of access to, and use of, the ecological commons without discrimination unrelated to need. Such rights shall not be alienated or diminished except for the purpose of protecting the commons for future generations.

* This recommendation was authored by Carolyn Raffensperger, Executive Director of the Science and Environmental Health Network (SEHN), Burns H. Weston, Director of the Climate Legacy Initiative, and David A. Bollier, Editor of *OntheCommons.org*. It originates in an earlier version published as Carolyn Raffensperger, *Law of Sharing: Setting a Policy and Legal Agenda for the Commons*, THE NETWORKER (Science & Envtl Health Network, Ames, Iowa, Oct. 2007), available at <http://www.sehn.org/Volume 12-5.html#a2>. The authors of this recommendation acknowledge with gratitude the insights and suggestions of Harriet Barlow, Peter Barnes, Joseph Guth, Roger Kennedy, Nancy Myers, and Edith Brown Weiss.

5. Publicly owned commons belong not to the state but to the commoners (the public or a defined community), both present and future, who are entitled to the benefits of their commons.
6. It is the responsibility of government to serve as trustee of commons assigned to it by law for present and future generations. In fulfillment of this responsibility, governments may create new institutions and mechanisms as well as authorize responsible parties to manage the commons or resources therein. All actions taken by government or its designees must be transparent and accountable to commoners.
7. The precautionary principle is a useful guide for protecting the commons for present and future generations.
8. Eminent domain (the “taking” of private property for a public use and subject to payment of just compensation) is the principal legal process for moving private property into the commons and protecting or enhancing the commons.
9. The market, commerce, and private property owners shall not externalize damage or costs onto the commons. If the commons are damaged, the polluter, not the commoners, pays.
10. Future generations shall not inherit a financial debt without a corresponding commons asset.

The foregoing ten tenets are key legal principles for protecting the ecological commons (local to global). Reflecting fragments of law and policy that come down to us from many sources, and imbued with varying degrees of vitality in contemporary law, politics, and governance, they constitute important guideposts for defining and developing a law of the ecological commons that protects the special value of nature’s commons for both present and future generations.

What remains, of course, is to devise and implement the legal mechanisms and strategies that can establish these tenets as firm pillars of national and international law. In this regard, we note the recommendations that follow, many of which, if implemented, could be instrumental to this end—for example, CLI Recommendation No. 2 in this CLI Policy Paper (advocating the adoption of “Model State Constitutional Provisions to Implement an Environmental Right for Present and Future Generations”) or CLI Recommendation No. 13C (a draft U.N. General Assembly resolution setting forth a “Declaration on the Establishment of the Atmosphere as a Global Commons for Present and Future Generations”). Whatever legal mechanisms and strategies are adopted, however, we urge that the process of selection be informed by the proposition that the existence of a life-sustaining, community-nourishing, and dignity-enhancing ecological commons is or should be a fundamental human right for all people everywhere.

For extended discussion, see the full text of this CLI Recommendation No. 1 in Appendix B of this CLI Policy Paper.

CLI RECOMMENDATION NO. 2 (Abstract)

Adopt Model State Constitutional Provisions to Implement an Environmental Right for Present and Future Generations*

The rights of future generations implicate, among other things, a merger of environmental and human rights law. It is a developing field of law that, in the name of intergenerational justice (or equity), requires a balancing of the well-being of future generations with that of present generations when making contemporary societal and environmental decisions.

This recommendation, consisting of a model constitutional provision with commentary, is accompanied by a companion model implementing statute as set forth in CLI Recommendation No. 3 (in this CLI Policy Paper and its Appendix B). Together these model instruments are designed to enhance environmental protection for future generations. Each working documents, it is hoped that they will spark discussion and debate as well as concrete action and innovative practical solutions to this issue and its complexities, both within the United States and beyond.

As indicated, the recommendation includes commentary on the provisions. The commentary outlines historical origins, legal precedent, and the reasoning behind the proposed articles and the use of particular terms. Here follows the text of the Model State Constitutional Provision itself:

* The result of collaboration between the Science and Environmental Health Network (SEHN) and the International Human Rights Clinic of the Human Rights Program of Harvard Law School, this recommendation was researched and written by Jason Steffen, J.D. Harvard Law School '07, a former student in the Clinic. Bonnie Docherty, Lecturer on Law and Clinical Instructor at the Clinic, edited the paper and supervised the collaborative efforts that led to its creation. Carolyn Raffensperger, Executive Director of SEHN, Joseph Guth, Legal Director of SEHN, and Tyler Giannini, Clinical Director of the Harvard Human Rights Program also helped formulate the ideas in this document, providing additional suggestions and edits. James Cavallaro, Executive Director of the Human Rights Program, assisted with editing, and Nancy Myers of SEHN proofread the document. The Climate Legacy Initiative (CLI) thanks the Harvard Human Rights Program and Clinic as well as Carolyn Raffensperger and Joseph Guth, both members of the CLI research team, for permission to include this material in this CLI Policy Paper. Except for footnote renumbering and minor reformatting, the recommendation presented in full in Appendix B of this policy paper is exactly as published by its SEHN and Harvard co-sponsors.

Article I: Inalienable Right

§ 1: Right to an Ecologically Healthy Environment

- (1) Present and future generations of citizens of the State have the right to an ecologically healthy environment. This right includes but is not limited to: the enjoyment of clean air, pure water, and scenic lands; freedom from unwanted exposure to toxic chemicals and other contaminants; and a secure climate.
- (2) This right is self-executing although it shall be maintained and strengthened under the guidance of the State Legislature.
- (3) Individuals and groups who believe their environmental right has been violated may seek redress in state courts against alleged violators, both public and private. The State Attorney General is also charged with the enforcement of this provision, with or without additional legislative guidance, on behalf of all citizens, including future generations.
- (4) The environmental right enumerated in this section is held to be fundamental to present and future generations of citizens and shall be weighed equally with other rights found by state courts to be fundamental.

Article II: Responsibilities

§ 1: Environmental Responsibilities

The State holds its natural resources in trust for its people and has the duty to use its powers to conserve, protect, and improve these resources for the benefit of present and future generations. In furtherance of this duty, the State shall take a precautionary approach to the use of natural resources and the development and proliferation of new technologies.

For extended discussion, see the full text of this CLI Recommendation No. 2 in Appendix B of this CLI Policy Paper. *See also* companion CLI Recommendation No. 3, next and in Appendix B. Additionally, see CLI Background Paper No. 14 in Appendix A of this policy paper upon which this recommendation is based in part.

CLI RECOMMENDATION NO. 3 (Abstract)

Adopt Model State Statute to Implement Environmental Rights for Future Generations*

The rights of future generations implicate, among other things, a merger of environmental and human rights law. It is a developing field of law that, in the name of intergenerational justice (or equity), requires a balancing of the well-being of future generations with that of present generations when making contemporary societal and environmental decisions.

This recommendation, consisting of a model statute with commentary, is accompanied by a companion model constitutional provision as set forth in CLI Recommendation No. 2. Together these model instruments are designed to enhance environmental protection for future generations. Each of them working documents, it is hoped that they will spark discussion and debate as well as concrete action and innovative practical solutions to this issue and its complexities, both within the United States and beyond.

As indicated, the recommendation includes commentary on the provisions. The commentary outlines historical origins, legal precedent, and the reasoning behind the proposed articles and the use of particular terms. To these ends, this recommendation proposes a Model State Statute to Implement Constitutionally Established Environmental Rights for Future Generations, designed to be an aspirational starting point for use in whole or in part by states and local communities in crafting their new laws. Its highlights include the following:

* The result of collaboration between the Science and Environmental Health Network (SEHN) and the International Human Rights Clinic of the Human Rights Program of Harvard Law School, this recommendation was researched and written by Bart Lounsbury, J.D. Harvard Law School '07, a former student in the Clinic. Bonnie Docherty, Lecturer on Law and Clinical Instructor at the Clinic, edited the paper and supervised the collaborative efforts that led to its creation. Carolyn Raffensperger, Executive Director of SEHN, Joseph Guth, Legal Director of SEHN, and Tyler Giannini, Clinical Director of the Harvard Human Rights Program also helped formulate the ideas in this document, providing additional suggestions and edits. James Cavallaro, Executive Director of the Human Rights Program, assisted with editing, and Nancy Myers of SEHN proofread the document. The Climate Legacy Initiative (CLI) thanks the Harvard Human Rights Program and Clinic as well as Carolyn Raffensperger and Joseph Guth, each members of the CLI research team, for permission to include this material in this CLI Policy Paper. Except for footnote renumbering and minor reformatting, the recommendation presented in full in Appendix B of this policy paper is exactly as published by its SEHN and Harvard co-sponsors.

- It states that the ecological health of the State's environment is of critical importance to the well-being of future generations. Its stated purpose is to establish a framework for ensuring the maintenance and encouraging improvement of the ecological health of the State's environment for future generations.
- It establishes that future generations have the right to an ecologically healthy environment.
- It establishes that public and private entities have the responsibility to preserve and, where possible, to restore the ecological health of the State's environment for the benefit of future generations.
- It charges State administrative agencies with promulgating regulations to implement and enforce these rights and responsibilities with respect to permit authorization.
- It provides for the creation of an "ombudsman for future generations" to assess independently both proposed acts within agency permitting authority and citizen complaints of violations relating to agency action.
- It places the burden of proof on permit applicants to demonstrate through environmental impact analyses that the proposed act is not likely to cause or contribute to degradation of the ecological health of the State's environment for future generations. These analyses must consider the potential effects of the act on future generations in view of cumulative impacts, evaluate less damaging alternatives, and evaluate the costs and benefits in non-monetized as well as monetized terms.
- It provides that agencies may not approve permits unless applicants carry their burden of proof under the statute, and requires agencies to select the feasible alternative that best promotes the ecological health of the environment for future generations.
- It provides a cause of action for acts that may cause or contribute, or may have caused or contributed, to the degradation of the ecological health of the State's environment. Upon a threshold evidentiary showing, the statute places the burden of proof on the public or private defendant to demonstrate that the act complained of is not likely to cause or contribute (or is not likely to have caused or contributed) to degradation of the ecological health of the State's environment for future generations.

- It provides that public entities and any person residing within the State shall have standing to bring an action under the statute, subject to any State constitutional limitations or requirements.
- It provides for various forms of injunctive or monetary relief, attorneys fees and cost recovery, and for heightened judicial scrutiny for acts that may contribute to further degradation of an already-damaged environment, profit private parties to the detriment of the public, or result in catastrophic destruction of the environment.

For extended discussion, preceded by the model statute's provisions in this composite form, see the full text of this CLI Recommendation No. 3 in Appendix B of this CLI Policy Paper. *See also* companion CLI Recommendation No. 2, preceding and in Appendix B of this policy paper. Additionally, see CLI Background Paper No. 14 in Appendix A of this policy paper upon which this recommendation is based in part.

CLI RECOMMENDATION NO. 4 (Abstract)

Adopt Model State Environmental Act*

The National Environmental Policy Act of 1969 (“NEPA”), one of the nation’s landmark environmental laws, requires federal agencies to consider the environmental consequences of their proposed actions. NEPA is the source of the well-known requirement that federal agencies prepare Environmental Impact Statements (EIS), and when this law works it provides a framework for society to think about the environmental impacts of government action. But NEPA does not work as well as it should. Federal rules and enforcement have waned. What is more, though needing to consider the environmental consequences of their actions, fewer than twenty of the separate states have their own environmental quality acts (or “little NEPAs”) as of this writing. Most were developed in the 1970s, long before the advent of global warming and other climate change hazards burst on the public consciousness.

Accordingly, the time is ripe to take seriously the numerous new environmental law concepts and policies that have been emerging in recent years regarding how government should make environmental decisions—including, for example, the importance of considering cumulative impacts and the idea of intergenerational ecological justice. Many of these new approaches and concepts should be incorporated into new state environmental quality acts, and should be used to revise and update existing state acts as well.

