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Adapting Laws For A Changing World: A Systemic Approach To Climate Change Adaptation

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ESSAY

ADAPTING LAWS FOR A CHANGING WORLD: A SYSTEMIC APPROACH TO CLIMATE CHANGE ADAPTATION

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Abstract

This Essay suggests that policy responses in climate change adaptation must be addressed and that focusing on adapting laws may be a good way to undertake this work. Following a review of existing scholarship and normative theories concerning law generally, environmental law, climate change, and adaptation, this Essay then proposes a template for approaching the adaptation of laws. This template would (1) examine where climate change puts pressure on the operation of laws; (2) seek to alter the implementation of that law or to alter the law itself to hew closely to the law's original purposes; and (3) make these alterations in the most efficient manner possible while also correcting any distributive reallocations. Where the law's original purposes cannot be accommodated or are so broad as to fail to constitute a clear legislative principle, policy changes should be made in the democratic forum, not by an administrative process. The Essay concludes with examples from working groups implementing the template approach.

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"All climate-sensitive systems of society and the natural environment . . . will need to adapt to a changing climate or possibly face diminished productivity, functioning and health."[1]

–Environmental Protection Agency

INTRODUCTION

Discussion of climate change has long focused on "mitigation"—what can be done to reduce the sources of, or increase the sinks for, greenhouse gases.[2] Proposals to limit carbon dioxide emissions from power plants, to switch to renewable sources of energy, or to increase fuel efficiency in cars all address mitigation. The ultimate goal of these proposals is to reduce greenhouse gases and thereby prevent the effects of these gases on the climate.

More recently, however, the discussion has shifted to "adaptation," which is defined by the Intergovernmental Panel on Climate Change (IPCC) as "the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects."[3] Underlying adaptation efforts is the understanding that certain climate change impacts will inevitably occur.[4] The goal then becomes to lessen the

1. *Climate Change—Health and Environmental Effects: Adaptation*, EPA.GOV, http://www.epa.gov/climatechange/effects/adaptation.html (last updated June 2, 2011).

2. *See* H-Holger Rogner et al., *Introduction* to INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: MITIGATION 102–09 (Bert Metz et al. eds., 2007) [hereinafter IPCC, MITIGATION], *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter1.pdf (detailing mitigation efforts to date).

3. *Introduction* to INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 6 (M.L. Parry et al. eds., 2007) [hereinafter IPCC, IMPACTS], *available at* http://www.ipcc-wg2.gov/AR4/website/intro.pdf.

4. *See* Robin Kundis Craig, *"Stationarity Is Dead"—Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV. ENVTL. L. REV. 9, 23 (2010); Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 50 ARIZ. L. REV. 879, 879–80

magnitude of these impacts on humans and the natural environment.[5] As the IPCC stated, "[M]itigation will always be required to avoid 'dangerous' and irreversible changes to the climate system. Irrespective of the scale of the mitigation measures that are implemented in the next 10–20 years, adaptation measures will still be required due to the inertia in the climate system."[6]

The challenge of climate change adaptation is exceptional and even broader than the challenge of mitigation. Scientifically and technically, the impacts of climate change are uncertain, particularly when downscaled to the regional or local level.[7] Better understanding will require more funding to improve our analysis and evaluation.[8] Once the scientific community better understands these impacts, responses may also require funds to lessen the harm that these impacts may have on the natural systems on which humans depend.[9] Thus, the funding of adaptation science has been one of the central foci of discourse on the issue and has occupied a large part of international climate change dialogue, such as at the Copenhagen meeting in December 2009.[10]

The last few years have also seen activity in climate change adaptation regarding the