To these ends, this recommendation proposes a Model State Environmental Act, designed to be an aspirational starting point for use in whole or in part by states and local communities in crafting their new laws. However, though developed with the separate states primarily in mind, its approaches and concepts could be incorporated also into a revised federal NEPA. Its highlights include the following:

- It establishes a public trust duty of government to develop and maintain a high quality environment for present and future generations.
- It establishes a duty of government to ensure the fair treatment of all people irrespective of race, culture, or income relative to the development, adoption, implementation, and enforcement of all environmental laws, regulations and policies.

* This recommendation was authored by Joseph H. Guth, Legal Director of the Science and Environmental Health Network (SEHN).

- It shifts the burden of proof to proponents of a project to establish a reasonable certainty that the proposed project will cause no significant adverse effect on the environment or unfair treatment.
- It incorporates the precautionary principle's approach to evaluating evidence of environmental harm or unfair treatment in the absence of complete scientific certainty.
- It incorporates specific requirements for Environmental Assessments, Environmental Impact Statements, and government reviews of those instruments to consider the public trust, environmental justice, future generations, cumulative impacts, and full analysis of alternatives.
- It provides that Environmental Impact Statements and Environmental Assessments may not rely solely on monetized cost-benefit analysis, but must comprise identification and analysis in non-monetized terms of all significant qualitative social, technical and economic considerations.
- It requires the state to deny projects as proposed if there are feasible alternatives or feasible mitigation measures available, including the option of not doing the project at all, which would substantially lessen unacceptable adverse environmental effects or unfair treatment based on race, culture, and income of such projects.
- It provides for substantial public consultation and input in government decision-making.
- It contemplates that projects might improve the environment and not always degrade it. It creates a preference for alternatives that improve the environment over those that are neutral, and for those that are neutral over those that degrade the environment.
- It authorizes any person or corporation to initiate actions or proceedings to enforce its provisions.

For extended discussion about how this model statute works, together with the text of the Model Act, see the website of the Science and Environmental Health Network (SEHN) at http://www.sehn.org/_law_models.html. For convenient reference to the full text of the Model Act, see CLI Recommendation No. 4 in Appendix B of this CLI Policy Paper.

CLI RECOMMENDATION NO. 5 (Abstract)

Enact a National Environmental Legacy Act to Preserve a Public Natural Resource Legacy for Future Generations*

There is virtually universal agreement across the political spectrum that protecting the interests of our children and grandchildren should be a goal of environmental, health, and safety policy. In numerous laws, Congress has embraced the goal of protecting a resource legacy for future generations and promoting sustainable use of the nation's resources. Yet it is clear that the U.S. is neither using its natural resources in a sustainable fashion nor systematically considering how today's patterns of resource use will affect the next generation. Instead, many public natural resources are managed under statutes with open-ended standards that require or grant federal agencies discretion to "balance" a variety of often incompatible uses, many of which degrade or deplete relevant resources. Many of these statutes contain no enforceable standard mandating protection of any particular quality or quantity of the resource.

This recommendation therefore proposes enactment of a new statute—a National Environmental Legacy Act (NELA or Legacy Act)—that would require defining in concrete terms for the first time the environmental legacy we wish to leave to future generations and providing a mechanism to ensure that we preserve that legacy.

Building on the goals already expressed in numerous laws, NELA would for the first time require management of public resources to conserve some stock of resources for future generations. Embrace of the Legacy Act concept would impel us to identify our long term goals and then help us to chart and maintain a course to achieve our shared goals. At a minimum, the idea of a Legacy Act envisions a statute that defines the public natural resource legacy we wish to preserve and prohibits all actions that will degrade or deplete the defined legacy over a set period of time. Stewardship agencies would be designated for all public natural resources and would be charged to develop and implement legacy plans that ensure preservation of this defined legacy of resources for future generations. The Legacy Act would include provisions to address the following topics:

* This recommendation was authored by Alyson C. Flournoy, University of Florida Research Foundation Professor (2006–2009) and Alumni Research Scholar at the University of Florida Levin College of Law; Heather Halter, J.D. University of Florida Levin College of Law '07; and Christina Storz, J.D. University of Florida Levin College of Law '08 and M.S. University of Florida (Interdisciplinary Ecology) '08. It is excerpted from a forthcoming Center for Progressive Reform report titled "The Case for a National Environmental Legacy Act," available at <http://progressivereform.org/publications.cfm>.

1. **Goals and Policy:** Setting out the goal as defining and preserving a legacy of public natural resources for present and future generations of Americans and describing in affirmative terms the legacy we wish to leave, defined in relation to the existing stock of resources;
2. **Designation of the Legacy Period:** Designating a fixed period of years that constitutes the legacy period, at the end of which the mandated legacy of resources must be conserved;
3. **Prohibited Degradation or Depletion of Legacy Resources:** Setting forth in clear and enforceable terms the maximum level of degradation or depletion permitted over the course of the legacy period for biological and mineral resources and prohibiting impermissible degradation or depletion; for biological resources, a standard that maintains resilience of relevant natural systems should be the presumptive standard; assigning the burden of proof to any agency authorizing degradation or depletion of legacy resources to demonstrate compliance with the Act;
4. **Designation of Legacy Resource Stewardship Agencies:** Designating an existing federal agency to serve as the stewardship agency for each public natural resource found in a given geographic location;
5. **Development of Metrics and Collection of Baseline Data:** Charging stewardship agencies with developing metrics of resource quality and quantity for the resources for which they are stewards; mandating and funding collection of baseline data on the quality and quantity of resources employing these metrics;
6. **Implementing Regulations:** Charging stewardship agencies to develop rules that elaborate on the quantity and quality of resource degradation or depletion that violates the statute, expressed in terms of the metrics developed by the agency;
7. **Prohibitions and Planning:** Limiting stewardship and other agencies' discretion under existing law by requiring stewardship agencies to ensure that impermissible degradation or depletion will not occur; mandating stewardship agencies to develop "legacy plans" and to conform their actions to these plans;
8. **Enforcement:** Providing enforcement authority to stewardship agencies and citizens to seek penalties and injunctive relief, including citizen suits to force stewardship agencies to perform duties under the Act;

- 9. Monitoring and Adaptive Learning:** Requiring and providing funding for ongoing monitoring of legacy resources and updating of legacy plans according to a fixed schedule;
- 10. Exceptions:** Authorizing exceptions to the prohibition on impermissible degradation or depletion if it can be shown by clear and convincing evidence that (1) foreseeable technological advances or the availability of substitute resources will obviate the need for or value of the resource in question and all its associated values and services; or (2) impermissible degradation or depletion is clearly in the public interest, no acceptable alternative exists that will adequately serve the public interest, and all impacts to resources, services, and values can be and will be mitigated.

For extended discussion, including the NELA text, see the full text of this CLI Recommendation No. 5 in Appendix B of this CLI Policy Paper.

CLI RECOMMENDATION NO. 6 (Abstract)

Institute Cap and Trade Strategies for Allocations to Energy Efficiency*

Recommendations for the control of green-house gas emissions have focused on (1) cap-and-trade programs, and (2) taxes imposed upon, and in return for, the right to emit green-house gasses.

In the case of cap-and-trade programs, some proponents suggest allocations of emission rights based on past pollutant levels (as was done for Clean Air Act SO_x permits), others suggest allocations based on social services provided (e.g, kWh of electricity provided or populations served) and others suggest allocations based on auction-bidding for allowable rights (as with telecommunications spectrum allocation auctions). In no case, however, do any pending or expected legislative proposals set the level of allowable emissions (measured in terms of tons of carbon-equivalent) at levels low enough to sustain atmospheric levels of greenhouse gases below the expected trigger levels for significant adverse climate change.

In the case of carbon-taxation schemes, similarly, some proponents suggest taxation at the point of retail consumption (*i.e.*, gas pumps or electricity bills), others suggest taxation at variously defined ‘choke-points’ in the distribution patterns for high-carbon products (*i.e.*, refineries and power plants), and others suggest taxation at a relatively few ‘upstream’ sources of high-carbon materials (*i.e.*, coal mines or oil fields). As with cap-and-trade proposals, no pending or expected legislation sets tax levels at a level that has any serious likelihood of suppressing demand for high-carbon products sufficiently to sustain atmospheric levels of greenhouse gases below the expected trigger levels for significant adverse climate change. Indeed, given the historic record of low elasticity of demand in the two most vital GHG-emission sectors (transportation and electricity), no level of taxation is likely to lead to adequate demand reduction without causing significant social pain.³¹¹

* This recommendation was authored by Richard H. Cowart, 2008 Distinguished Visiting Energy Scholar, Vermont Law School and Director of The Regulatory Assistance Project, and Michael H. Dworkin, Professor of Law and Director of the Institute for Energy and the Environment at Vermont Law School.

Because of these facts, mere collection of revenues for the right to emit greenhouse gases is unlikely to provide necessary constraints on the level of emissions. Thus, the allocation of those revenues becomes as critical as their collection. To quote Richard Cowart's May 8, 2008 testimony to the U.S. Congress's Select Committee on Energy Independence and Global Warming:

Although adding a carbon price signal to the cost of electricity is directionally correct, cap-and-trade programs that try to reduce emissions through price alone will be much more costly and will save less carbon than a cap-and-trade program that includes proven techniques to deliver low-cost efficiency resources. At the consumer level, higher power prices alone will not reduce demand nearly enough to meet our carbon goals. At the generator level, it requires a very high carbon price to make a meaningful change in the dispatch of the generation fleet. In both cases, the prices required to produce deep reductions are high enough to raise practical political barriers to the reductions now called for by climate science.

Fortunately, field experience has demonstrated that the dedication of revenues to direct investment in demand reduction can be an extremely effective means of suppressing emissions. Commitments of 3–5% of electric utility revenues to energy efficiency programs has not merely slowed, but stabilized kWh usage for multi-year periods, and large scale investments in mass-transit and enhanced vehicle efficiency can stabilize gasoline usage.

There is, thus, of significant value to a national program for investments in efficiency; i.e., in insulation, improved lighting, variable speed motors, reflective roofs, better pumps, higher mileage vehicles, and mass-transit. That policy does not need to dictate methods or means of achieving efficiency goals, but could allow states, local governments, utilities, and third parties free use of a variety of techniques to reduce demand for carbon-intensive energy usage. These methods include codes, standards, incentives, utility programs, ratemaking, smart growth policies, competitive acquisition, etc. And they can be implemented on state and local levels in many cases. Indeed, throughout the Regional Greenhouse Gas Initiative (RGGI) states, the examples of statutes (first arising in Vermont) and executive orders (in other states) demonstrate that such commitments can be combined with cap allocations and tax placements in ways that offer a far more effective means of emission reduction than through price increases alone.³¹²

For extended discussion, see the full text of this CLI Recommendation No. 6 in Appendix B of this CLI Policy Paper, which identifies the limits of unrestricted revenue collections, summarizes the need for allocations for the purpose of reducing impacts on future generations, identifies examples of state statutory language making such commitments, and suggests the key elements of federal statutory text to the same effect.

CLI RECOMMENDATION NO. 7 (Abstract)

Create Sky Trusts and Other Environmental Stakeholder Trusts to Sustain and Safeguard Common Assets*

This recommendation proposes the creation, via national and state legislation, of sky trusts and other environmental stakeholder trusts to sustain and safeguard common assets for future generations, fellow citizens, and nature—e.g., a Federal Carbon Trust to manage the flow of carbon through the U.S. economy and into the atmosphere. Other environmental stakeholder trusts would include, but not be limited to, local land trusts and regional watershed trusts. To the extent compatible with foreign economic and legal systems, all are recommended for other countries as well.

For explanatory detail, see the full text of this CLI Recommendation No. 7 in Appendix B of this CLI Policy Paper. *See also* the author's book *Capitalism 3.0: A Guide To Reclaiming The Commons* (2006), especially Chapter 9 therein ("Building the Commons Sector").

* This recommendation was authored by Peter Barnes, Senior Fellow of "OntheCommon.org" (formerly the Tomales Bay Institute) and author of *Capitalism 3.0: A Guide to Reclaiming the Commons* (2006).

CLI RECOMMENDATION NO.8 (Abstract)

Advance the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations*

Modern environmental law has proved a colossal failure, despite the good intentions and the hard work of many citizens, lawyers, and government officials. Notwithstanding the most extensive and complex set of legal mandates the world has ever known, government is driving runaway greenhouse gas emissions and resource depletion. Agencies have taken the discretion in the statutes and created a regulatory monster, so complex and bureaucratic that it lacks any meaning for the average citizen. At best, the environmental law of today is used to hospice a dying planet. At a time when society must form a “bridge” to a sustainable world, leading thinkers should be setting their sights on a transformational environmental principle.

This recommendation identifies the public trust doctrine as the most fundamental legal mechanism available to ensure governmental protection of natural resources necessary for public welfare and survival. At the core of the doctrine is the principle that every sovereign government holds vital natural resources in “trust” for the public—i.e., present and future generations of citizen beneficiaries.

This recommendation proposes a paradigm shift away from a political discretion system of natural resource management to one that is infused with public trust principles and policies across all branches of government and at all levels from the most local to the most global. It highlights the fiduciary obligations inherent in the trust approach, requiring government to act both as a steward of all natural resources through its management agencies and as a co-tenant trustee with other sovereign governments of shared global and regional resources (air, atmosphere, migratory wildlife, oceans, etc.). In these capacities, government has the duty to establish and enforce measurable standards of performance for the protection of the vital assets of the natural trust and to preserve such assets for the benefit of future generations.

The recommendation emphasizes, too, that a cultural transformation across all sectors of society is required if a legal paradigm shift to public trust is to be accomplished and endure; and to this end it advocates that, outside the law as well as within it, the notion of public trust

* This recommendation was authored by Mary Christina Wood, Philip H. Knight Professor of Law and Luvaas Faculty Fellow (2007–08) at the University of Oregon School of Law. It includes concepts being developed in a book work-in-progress, *Nature’s Trust: A Paradigm for Natural Resources Stewardship*. The author acknowledges with appreciation the research assistance of Jonas Hemenway, Amy Hicksted, Maureen McGee, Abigail Blodgett, Jordon Huppert, Tyler Hinton, and Sarah Mann.

must become a focus of multiple institutional initiatives, including within schools, businesses, churches, and non-profit organizations. The climate crisis has positioned the world for such a transformation.

For extended discussion, see the full text of this CLI Recommendation No. 8 in Appendix B of this CLI Policy Paper.

CLI RECOMMENDATION NO. 9 (Abstract)

Foster Diagonal Regulatory Initiatives*

This recommendation proposes that policymakers foster diagonal regulatory initiatives in which different levels and branches of government coordinate their responses to climate change and, more broadly, their actions to protect future generations. It argues that the division of government into distinct levels and branches presents a danger of uncoordinated climate regulation. Treaties, national legislation, and state and local initiatives often develop in relative isolation from one another, which decreases the overall effectiveness of climate policy and increases the risks of intergenerational harm. This recommendation suggests that more efforts at diagonal regulation—which cut across levels and branches of government—are critical to addressing this difficulty and the interests of future generations.

Although some diagonal approaches currently exist, they are relatively limited and certainly not comprehensively integrated into thinking about climate policy across time and space. The recommendation identifies opportunities at different levels of government for diagonal thinking, and explores how such a regulatory reorientation might change current policy.

For extended discussion, see the full text of this CLI Recommendation No. 9 in Appendix B of this CLI Policy Paper.

* This recommendation was authored by Hari M. Osofsky, Associate Professor of Law at Washington & Lee University School of Law. It is a revised version of portions of Hari M. Osofsky, *Climate Change Legislation in Context*, 102 N.W. U. L. REV. COLLOQUY 245 (2008) and Hari M. Osofsky, *Is Climate Change “International”?: Litigation’s Diagonal Regulatory Role* (draft article on file with author).

CLI RECOMMENDATION NO. 10 (Abstract)

Adopt a Model Executive Order Establishing an Office of Legal Guardian for Future Generations and Provide for the Training and Certification of Legal Guardians*

Model Executive Order

Executive orders are directives issued by mayors, governors, tribal leaders, presidents, or other administrative officers acting in their capacity as heads of state or government. Typically they command agencies within the Executive Branch to take a course of action they are authorized to undertake by law. To the extent of that authorization, they do not require ratification by the legislative branch to be enforced (although executive orders may be overturned through legislation). Several governors have issued executive orders concerning climate change. Also, the President of the United States and several U.S. governors have issued executive orders concerning environmental justice and children's environmental health.

This recommendation proposes a model executive order that a mayor, governor, tribal leader, president, or other administrative officer can use to designate a legal guardian for future generations, and to do so in a manner that fulfills the constitutional and statutory intent of CLI Recommendations Nos. 2 and 3 above (and in Appendix B of this CLI Policy Paper). For the text of the Model Executive Order, see CLI Recommendation No. 10 in Appendix B of this CLI Policy Paper. See also CLI Background Paper No. 14 in CLI Policy Paper Appendix A upon which this recommendation is based in part.

Training and Certification

To facilitate the effective promotion and protection of the ecological (and related) interests of future generations, CLI Recommendation No. 10 proposes a Model Executive Order Establishing an Office of Legal Guardian for Future Generations at all levels of executive government. Whether appointed in this or any other setting, however, persons designated as legal guardians to represent future generations (whether as “guardians,” “ombudspersons,” “trustees,” or otherwise) will require special training and certification so that they may serve the interests

* The first of these two recommendations was authored by Carolyn Raffensperger and Joseph H. Guth, respectively Executive Director and Legal Director of the Science and Environmental Health Network (SEHN), the second by Carolyn Raffensperger in association with Burns H. Weston, Director of the Climate Legacy Initiative.

of their unborn clients responsibly and well. This recommendation advocates training and certification programs dedicated precisely to this purpose.

For extended discussion, see the full text of this CLI Recommendation No. 10 in Appendix B of this CLI Policy Paper. *See also* CLI Background Paper No. 14 in Appendix A of this policy paper upon which this recommendation is based in part.

CLI RECOMMENDATION NO. 11(Abstract)

Build Environmental Values into the Law, Including the Common Law*

This recommendation stems from the structure of American property law which, when nature and private property interests collide, historically has exhibited and continues to exhibit a strong preference for economic development or other economic interests, even when that activity externalizes damage onto society and the environment. Given the increasing challenges of climate change and its mounting threats to present and future generations, the recommendation urges a new juridical conception for resolving such conflicts, one that places a higher priority on environmental preservation and enhancement. In so doing, it proposes a new tort of “ecological degradation” that deems it unreasonable to contribute to significant ecological despoliation and destruction.

Among other things, the proposed approach ties potential liability to actions that negatively affect the natural world and thus contribute to ecological degradation. It places the burden of proof on defendants whenever their conduct is the legal cause of an “ecological threat.” And it establishes an affirmative defense for defendants who prove they have taken their stewardship obligations seriously by actively seeking less damaging alternatives.

For extended discussion, see the full text of this CLI Recommendation No. 11 in Appendix B of this CLI Policy Paper.

* This recommendation was authored by Joseph H. Guth., Legal Director of the Science and Environmental Health Network (SEHN). *See also* Joseph H. Guth, *Law for the Ecological Age*, 9 VT. J. ENVTL L. 431 (2008), available also as Background Paper No. 11 in Appendix A of this CLI Policy Paper.

CLI RECOMMENDATION NO. 12 (Abstract)

Arrange for Court-Appointed Special Masters and Experts: A Unique Role for Legal Guardians of Future Generations*

Climate change cases will proliferate in courts throughout the world in the coming decades. While most of the environmental cases of the past thirty years have hinged on scientific issues and contested facts, the emerging ecological and climate change cases, particularly those that are global in scale and intergenerational in scope, will turn on economic issues, be accompanied by vast scientific uncertainty, and have enormous societal ramifications.

These facts call for special masters and expert witnesses to serve in courts as a form of a legal guardian or ombudsperson for future generations, and to do so according to essentially the same criteria and with the same training and certification as are set out in some detail in CLI Recommendations No. 10 for Legal Guardians of Future Generations generally. Such is the concern and focus of this recommendation.

For extended discussion, see the full text of this CLI Recommendation No. 12 in Appendix B of this CLI Policy Paper. See also CLI Background Paper No. 14 in Appendix A of this policy paper upon which this recommendation is based in part.

* This recommendation was authored by Carolyn Raffensperger, Executive Director of the Science and Environmental Health Network (SEHN), in association with Burns H. Weston, Director of the Climate Legacy Initiative.

CLI RECOMMENDATION NO. 13 (Abstract)

Adopt Draft UN General Assembly Declarations on the Ecological Rights and Responsibilities of Present and Future Generations; on the Right to a Clean, Healthy, Ecologically Balanced, and Sustainable Environment; and on the Recognition of the Atmosphere as a Global Commons for Present and Future Generations

The UN General Assembly, the only principal organ of the United Nations in which all its member states have equal representation, typically does its business via recommendations submitted by sponsoring states, commonly and officially known as “resolutions”—sometimes “declarations” in the case of issues of major import. Except in the case of matters concerning internal UN governance, however, these instruments are technically non-binding under the terms of the UN Charter. Yet, via the processes of customary international law-making over time, numerous UN General Assembly declarations and resolutions—including, perhaps most prominently, the historic 1948 Universal Declaration of Human Rights—have become law in whole or in part. Not infrequently they have been accepted by the international community as constitutive or proof of customary international law and therefore binding on the Member States. It is fair to say, too, in respect of human rights issues especially, that they can have morally suasive even if not legally binding effect, symbolic of the international community’s sense of the “opinions of mankind.”

It is worthy of note, too, that what is true of UN General Assembly declarations and resolutions is true also of the declarations and resolutions of the African Union (AU), the European Union (EU), the Organization of American States (OAS), and other regional intergovernmental organizations. Accordingly, the three draft declarations proposed to be adopted by the UN General Assembly in this recommendation are proposed for adoption also, *mutatis mutandi*, by the appropriate organs of such regional organizations. Again, the long-term purpose is to encourage the development of international environmental law in ways that can enhance the biotic community in which, from generation to generation, the human family lives and upon which it depends. The short-term purpose is to signal to the separate but interdependent regions of the world the high priority that must be given by everyone everywhere to the achievement of a clean, healthy, ecologically balanced, and sustainable environment if the well-being, even in some instances the very survival, of the human family, present and future, is to be assured.

CLI RECOMMENDATION NO. 13A* (Abstract)

Adopt Draft UN General Assembly Declaration on the Ecological Rights and Responsibilities of Present and Future Generations

The long-term purpose of this draft declaration is to encourage and shape intergenerational legal justice in ways that can enhance the biotic community in which, from generation to generation, the human family lives and upon which it depends. The short-term purpose is to signal to the entire world community the high priority that must be given by everyone everywhere to the achievement of a clean, healthy, ecologically balanced, and sustainable environment if the well-being, even in some instances the very survival, of present and future generations is to be assured.

For the text of this draft declaration, worthy of adoption by the UN General Assembly and its regional equivalents in Africa, Europe, and the Americas as well, see the full text of this CLI Recommendation No. 13A in Appendix B of this CLI Policy Paper.

* This Draft Declaration was authored by Burns H. Weston, Director of the Climate Legacy Initiative, Katherine L. Moll, Vermont Law School '09, and Suzan M. Pritchett, Esq., J.D. The University of Iowa College of Law '08. Each gratefully acknowledges the helpful insights and suggestions of Carolyn Raffensperger, Executive Director of the Science and Environmental Health Network (SEHN).

CLI RECOMMENDATION NO. 13B* (Abstract)

Adopt Draft UN General Assembly Declaration on the Right to a Clean, Healthy, Ecologically Balanced, and Sustainable Environment for the Benefit of Present and Future Generations

The long-term purpose of this draft declaration is to encourage the development of international environmental law in ways that can enhance the biotic community in which, from generation to generation, the human family lives and upon which it depends. The short-term purpose is the same as for Recommendation 13A above (and in CLI Policy Paper Appendix B) to signal to the entire world community the high priority that must be given by everyone everywhere to the achievement of a clean, healthy, ecologically balanced, and sustainable environment if the well-being, even in some instances the very survival, of present and future generations is to be assured.

For the text of this draft declaration, worthy of adoption by the UN General Assembly and its regional equivalents in Africa, Europe, and the Americas, see the full text of this CLI Recommendation No. 13B in Appendix B of this CLI Policy Paper.

* This Draft Declaration was authored by Burns H. Weston, Director of the Climate Legacy Initiative and Suzan M. Pritchett, Esq., J.D. The University of Iowa College of Law '08. Each gratefully acknowledges the helpful insights and suggestions of Carolyn Raffensperger, Executive Director of the Science and Environmental Health Network (SEHN).

CLI RECOMMENDATION NO. 13C* (Abstract)

Adopt Draft UN General Assembly Declaration on the Recognition of the Atmosphere as a Global Commons for Present and Future Generations

The long-term purpose of this draft declaration is to facilitate the development of a Law of the Commons in respect of the atmosphere which today is especially threatened by greenhouse gas emissions and consequent global warming. Dependent as the human family and all other living things are on a clean and healthy atmosphere, its integrity and sustainability must be ensured, and to these ends a new paradigm or way of thinking about the atmosphere must be instilled in the minds of people everywhere, especially those who are the captains of government and industry. Such is the long-term purpose of this recommendation. The short-term purpose is the same as for Recommendations 13A and 13B above (and in CLI Policy Paper Appendix B)—*i.e.*, to signal to the entire world community the high priority that must be given by everyone everywhere to the achievement of a clean, healthy, ecologically balanced, and sustainable environment if the well-being, in some instances the very survival, of present and future generations is to be assured.

For the text of this draft declaration, worthy of adoption by the UN General Assembly and its regional equivalents in Africa, Europe, and the Americas, see the full text of this CLI Recommendation No. 13C in Appendix B of this CLI Policy Paper.

* This Draft Declaration was authored by Burns H. Weston, Director of the Climate Legacy Initiative, Wan-chun Dora Wang, The University of Iowa College of Law, J.D. '10, and Suzan M. Pritchett, Esq., J.D. The University of Iowa College of Law, '08. It is inspired in part by CLI Recommendation No. 1 in this CLI Policy Paper and its Appendix B.

CLI RECOMMENDATION NO. 14 (Abstract)

Strengthen Kyoto Institutions and Mechanisms to Reduce Greenhouse Gas Emissions*

Attention on the post-Kyoto international arrangements is an opportunity to consider short-term and long-term issues that will affect intergenerational justice issues with fresh eyes. Among the most important short-term issue is how to engage the “non-engaged” world in efforts to curb greenhouse gas (GHG) emissions, the developing countries as well as the United States. Among the long-term issues is the question of how to pave the way for long-term efforts to cut greenhouse gases deeply. This recommendation proposes action on two sets of important opportunities that would benefit both long-term and short-term efforts on climate change.

First, it is recommended that existing international institutions within the Kyoto Protocol be strengthened and “fixed.” While the Kyoto Protocol may not have been especially successful in curbing global GHG emissions significantly, it has been relatively successful in initiating the process of building international institutions and global momentum to cut these emissions. Nevertheless, serious work remains to be done to make institutions like the Clean Development Mechanism (CDM) and the international emission trading system truly effective and consistent with environmental goals. These institutions will facilitate not only the effective functioning of Kyoto and its successor regime; it also will engage the private sector in the developing world. Because regulatory institutions in developing countries remain generally weak, international institutions like the CDM and the international emission trading system have an opportunity to engage the private sector in such countries and link them to international markets and actors elsewhere. As a long-term matter, building on these existing institutions, as well as strengthening the non-compliance mechanism, will make the global climate change regime much more robust and credible as an international environmental regulatory regime.

Second, it is recommended that there be bilateral discussions between the U.S. and China to make a significant and relatively short-term impact on GHG emission curbs. With a new administration taking office in the United States and with China’s increased willingness to take responsible positions on global issues, there is an important opportunity for the world’s two largest GHG emitters to become engaged in more serious reductions of GHG emissions.

For extended discussion, see the full text of this CLI Recommendation No. 14 in Appendix B of this CLI Policy Paper.

* This recommendation was authored by Tseming Yang, Professor of Law at Vermont Law School and Director of the Vermont Law School-Sun Yat-sen University Partnership for Environmental Law in China. He acknowledges with thanks his research assistants Samantha Balmes, Anna Ellis, and Kristin Hines who provided primary research and drafting assistance for this recommendation.

CLI RECOMMENDATION NO. 15 (Abstract)

Make Trade Rules Attuned to the Ecological Needs and Interests of Future Generations*

This recommendation observes that international trade agreements as currently structured do not establish minimum standards so as to protect the climate for present and future generations. Accordingly, it advocates potential strategies that could be employed in future rounds of international trade negotiations to mobilize the international trade regime in the pursuit of climate-friendly policies. These strategies include, among others, the elimination of climate-degrading subsidies, the liberalization of trade in climate-friendly goods and services, and the promotion of climate-friendly investments (particularly in the energy sector).

In addition, the recommendation proposes a modification in trade rules to account for the greenhouse-gas intensity of fuels and a rigorous evaluation of trade and investment agreements to assure their consistency with the goal of protecting the global climate for present and future generations.

For extended discussion, see the full text of this CLI Recommendation No. 15 in Appendix B of this CLI Policy Paper.

* This recommendation was authored by David A. Wirth, Professor of Law and Director of International Programs at Boston College Law School. Professor Wirth gratefully acknowledges Jeffery Atik's and Aaron Cosbey's helpful comments on an earlier draft of this recommendation, but adds that all the views herein expressed are his alone.

CLI RECOMMENDATION NO. 16 (Abstract)

Give the International Court of Justice Compulsory Advisory Jurisdiction on Matters Concerning Climate Change and the Needs and Interests of Future Generations*

Learning from the historical success of the GATT panel dispute resolution system which preceded the creation of the World Trade Organization (WTO), this recommendation suggests that, pursuant to Article 22 of the UN Charter, the UN General Assembly should establish a subsidiary “Judicial Organ” that, upon the application of aggrieved countries, would have the power to refer cases to the International Court of Justice (ICJ) for advisory opinions, including on issues affecting the global environment and the needs and interests of future generations relative thereto. The implementation of this recommendation would facilitate the ICJ’s ability to settle important areas of international environmental law, including how the burdens of climate change should be allocated within the global community and between present and future generations.

For extended discussion, see the full text of this CLI Recommendation No. 16 in Appendix B of this CLI Policy Paper.

* This recommendation was authored by Andrew L. Strauss, Professor of Law at Widener University School of Law. He wishes to thank Professor of Law Mary Ellen O’Connell for her “enthusiastic response” to questions regarding this project when, at the time of writing, he served as Visiting Professor of Law at Notre Dame University. He wishes also to thank Michael Hubbard for his very able research assistance.

Endnotes

Foreword Endnotes

¹ Brand is now the leading spirit of The Long Now Foundation, devoted to encouraging intergenerational perspective. See <http://www.longnow.org/>.

Introduction Endnotes

² NICHOLAS HERBERT STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* 65–68 (Cambridge University Press 2007).

³ James Hansen, Dir., NASA Goddard Inst. for Space Studies, Address in memory of Charles David Keeling at the fall meeting of the American Geophysical Union (Dec. 6, 2005), available at http://www.columbia.edu/~jeh1/2005/Keeling_20051206.pdf.

⁴ Ban Ki-moon, U.N. Sec'y Gen., Statement celebrating the twentieth anniversary of the Intergovernmental Panel on Climate Change (Aug. 31, 2008), available at http://www.un.org/apps/news/infocus/speeches/statments_full.asp?statID=306.

⁵ See Sharon Benzoni & Jerald Schnoor, *Probable Climate Change Impacts: Harms and Benefits at a Continental to Sub-Continental Scale*, in *RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE* (Climate Legacy Initiative 2009) (Appendix A); see also Maureen McCue, *Health Consequences Climate Change: Current & Future, Direct & Indirect*, in *RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE* (Climate Legacy Initiative 2009) (Appendix A).

⁶ *Scientific Assessment of the Effects of Global Climate Change on the United States: A Report of the Committee on the Environment and Natural Resources and the National Science and Technology Council 2* (May 2008), available at <http://www.climate-science.gov/Library/scientific-assessment/Scientific-AssessmentFINAL.pdf>.

⁷ James Hansen, *Dangerous Human-Made Interference with Climate*, Testimony Before Select Committee on Energy Independence and Global Warming, U.S. House of Representatives 3 (Apr. 26, 2007), available at http://www.columbia.edu/~jeh1/2007/Testimony_20070426.pdf.

⁸ PETER BARNES, *CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS* (2006).

⁹ Conference on the Human Environment, Stockholm, Swed., June 5–16, 1972, *Report of the United Nations Conference on the Human Environment*, 3 U.N. Doc. A/CONF.48/14/REV.1 (June 16, 1972), reprinted in 5 *INTERNATIONAL LAW AND WORLD ORDER BASIC DOCUMENTS* V.B.3 (Burns H. Weston & Jonathan C. Carlson eds., 14th ed. 2008) [hereinafter Weston & Carlson].

¹⁰ See GRO HARLEM BRUNDTLAND ET AL., *OUR COMMON FUTURE: THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT* (1987).

¹¹ Conference on Environment and Development, Rio de Janeiro, Braz., June 13, 1992, *Report of the United Nations Conference on Environment and Development*, U.N. Doc. A/CONF.151/26 (vol. I) (Aug. 12, 1992), reprinted in 5 Weston & Carlson, *supra* note 9, at V.B.16; U.N. Dep't of Int'l Econ. & Soc. Affairs, Div. for Sustainable Dev., *Agenda 21, Report of the United Nations Conference on Environment*

and Development, vols. I–III, U.N. Doc. A/CONF.151/26 (June 3–14, 1992), reprinted in 5 Weston & Carlson, *supra* note 9, at V.B.17.

¹² MONT. CONST. art. IX, § 1.

¹³ National Environmental Policy Act of 1969 pmb., 42 U.S.C. § 4332 (2000).

¹⁴ S. AFR. CONST. ch. 2, § 24 (1996); *see also* POL. CONST. art. 6 (1997) (“The Republic of Poland . . . shall ensure the protection of the natural environment pursuant to the principles of sustainable development.”)

¹⁵ Thomas L. Friedman, *Keep It in Vegas*, N.Y. TIMES, Sept. 17, 2008, at A27.

Chapter I Endnotes

¹⁶ This chapter builds on Burns H. Weston, *Climate Change and Intergenerational Justice: Foundational Reflections*, 9 VT. J. ENVTL. L. 375 (2008), available also as Background Paper No. 2 in Appendix A of this policy paper.

¹⁷ President John F. Kennedy, Commencement Address at American University (June 10, 1963), available at <http://www.american.edu/media/speeches/Kennedy.htm>.

¹⁸ Elise Boulding, *The Dynamics of Imaging Futures*, 12 WORLD FUTURE SOC’Y BULL., No. 5, Sept.–Oct. 1978, at 7.

¹⁹ Edith Brown Weiss, *Intergenerational Fairness and Rights of Future Generations*, INTERGENERATIONAL JUST. REV. 1, 6 (2002) (full quote relating intergenerational rights to generational rights).

²⁰ Jörg (Chet) Tremmel, *Introduction*, in HANDBOOK OF INTERGENERATIONAL JUSTICE 1 (Jörg (Chet) Tremmel ed., 2006) [hereinafter “HANDBOOK OF INTERGENERATIONAL JUSTICE”].

²¹ *Id.*

²² *See id.* at 4 and 12. *See also* Jörg (Chet) Tremmel, *Is a Theory of Intergenerational Justice Possible? A Response to Beckerman*, INTERGENERATIONAL JUST. REV. 6, 7 (2004). *Accord* BRYAN G. NORTON, SUSTAINABILITY: A PHILOSOPHY OF ADAPTIVE ECOSYSTEM MANAGEMENT 305 (2005).

²³ BRIAN BARRY, DEMOCRACY, POWER AND JUSTICE 519 (1989).

²⁴ JOHN RAWLS, A THEORY OF JUSTICE 293 (1971).

²⁵ *See* EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY 40–45 (1989).

²⁶ *Id.* at 38.

²⁷ *Id.*

²⁸ *Id.* at 24.

²⁹ *Id.* at 38.

³⁰ *Id.*

³¹ *Id.* at 24.

³² *Id.* at 38.

³³ *Id.* at 24–25.

³⁴ *Id.* at 17.

³⁵ NORTON, *supra* note 22, at 338.

- ³⁶ ONORA O'NEILL, *TOWARDS JUSTICE AND VIRTUE* 113–21 (1996); Henry Shue, *Climate*, in *A COMPANION TO ENVIRONMENTAL PHILOSOPHY* 450 (Dale Jamieson ed., 2001) (“Failing to deal with climate change constitutes inflicting harm on generations who could have been spared all such harm.”).
- ³⁷ Emmanuel Agius, *Intergenerational Justice*, in *HANDBOOK OF INTERGENERATIONAL JUSTICE*, *supra* note 20, at 319.
- ³⁸ BARNES, *supra* note 8, at 12.
- ³⁹ Tremmel, *supra* note 22, at 7.
- ⁴⁰ EDWARD A. PAGE, *CLIMATE CHANGE, JUSTICE AND FUTURE GENERATIONS* 64–65 (2006).
- ⁴¹ *Id.* at 38.
- ⁴² Clark Wolf, *Intergenerational Justice*, in *A COMPANION TO APPLIED ETHICS* 279, 280 (R.G. Frey & Christopher Heath Wellman eds., 2003).
- ⁴³ Hans Jonas, *Technology and Responsibility: The Ethics of an Endangered Future*, in *RESPONSIBILITIES TO FUTURE GENERATIONS: ENVIRONMENTAL ETHICS* 23, 34–35 (Ernest Partridge ed., 1981).
- ⁴⁴ JOEL FEINBERG, *The Rights of Animals and Unborn Generations*, in *RIGHTS, JUSTICE, AND THE BOUNDS OF LIBERTY: ESSAYS IN SOCIAL PHILOSOPHY* 181–82 (1980).
- ⁴⁵ Wilfred Beckerman, *Intergenerational Justice*, *INTERGENERATIONAL JUST. REV.* 1, 4 (2004).
- ⁴⁶ See RAWLS, *supra* note 24, at 284–98 (discussing “justice between generations” and their assumed “time preference”).
- ⁴⁷ See JED RUBENFELD, *FREEDOM AND TIME: A THEORY OF CONSTITUTIONAL SELF-GOVERNMENT* 3 (2001).
- ⁴⁸ 1 JOHN AUSTIN, *AUSTIN'S JURISPRUDENCE, LECTURES ON JURISPRUDENCE* 413-15 (1873).
- ⁴⁹ Annette Baier, *The Rights of Past and Future Generations*, in *RESPONSIBILITIES TO FUTURE GENERATIONS*, *supra* note 43, at 171, 174.
- ⁵⁰ Hans Jonas, *supra* note 43, at 23, 34–35.
- ⁵¹ Wolf, *supra* note 42, at 279, 284.
- ⁵² See *id.* at 286–91 (providing a helpful summary and critique of Rawls in this regard).
- ⁵³ Rawls, *supra* note 24, at 112.
- ⁵⁴ For helpful explication of the “stewardship model,” see PAGE, *supra* note 40, at 53.
- ⁵⁵ For helpful explication of the “chain of concern model,” see *id.* at 117–21.
- ⁵⁶ Tremmel, *supra* note 22, at 6.
- ⁵⁷ See generally ALFRED NORTH WHITEHEAD, *PROCESS AND REALITY: AN ESSAY IN COSMOLOGY* (1929).
- ⁵⁸ See Burns H. Weston, *Human Rights*, in *20 ENCYCLOPEDIA BRITANNICA* 656 (15th ed. 2005) (providing the history as well as the meaning and scope of human rights), available at <http://international.uiowa.edu/centers/human-rights/resources/publications/recurrent.asp> (last visited Feb. 16, 2008).
- ⁵⁹ Emmanuel Agius, *supra* note 37, at 328 (summarizing Whitehead).
- ⁶⁰ *Id.*
- ⁶¹ JOHN RAWLS, *JUSTICE AS FAIRNESS: A RESTATEMENT* 50 (2001) (discussing “the problem of distributive justice”).
- ⁶² Universal Declaration of Human Rights, G.A. Res. 217A, at 72–77, U.N. GAOR, 3d Sess., 1st plen. mtg., U.N. Doc A/810 (Dec. 12, 1948), reprinted in 3 Weston & Carlson, *supra* note 9, at III.A.1.

- ⁶³ International Covenant on Economic, Social and Cultural Rights, G.A. Res. 2200A (XXI), U.N. GAOR, Supp. No. 16, U.N. Doc. A/6316 (Dec. 16, 1966) (entered into force Jan. 3, 1976), *available at* http://www.unhchr.ch/html/menu3/b/a_cescr.htm.
- ⁶⁴ International Covenant on Civil and Political Rights, G.A. Res. 2200A (XXI), 21 U.N. GAOR Supp. No. 16 (Dec. 16, 1966) (entered into force Mar. 23, 1976), *available at* http://www.unhchr.ch/html/menu3/b/a_ccpr.htm.
- ⁶⁵ Convention on the Rights of the Child, G.A. Res. 44/25, Art. 1, U.N. GAOR 44th Sess., Supp. No. 49, U.N. Doc. A/44/49 (Nov. 20, 1989) (entered into force Sept. 2, 1990), *available at* <http://www.unhchr.ch/html/menu3/b/k2crc.htm>.
- ⁶⁶ BROWN WEISS, *supra* note 25, at 25–26.
- ⁶⁷ The Bamaca Velasquez Case, Judgment of Nov. 25, 2000, Inter-Am. Ct. H.R. (Ser. C) No. 70 (July 25, 2000), Separate Opinion of Judge A.A. Cancado Trindade.
- ⁶⁸ NORTON, *supra* note 22, at 334–35.
- ⁶⁹ BROWN WEISS, *supra* note 25, at 38.
- ⁷⁰ *Id.*
- ⁷¹ *Id.*
- ⁷² *Id.*
- ⁷³ *Id.* at 24
- ⁷⁴ Edith Brown Weiss, *Agora: What Obligation Does Our Generation Owe to the Next? An Approach to Global Environmental Responsibility, Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INT'L L. 198, 199 (1990).
- ⁷⁵ BROWN WEISS, *supra* note 25, at 23 (citing EDMUND BURKE, *Reflections on the Revolution in France* 139–40 (1790), *in* 2 WORKS OF EDMUND BURKE 368 (1905)).
- ⁷⁶ *Id.*

Chapter II Endnotes

- ⁷⁷ Oren Lyons, *An Iroquois Perspective*, *in* ENVIRONMENTAL DISCOURSE AND PRACTICE: A READER 15 (Lisa M. Benton & John Rennie Short eds., 2000).
- ⁷⁸ BROWN WEISS, *supra* note 25, at 42.
- ⁷⁹ *Id.* at 38.
- ⁸⁰ *Id.*
- ⁸¹ *Id.* at 24.
- ⁸² *Id.* at 40.
- ⁸³ *Id.* at 40–41.
- ⁸⁴ *Id.* at 41.
- ⁸⁵ *Id.*
- ⁸⁶ *Id.* at 42.
- ⁸⁷ GERMAN ENVIRONMENTAL LAW FOR PRACTITIONERS 16 (Jane Martens trans.) (Dr. Horst Schlemminger & Dr. Claus-Peter Martens eds., 2004). For more information about the German Constitution and

other foreign law references in this policy paper, see the background paper written by Tracy Bach et. al., *The Recognition of Intergenerational Rights and Duties in Foreign Law*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

⁸⁸ *Germany Votes for Animal Rights*, CNN, <http://archives.cnn.com/2002/WORLD/europe/05/17/germany.animals/index.html> (last visited 12/18/07).

⁸⁹ INTERNATIONAL, REGIONAL AND NATIONAL ENVIRONMENTAL LAW 544 (Fred L. Morrison & Rudiger Wolfrum eds., 2000).

⁹⁰ *Id.* at 545.

⁹¹ COMPARATIVE ENVIRONMENTAL LAW IN EUROPE: AN INTRODUCTION TO PUBLIC ENVIRONMENTAL LAW IN THE EU MEMBER STATES 157 (Rene Seerden & Michiel Heldeweg eds., 1996).

⁹² *Id.*

⁹³ HAW. CONST. art. XI. For more information about the U.S. law, see the background paper written by Tracy Bach, *The Recognition of Intergenerational Rights and Duties in U.S. Law*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

⁹⁴ HAW. CONST. art. XI, § 9.

⁹⁵ See *Kahana Sunset Owners Ass'n v. Maui City Council*, 948 P.2d 122, 124 (Haw. 1997).

⁹⁶ *Life of the Land v. Land Use Comm'n*, 623 P.2d 431 (Haw. 1981). The court stated that the plaintiffs needed only to assert an interest in “the needs of justice” or a “stake in the outcome of the alleged controversy” under the provision, rather than a particularized and personal injury caused by the defendant’s actions. *Id.*

⁹⁷ See also Mary F. Cusack, *Judicial Interpretation of State Constitutional Rights to a Healthful Environment*, 20 B.C. ENVTL. AFF. L. REV. 173, 191 (1993) (“Only Hawaii’s constitutional provision attempts to define ‘healthful’ in its text,” which is determined by the “laws relating to environmental quality.”).

⁹⁸ Other provisions promote the idea of environmental rights and sustainability, including Article XI, section 3, which addresses the protection, conservation and sustainability of Hawaii’s agricultural lands; Article XI, section 6, dealing with protection of marine resources; and Article XI, section 7, articulating the state’s “obligation to protect, control and regulate the use of Hawaii’s water resources for the benefit of its people.” Each of these provisions provides a toehold for recognizing the rights of future generations, although they’ve not been so used in any cases to date.

⁹⁹ *Montana v. United States*, 450 U.S. 544, 565–66 (1981). This section draws heavily on the background paper written by N. Bruce Duthu, *The Recognition of Intergenerational Ecological Rights and Duties in Native American Law*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

¹⁰⁰ Diné Natural Resources Protection Act of 2005 (on file with author), available at <http://www.sric.org/uranium/DNRPA.pdf>.

¹⁰¹ *Id.*

-
- ¹⁰² See Report by Ecos Consulting for Dine Citizens Against Ruining our Environment (Dine CARE). Energy and Economic Alternatives to the Desert Rock Energy Project, 44 (Jan. 12, 2008) (on file with author).
- ¹⁰³ GLIFWC is an intertribal political body to which several Anishinaabe or Ojibwe tribes from Wisconsin, Minnesota, and Michigan delegate certain governmental functions regulating tribal fishing and hunting rights.
- ¹⁰⁴ Larry Nesper & James H. Schlender, *The Politics of Cultural Revitalization and Intertribal Resource Management: The Great Lakes Indian Fish and Wildlife Commission and the States of Wisconsin, Michigan, and Minnesota*, in NATIVE AMERICANS AND THE ENVIRONMENT: PERSPECTIVES ON THE ECOLOGICAL INDIAN 292 (Michael E. Harkin & David Rich Lewis eds., 2007).
- ¹⁰⁵ FIKRET BERKES, SACRED ECOLOGY: TRADITIONAL ECOLOGICAL KNOWLEDGE AND RESOURCE MANAGEMENT 35 (1999).
- ¹⁰⁶ *Id.* at 24, § 2.4.
- ¹⁰⁷ *Id.* at 24, § 2.5.
- ¹⁰⁸ Deborah Groban Olson, *Fair Exchange: Providing Citizens with Equity Managed by a Community Trust, In Return for Government Subsidies or Tax Breaks to Businesses*, 15 CORNELL J.L. & PUB. POL'Y 231, 292 (2006).
- ¹⁰⁹ *Id.* at 291.
- ¹¹⁰ ALASKA CONST. amend. IX, § 15 (1976). This percentage was later raised through legislation to 50 percent of revenues in some instances, but then was later repealed by the legislature and currently sits at the 25 percent allocation mandated by the state constitution. Olson, *supra* note 108, at 292.
- ¹¹¹ ALASKA STAT. § 37.13.040 & 37.13.120 (2004) (the prudent-investor rule means that “the corporation shall exercise the judgment and care under the circumstances then prevailing that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the designation and management of large investments entrusted to it... in regard to the permanent disposition of funds, considering preservation of the purchasing power of the fund over time while maximizing the expected total return from both income and the appreciation of capital.”)
- ¹¹² ALASKA STAT. § 37.13.020 (2004).
- ¹¹³ Olson, *supra* note 108, at 296–97 (each Alaskan who applies for a dividend, has resided in the state during the qualifying year, and has been in the state for at least 72 continuous hours during the prior two years or a child of such a person is eligible for a dividend check). Dividend checks have ranged from \$331.29 in 1984 to \$1,963.86 in 2000. *Id.* at 297.
- ¹¹⁴ *Id.* at 301.
- ¹¹⁵ Future generations are mentioned in the following environmental acts: Hazardous Substances and New Organisms Act 1996, 1996 S.N.Z. No. 30; Fisheries Act 1996, 1996 S.N.Z. No. 88; Resource Management Act 1991, 1991 S.N.Z. No. 69; Ngai Tahu Claims Settlement Act 1998 No. 97 (N.Z.); Climate Change Response Act 2002 No. 40 (N.Z.); Te Arawa Lakes Settlement Act 2006 No. 43 (N.Z.); Queen Elizabeth the Second National Trust Act 1977 No. 102 (N.Z.); Environment Act 1986, 1986 S.N.Z. No. 127; Conservation Act 1987 No. 65 (N.Z.); New Zealand Antarctic Institute

Act 1996 No. 38 (N.Z.); Ngai Tahu (Tutaepatu Lagoon Vesting) Act 1998 No. 16 (N.Z.); Energy Efficiency and Conservation Act 2000 No. 14 (N.Z.); Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 No. 36 (N.Z.).

- ¹¹⁶ Section 5, Resource Management Act 1991, available at <http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html>.
- ¹¹⁷ Gordon Smith, *The Resource Management Act 1991—“A Biophysical Bottom Line” vs. “A More Liberal Regime”; A Dichotomy?*, 6 CANTERBURY L.R. 499, 501 (1997).
- ¹¹⁸ Resource Management Act, *supra* note 115 (emphasis added), available at <http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM231905.html>.
- ¹¹⁹ Under the RMA, regional councils shall have the following functions: “The establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the natural and physical resources of the region.” Section 30, Resource Management Act 1991, available at <http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM232560.html>.
- ¹²⁰ Resource Management Act, The Fourth Schedule, *Assessment of Effects on the Environment*, § 2(d), available at <http://www.marlborough.govt.nz/content/docs/regulatory/FourthSchedule-AssessmentofEffectsOnTheEnvironment.pdf>.
- ¹²¹ Ministry of Justice, Environment Court, available at <http://www.justice.govt.nz/environment/>.
- ¹²² *Genesis Power Ltd. v. Franklin Dist. Council*, Environment Court Decision A148 [2005] NZRMA 541, at § 227 (first wind farm appeal case heard in the New Zealand Environment Court).
- ¹²³ *Id.* at § 65–66.
- ¹²⁴ EPBC, 3A (C).
- ¹²⁵ (2006) NSWLEC 720.
- ¹²⁶ This invocation of the precautionary principle was long anticipated. See, e.g., Fraser K. Cameron, *The Greenhouse Effect: Proposed Reforms for the Australian Environmental Regulatory Regime*, 25 COLUM. J. ENVTL. L. 347, 367 (2000) (arguing for the strengthening of the precautionary principle by requiring its enforcement as a legal rule, rather than as a general principle of statutory interpretation).
- ¹²⁷ 2006 NSWLEC 720, § 116 (quoting *Bentley v. BGP Properties* (2006) NSWLEC 34, 67–70). When discussing intergenerational equity, the court relied heavily on the three conservation principles articulated by Edith Brown Weiss. 2006 NSWLEC 720, § 119.
- ¹²⁸ *Juan Antonio Oposa, et al. vs. Fulgencio S. Factorian, Jr., et al.*, G.R. No. 101083, July 30, 1993, available at http://www.lawphil.net/judjuris/juri1993/jul1993/gr_101083_1993.html.
- ¹²⁹ Environmental Policy (PD No. 1151, 1977), available at <http://sunsite.nus.edu.sg/apcel/dbase/filipino/primary/phpenv.html>.
- ¹³⁰ Dante B. Gatmaytan, *The Illusion of Intergenerational Equity: Oposa v. Factorian as Pyrrhic Victory*, 15 GEO. INT’L ENVTL. L. REV. 457, 460 (2003).
- ¹³¹ *Id.* at 462.
- ¹³² 5 June 1992/29 Dec 993: 1760 UNTS 79; US Treaty Doc 103-20. This section draws heavily on two background papers: Jonathan C. Carlson, *International Environmental Law, Climate Change, and Intergenerational Justice*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE:

CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A) and Pamela J. Stephens, *International Human Rights and Climate Change*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

¹³³ 3 Nov 2001/29 Jun 2004: 31 FAO Conf Res 3/2001.

¹³⁴ *Id.* at preamble.

Chapter III Endnotes

¹³⁵ Fur Seal Arbitration 66 (Washington, Gov't Printing Office 1895).

¹³⁶ BROWN WEISS, *supra* note 25, at 38.

¹³⁷ *Id.*

¹³⁸ *Id.* at 42-43.

¹³⁹ *Id.* at 24.

¹⁴⁰ *Id.* at 39.

¹⁴¹ James R. May, *Constituting Fundamental Environmental Rights Worldwide*, 23 PACE ENVTL. L. REV. 113, 113-14 (2005-06).

¹⁴² Civ. Article L110-2 (2002), available at <http://195.83.177.9/code/liste.phtml?lang=uk&c=40> (emphasis added).

¹⁴³ C. Civ. Article L110-1(II) (2002), available at <http://195.83.177.9/code/liste.phtml?lang=uk&c=40>.

¹⁴⁴ *Id.*

¹⁴⁵ C. Environment. Article L542-1(2006), available at <http://195.83.177.9/code/liste.phtml?lang=uk&c=40&r=5069>.

¹⁴⁶ http://www.icgr2007.org/Proceedings/Session%204/Papers/Session4_2_Dupuis_Text.pdf.

¹⁴⁷ P. Landais, *Perspectives for Deep Geological Formation Disposal Research in France Beyond 2006*, 4.3, for the TopSeal International Topical Meeting, Finland, Sept. 17-20, 2006 available at <http://www.euronuclear.org/events/topseal/transactions/TopSeal-Transactions.pdf>.

¹⁴⁸ M. Dutzer, J.P. Vervialle, P. Charton, *Present Issues for Centre de la Manche Disposal Facility*, 3.3, for the TopSeal International Topical Meeting, Finland, Sept. 17-20, 2006 available at <http://www.euronuclear.org/events/topseal/transactions/TopSeal-Transactions.pdf>.

¹⁴⁹ MONT. CONST. art. IX, § 1; see also MONT. CONST. pmb., MONT. CONST. art. II, § 3 (right to clean and healthy environment).

¹⁵⁰ John L. Horwich, *Montana's Constitutional Environmental Quality Provisions: Self-Execution or Self-Delusion?*, 57 MONT. L. REV. 323, 326 (1996).

¹⁵¹ See Mont. Envtl. Info. Ctr. v. Dep't of Envtl. Quality, 988 P.2d 1236, 1246 (Mont. 1999).

¹⁵² Cape-France Enters. v. In re Estate of Peed, 29 P.3d 1011, 1017 (Mont. 2001).

¹⁵³ Federal Land Policy and Management Act, 43 U.S.C. §§ 1701-1787 (1976).

¹⁵⁴ National Forest Management Act, 16 U.S.C. §§ 1600-1687 (1976).

¹⁵⁵ 43 U.S.C. § 1701(7) (1976).

¹⁵⁶ *Id.* § 1702(c).

- ¹⁵⁷ Nat'l Wildlife Fed'n v. Burford, 835 F.2d 305, 326 (D.C. Cir. 1987).
- ¹⁵⁸ Parthenia Blessing Evans, *Multiple Use, Sustained Yield Planning on the Public Lands*, 53 U. COLO. L. REV. 411, 460 (1982) (the article is adapted from a speech given by Professor George Cameron Coggins). This is particularly true of federal grasslands, where the BLM weighs the interest of cattle production very heavily. *Id.*
- ¹⁵⁹ Norton v. S. Utah Wilderness Alliance, 542 U.S. 55 (2004).
- ¹⁶⁰ 16 U.S.C. § 1600(3) (1976).
- ¹⁶¹ *Id.* § 1601(a)(1) & (5). Assessments were produced in 1979, 1989, and 2000. USDA FOREST SERVICE, THE RPA ASSESSMENT: PAST, PRESENT, AND FUTURE, <http://www.fs.fed.us/pl/rpa/what.htm> (last visited Dec. 10, 2007).
- ¹⁶² USDA FOREST SERVICE, 1989 AND 2000 ASSESSMENT, <http://www.fs.fed.us/pl/rpa/what.htm> (last visited Dec. 10, 2007).
- ¹⁶³ 16 U.S.C. § 1604(g)(3)(E)(i) (1976). Like the FLMPA, there is no private cause of action or citizen suit provision, so plaintiffs must sue under the APA.
- ¹⁶⁴ 40 C.F.R. § 131.12(a)(3) (1998).
- ¹⁶⁵ Judith M. Brawer, Esq., *Anitdegradation Policy and Outstanding National Resource Waters in the Northern Rocky Mountain States*, 20 PUB. LAND & RESOURCES L. REV. 13, 13, 29 (1999). This provision, however, is rarely used and is limited to "high quality waters," such as waters in national and state parks and wildlife refuges. *Id.* at 13.
- ¹⁶⁶ Weyerhaeuser Comp. v. Costle, 590 F.2d 1011, 1037 (D.C. Cir. 1978).
- ¹⁶⁷ Citizens have the ability to enforce the CWA through its citizen suit provision. See 33 U.S.C. § 1365 (1972). A citizen may sue to enforce the CWA against a violator or may sue the EPA for failure to enforce the CWA or for failure to promulgate a rule required by the CWA.
- ¹⁶⁸ Law No. 91 of 1993, Chapter 1, Article 3, available at <http://www.env.go.jp/en/laws/policy/basic/ch1.html>.
- ¹⁶⁹ Shiro Kawashima, *A Survey of Environmental Law and Policy in Japan*, 20 N.C. J. INT'L L. & COM. REG. 231, 248-49 (1995).
- ¹⁷⁰ ENVIRONMENTAL LAW AND ENFORCEMENT IN THE ASIA-PACIFIC RIM 247-51 (Terri Mottershead ed., 2002).
- ¹⁷¹ Law No. 117 of 1998, Article 1, available at <http://www.env.go.jp/en/laws/global/warming.html>.
- ¹⁷² ENVIRONMENTAL LAW AND ENFORCEMENT IN THE ASIA-PACIFIC RIM, *supra* note 170, at 254.
- ¹⁷³ Law No. 81 of 1987, Chapter 1, Article 1, available at <http://www.env.go.jp/en/laws/policy/assess/chap1.html>.
- ¹⁷⁴ Professor Sax helped to draft the first of these laws, the Michigan Environmental Policy Act. Minnesota has a similar statute, and thirteen other states have more limited forms of these general environmental rights statutes. Alexandra B. Klass, *Modern Public Trust Principles: Recognizing Rights and Integrating Standards*, 82 NOTRE DAME L. REV. 699, 725 (Dec. 2006).
- ¹⁷⁵ Allan Kahner, "The Public Trust Doctrine, Parens Patriae, and the Attorney General as the Guardian of the State's Natural Resources," 16 DUKE ENVTL. L. & POL'Y F. 57, 63.

¹⁷⁶ 146 U.S. 387 (1892).

¹⁷⁷ *Id.* at 436.

¹⁷⁸ *Id.* at 454.

¹⁷⁹ *Id.* at 454–55.

¹⁸⁰ *Id.* at 460.

¹⁸¹ *Id.* at 453.

¹⁸² *Id.* at 454.

¹⁸³ See also *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 476 (1988) (holding that land affected by the tides, even when it does not underlie waters that are navigable-in-fact, may be held in the public trust and that interests like fishing, planting and harvesting oysters, and urban expansion have also been considered under the public trust doctrine).

¹⁸⁴ Professor Wood is a valued contributor to the CLI. Please see her Recommendation No. 8 in Appendix B.

¹⁸⁵ Mary C. Wood, *Nature's Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577 (2007); Mary C. Wood, *Nature's Trust: Reclaiming an Environmental Discourse*, 25 VA. ENVTL. L. J. 243 (2007).

¹⁸⁶ *But see* *W.J.F. Realty Corp. v. State*, 672 N.Y.S.2d 1007 (N.Y. App. Div. 1998) (a 1998 New York Supreme Court decision holding that a state law restricting development in a designated natural area of Long Island was not a taking without compensation because “the public trust doctrine limited the plaintiff’s property rights so as to render the law not a taking.”). Three different secondary sources published or updated in 2006 and 2007 concluded that “very few, if any, courts have extended the common law doctrine beyond tidal or navigable waters, thus leaving unprotected inland resources that are unconnected to navigable lakes or rivers.” *Klass*, *supra* note 174, at 712; accord WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW AIR & WATER § 2.20 (current through the July 2007 update); 1 DANIEL P. SELMI ET AL., STATE ENVIRONMENTAL LAW § 4:12.

¹⁸⁷ *Rodgers Environmental Law*, *supra* note 186, § 2.20(A).

¹⁸⁸ *Klass*, *supra* note 174, at 723–24 (explaining that Minnesota courts have interpreted the Minnesota Environmental Rights Act to grant automatic standing to all persons, but that Michigan courts have placed constitutional standing limits on citizens seeking to use the Michigan Environmental Policy Act).

¹⁸⁹ 16 Sep 87/1 Jan 89: 1522 UNTS 3; US Treaty Doc 100–10. This section draws heavily on two background papers: Jonathan C. Carlson, *International Environmental Law, Climate Change, and Intergenerational Justice*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A) and Pamela J. Stephens, *International Human Rights and Climate Change*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

¹⁹⁰ Convention on Long-Range Transboundary Air Pollution, 13 Nov 1979/16 Mar 1983: 1302 UNTS 217. See, e.g., Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Percent, 8 Jul 85/2 Sep 87: 1480 UNTS 215.

Chapter IV Endnotes

- ¹⁹¹ United Nations Framework Convention on Climate Change (UNFCCC), May 9, 1992, 1771 U.N.T.S. 107, U.S. Treaty Doc. 102–38, *reprinted in* I.L.M.849 (1992), *and in* 5 Weston & Carlson V.E.19.
- ¹⁹² BROWN WEISS, *supra* note 25, at 38.
- ¹⁹³ *Id.* at 43–44.
- ¹⁹⁴ 42 U.S.C. § 4331(a) (1970).
- ¹⁹⁵ *Id.* § 4331(b)(1).
- ¹⁹⁶ *Id.* § 4331(b)(4).
- ¹⁹⁷ *Id.* § 4332(C).
- ¹⁹⁸ 40 C.F.R. §§ 1500–1508; 40 C.F.R. § 1508.8; 40 C.F.R. § 1508.7. For example, increased GHG emissions of a project could have a “cumulative” impact on global warming.
- ¹⁹⁹ 42 U.S.C. § 4332(C), (C)(iv), & (C)(v) (1970). If there is no significant impact, the agency issues a Finding of No Significant Impact (FONSI) explaining how it reached its conclusion.
- ²⁰⁰ *See* Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989).
- ²⁰¹ *See* Concerned About Trident v. Rumsfeld, 555 F.2d 817 (D.C. Cir. 1977).
- ²⁰² *Id.* at 830 (finding an EIS for a proposed atomic missile submarine system prepared by the Navy insufficient).
- ²⁰³ Potomac Alliance v. U.S. Nuclear Regulatory Comm’n, 682 F.2d 1030 (D.C. Cir. 1982).
- ²⁰⁴ *Id.* at 1035 (Bazelon, J., concurring).
- ²⁰⁵ Cape May County Chapter, Inc., Izaak Walton League of Am. v. Macchia, 329 F. Supp. 504 (D.N.J. 1971).
- ²⁰⁶ *Id.* at 509.
- ²⁰⁷ *Id.* at 514. One important limitation on this 1971 case, however, is that it was decided prior to *Lujan*, in which the Supreme Court significantly narrowed the standing requirements, particularly for environmental suits.
- ²⁰⁸ *See, e.g.,* Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin., 2007 WL 3378240 (9th Cir. 2007).
- ²⁰⁹ Border Power Plant Working Group v. Dep’t of Energy, 260 F. Supp. 2d 997 (D. Cal. 2003).
- ²¹⁰ *See* Mayo Found. v. Surface Transp. Bd., 472 F.3d 545 (8th Cir. 2006).
- ²¹¹ Justin R. Pidot, GLOBAL WARMING IN THE COURTS: A LITIGATION UPDATE, GEO. ENVTL. L. & POL’Y INST. 2 (2007).
- ²¹² *See* Friends of the Earth, Inc. v. Watson, 2005 WL 2035596 (N.D.Ca. 2005).
- ²¹³ *See* Stryker’s Bay Neighborhood Council v. Karlen, 444 U.S. 223, 227–28 (1980).
- ²¹⁴ *Id.*
- ²¹⁵ *See* Forest Serv. Employees for Envtl. Ethics v. U.S. Forest Serv., 397 F. Supp. 2d 1241 (D. Mont. 2005).
- ²¹⁶ *Id.* at 1247 (citing 5 U.S.C. § 702 (1966)).
- ²¹⁷ *Id.* at 1247–48.

- ²¹⁸ See 42 U.S.C. § 6972 (1976).
- ²¹⁹ *Id.* § 6972(a)(1)(B).
- ²²⁰ Dague v. City of Burlington, 935 F.2d 1343, 1355 (2nd Cir. 1991) (reversed on other grounds).
- ²²¹ Price v. U.S. Navy, 39 F.3d 1011, 1019 (9th Cir. 1994).
- ²²² Wilson v. Amoco Corp., 989 F. Supp. 1159, 1174 (D. Wyo. 1998).
- ²²³ 42 U.S.C. § 7401(b)(1) (1955).
- ²²⁴ In 1990, however, Congress passed amendments as a result of the acid rain problem, and the amendment specifically noted that “current and future generations...will be adversely affected by delaying measures to remedy the problem.” 42 U.S.C. § 7651(a)(5) (1990).
- ²²⁵ 42 U.S.C. § 7604(a)(1) & (2) (1970).
- ²²⁶ Massachusetts v. EPA, 127 S. Ct. 1438, 1446 (2007).
- ²²⁷ *Id.* at 1462–63.
- ²²⁸ On April 2, 2008, exactly one year after the Massachusetts v. EPA decision, 18 states (MA, CA, CT, IL, ME, NJ, NM, NY, OR, RI, VT, WA, AZ, DE, IA, MD, MN, and PA), the Sierra Club and numerous other environmental groups began legal proceedings in the U.S. Court of Appeals for the District of Columbia Circuit to compel the EPA to regulate GHG emissions from cars. Petition for Writ of Mandamus to Compel Compliance with Mandate, Massachusetts v. EPA, No. 03–1361 (2008), available at http://www.sierraclub.org/environmentallaw/lawsuits/docs/Mandamus_Petition.pdf.
- ²²⁹ Jeffery Spear, *Remedy Selection Under CERCLA and Our Responsibilities to Future Generations*, 2 N.Y.U. ENVTL. L. J. 117 (1993).
- ²³⁰ 42 U.S.C. § 6959(a)(1) (1988).
- ²³¹ *Id.* § 6959(a)(2).
- ²³² U.S. v. Tri-No Enters., Inc., 819 F.2d 154, 156 (7th Cir. 1987).
- ²³³ 30 U.S.C. §§ 1257–1265 (1977).
- ²³⁴ *Id.* § 1270(a).
- ²³⁵ 16 U.S.C. § 824(b) (providing FERC [known then as the Federal Power Commission] jurisdiction over the “sale of electric energy at wholesale in interstate commerce”).
- ²³⁶ TIMOTHY J. BRENNAN, KAREN L. PALMER, & SALVADOR A. MARTINEZ, *ALTERNATING CURRENTS: ELECTRICITY MARKETS AND PUBLIC POLICY* 27 (2002) (“[State public utility commissions] have been responsible for regulating the distribution and retail sales of electricity.”).
- ²³⁷ 42 U.S.C. § 5843(b) (1974).
- ²³⁸ Kentucky Util. Co. v. F.E.R.C., 760 F.2d 1321, 1324 n.4 (C.A.D.C. 1985) (“[the] ‘used and useful’ principle, enunciated by the Supreme Court in *Smyth v. Ames*, 169 U.S. 466 (1889), has stood as a bedrock principle of utility rate regulation.”).
- ²³⁹ James Norris, *Postretirement Benefits: Accounting and Rate Policy*, 141 PUB. UTIL. FORTNIGHTLY 46, 47 (1993).
- ²⁴⁰ See, e.g., In Re: Elec. Energy Adjustment Clause, 2008 WL 376892 (Iowa U.B., Feb. 7, 2008) (“The Board believes that the [energy adjustment clause] rules should be reexamined in light of the new

emissions allowances and concerns regarding intergenerational equity.”); In re Wisconsin Elec. Power Co., 260 P.U.R.4th 169, 2007 WL 2846904 (Wis.P.S.C., Sept. 25, 2007) (“As the Commission stated in its order approving the sale of KNPP, allowing ratepayers to recapture a portion of the decommissioning dollars ‘is an immediate financial benefit to consumers’ and ‘will also promote intergenerational equity by avoiding the possibility of a long delay before any refunds are made.’”); In re Florida Power & Light Co., 2005 WL 1000256 (Fla.P.S.C., Apr. 19, 2005) (“These three parts act together to allow FPL over time to recover the full costs of storm restoration, while at the same time balancing potentially competing customer interests: as small an ongoing impact on customer bills as possible; minimal volatility of “rate shock” in customer bills because the reserve is insufficient; and intergenerational equity.”).

²⁴¹ Shlomo Shoham & Nira Lamay, *Commission for Future Generations in the Knesset: Lessons Learnt*, in HANDBOOK OF INTERGENERATIONAL JUSTICE, *supra* note 20, at 244.

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *Id.* at 246.

²⁴⁵ *Id.*

²⁴⁶ *Id.* at 247.

²⁴⁷ *Id.* at 246.

²⁴⁸ *Id.*

²⁴⁹ *Id.* at 250.

²⁵⁰ *Id.*

²⁵¹ Axel Gosseries & Benedek Jàvor, *First-ever Ombudsman for the Future*, ALTERNATIVES INT’L J., July 9, 2008, <http://www.alternatives.ca/article3932.html>; Parliamentary Commissioner for Future Generations, *Guideline: How To Prepare A Complaint To The Parliamentary Commissioner for Future Generations*, <http://www.jno.hu/en/?menu=guideline> (last visited Nov. 12, 2008).

²⁵² Parliamentary Commissioner for Future Generations, *Guideline: How To Prepare A Complaint To The Parliamentary Commissioner for Future Generations*, <http://www.jno.hu/en/?menu=guideline> (last visited Nov. 12, 2008).

²⁵³ *Id.*

²⁵⁴ Gosseries & Jàvor, *supra* note 251.

²⁵⁵ UNFCC, Art 3, *supra* note 191. This section draws heavily on two background papers: Jonathan C. Carlson, *International Environmental Law, Climate Change, and Intergenerational Justice*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A) and Pamela J. Stephens, *International Human Rights and Climate Change*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).

²⁵⁶ Art 61, 10 Dec 982/6 Nov 1994: 1833 UNTS 3; US Treaty Doc 103–39.

²⁵⁷ 2 Dec 196/10 Nov 1948: 161 UNTS 72.

²⁵⁸ 1 Jun 1972/11 Mar 978: 1080 UNTS 175.

²⁵⁹ 23 Jun 1979/1 Nov 1983: 1651 UNTS 333.

Chapter V Endnotes

- ²⁶⁰ Elisabeth Rosenthal, *U.N. Report Describes Risks of Inaction on Climate Change*, N.Y. TIMES, Nov. 17, 2007, available at http://www.nytimes.com/2007/11/17/science/earth/17cnd-climate.html?pagewanted=1&_r=1&hp&adxnxi=11953208860-SIKP3drn86kqDkj8mNETzQ.
- ²⁶¹ David A. Weisbach & Cass R. Sunstein, *Introduction, Symposium on Intergenerational Equity and Discounting*, 74 U. CHI. L. REV. 1, 1 (2007) (hereinafter “*Chicago Symposium*”) (noting most analysts agree all generations count equally); David A. Weisbach & Cass Sunstein, *Climate Change and Discounting the Future: A Guide for the Perplexed* 6 (University of Harvard Public Law Working Paper No. 08-20 2008). *But see* Eric A. Posner, *Agencies Should Ignore Distant - Future Generations*, 74 U. CHI. L. REV. 139, 139–41 (2007) (because Americans place little value on future generations, they should not be considered at all).
- ²⁶² This chapter draws heavily on the background paper written by Joseph H. Guth, *Resolving the Paradoxes of Discounting*, in RECALIBRATING THE LAW OF HUMANS WITH THE LAWS OF NATURE: CLIMATE CHANGE, HUMAN RIGHTS, AND INTERGENERATIONAL JUSTICE (Climate Legacy Initiative 2009) (Appendix A).
- ²⁶³ *See* FRANK ACKERMAN & LISA HEINZERLING, PRICELESS—ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING (2004).
- ²⁶⁴ RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY—HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 10 (Oxford Univ. Press 2008).
- ²⁶⁵ *Id.* at 95.
- ²⁶⁶ Discount rates are independent of and in addition to inflation, which is accounted for separately and should be ignored in this discussion.
- ²⁶⁷ REVESZ & LIVERMORE, *supra* note 264, at 95.
- ²⁶⁸ Weisbach & Sunstein, Working Paper, *supra* note 261, at 2.
- ²⁶⁹ The Office of Management and Budget, *Regulatory Analysis*, OMB CIRCULAR A-4, at p. 32–33 (Sept. 17, 2003), available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf> (hereinafter “OMB, ‘Regulatory Analysis’”). 3% rate is the historical real rate of return on long-term government debt and 7% is the average before-tax rate of return to private capital in the U.S. economy. A 2001 survey of 2,160 economists found that the most common discount rate applied to long-term environmental problems was 2%, with a median rate of 3% and mean rate of 4%. *See* Geoffrey Heal, “Discounting: A Review of the Basic Economics,” *Chicago Symposium*, *supra* note 261, at 59, 72 (2007).
- ²⁷⁰ Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981, 1984–85 (1998).
- ²⁷¹ STERN, *supra* note 2.
- ²⁷² WILLIAM A. NORDHAUS, QUESTION OF BALANCE—WEIGHING THE OPTIONS ON GLOBAL WARMING POLICY 10 (2008).

- ²⁷³ See Cass R. Sunstein & Arden Rowell, “On Discounting Regulatory Benefits: Risk, Money, and Intergenerational Equity,” *Chicago Symposium*, *supra* note 261, at 171, 175–78 (2007) (outlining objections to failure to discount). *But see* Douglas A. Kysar, “Discounting . . . on Stilts,” *id.* at 119, 122–24 (criticizing as unlikely the assumption that we would ever actually make and set aside for future use the investments in man-made capital that discounters make to justify depletion of natural capital).
- ²⁷⁴ See ACKERMAN & HEINZERLING, *supra* note 263, at 179–203 (2004).
- ²⁷⁵ Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553, 1571 (2002).
- ²⁷⁶ See Paul R. Portney & John P. Weyant, *Introduction*, in DISCOUNTING AND INTERGENERATIONAL EQUITY 1, 5 (Paul R. Portney & John P. Weyant eds., 1999) (hereinafter DISCOUNTING AND INTERGENERATIONAL EQUITY).
- ²⁷⁷ THOMAS O. MCGARITY, SIDNEY SHAPIRO & DAVID BOLLIER, SOPHISTICATED SABOTAGE—THE INTELLECTUAL GAMES USED TO SUBVERT RESPONSIBLE REGULATION 183–89 (2004) (*quoting* Lisa Heinzerling, *Discounting Our Future*, 34 LAND & WATER L. REV. 39 (1999)); Kysar, *supra* note 273, at 121–22; Richard L. Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941, 1015 (1999).
- ²⁷⁸ These range from 15 percent (5 years) to 5 percent (30 to 50 years) and down to 2 percent (100 years). Heal, *supra* note 269, at 68–69.
- ²⁷⁹ Maureen Cropper & David Laibson, *The Implications of Hyperbolic Discounting for Project Evaluation*, in DISCOUNTING AND INTERGENERATIONAL EQUITY, *supra* note 276, at 163, 163–72.
- ²⁸⁰ Partha Dasgupta, Karl-Goran Maler & Scott Barrett, *Intergenerational Equity, Social Discount Rates, and Global Warming*, in DISCOUNTING AND INTERGENERATIONAL EQUITY, *supra* note 276, at 51, 51–77.
- ²⁸¹ ACKERMAN & HEINZERLING, *supra* note 263, at 185–86; Sunstein & Rowell, *supra* note 273, at 189, 204–05, n.77; Posner, *supra* note 261, at 143.
- ²⁸² ACKERMAN & HEINZERLING, *supra* note 263, at 187.
- ²⁸³ Revesz, *supra* note 277, at 1015–16.
- ²⁸⁴ Sunstein & Rowell, *supra* note 273, at 199; *see also* Kysar, *supra* note 273, at 120 (expressing hope that after publication of papers from the 2006 Symposium, those interested in long-term policymaking will be able to put discounting aside and “focus instead on the more important task of conceiving and realizing equitable relations between human generations.”).
- ²⁸⁵ NORTON, *supra* note 22, at section 8.7.
- ²⁸⁶ *Id.*
- ²⁸⁷ *Id.* at 334–35.
- ²⁸⁸ See Bryan Norton & Robert Ulanowicz, *Scale and Biodiversity Policy: A Hierarchical Approach*, in ECOSYSTEM MANAGEMENT: SELECTED READINGS 424, 424–34 (Fred B. Samson & Fritz L. Knopf eds., 1996).
- ²⁸⁹ NORTON, *supra* note 22, at section 8.7.
- ²⁹⁰ See *id.*

- ²⁹¹ Weisbach & Sunstein, Working Paper, *supra* note 261, at 30.
- ²⁹² *Id.*
- ²⁹³ REVESZ & LIVERMORE, *supra* note 264, at 114.
- ²⁹⁴ See also Joseph H. Guth, *Law for the Ecological Age*, 9 VT. J. ENVTL. L. 431, 464 (2008), available at <http://www.vjel.org/index.php>; Joseph H. Guth, *Cumulative Impacts—Death-Knell for Cost Benefit Analysis in Environmental Decisions*, BARRY L. REV. (forthcoming 2008).
- ²⁹⁵ See also HERMAN E. DALY & JOSHUA FARLEY, *ECOLOGICAL ECONOMICS* 15, 35, 223–44 (2004).
- ²⁹⁶ United Nations Environment Programme, Fourth Global Environment Outlook: Environment for Development (GEO-4), at 6 (2007), available at http://www.unep.org/geo/geo4/report/GEO-4_Report_Full_en.pdf (hereinafter “GEO-4”).
- ²⁹⁷ WORLD WILDLIFE FUND, LIVING PLANET REPORT 2006, available at www.panda.org/news_facts/publications/living_planet_report/index.cfm.
- ²⁹⁸ REED, F. NOSS, EDWARD T. LAROE III & J. MICHAEL SCOTT, ENDANGERED ECOSYSTEMS OF THE UNITED STATES: A PRELIMINARY ASSESSMENT OF LOSS AND DEGRADATION (National Biological Service, U.S. Dept. of the Interior, 1995) (unpaginated report), available at <http://biology.usgs.gov/pubs/ecosys.htm>.
- ²⁹⁹ See generally JARED DIAMOND, *COLLAPSE: HOW SOCIETIES CHOOSE TO FAIL OR SUCCEED* 18–19 (2005).
- ³⁰⁰ REVESZ & LIVERMORE, *supra* note 264, at 96.
- ³⁰¹ *Id.* at 107.
- ³⁰² *Id.*
- ³⁰³ GRO HARLEM BRUNDTLAND ET AL., *supra* note 10.
- ³⁰⁴ REVESZ & LIVERMORE, *supra* note 264, at 117.
- ³⁰⁵ *Id.*
- ³⁰⁶ *Id.*
- ³⁰⁷ NORTON, *supra* note 22, at xii.

Chapter VI Endnotes

- ³⁰⁸ Kevin Harris, Collected Quotes from Albert Einstein (1995), available at <http://rescomp.stanford.edu/~cheshire/EinsteinQuotes.html>.
- ³⁰⁹ On both the uncertainties and the unprecedented nature of the moral crisis posed by climate change, see CLI Background Paper No. 1A by Sharon C. Benzoni and Jerald L. Schnoor, and CLI Background Paper No. 1B by Maureen F. McCue, *supra* note 5.
- ³¹⁰ THE STATE OF THE COMMONS: A REPORT TO OWNERS FROM TOMALES BAY INSTITUTE 3 (2003) (coauthored by Peter Barnes, Jonathan Rowe, and David Bollier).

CLI Recommendation No. 6

- ³¹¹ Increases in gasoline prices from \$1.50 per gallon to \$3.00 per gallon lead to no significant reductions in m. driven between 2006 and 2007. Increases to \$4.00 per gallon lead to reductions of less than 2% from

First Quarter of 2008 compared to the first quarter of 2007. Similarly, price increases of over 50% per kWh in the electricity sector have often occurred without sustained reductions in electricity usage.

³¹² Indeed, unrestricted distribution of emission-revenues raises the prospect that, as with cigarette taxes, gambling taxes, and Alaskan claims settlements, the prospect of further revenues may increase rather than reduce incentives for demand growth.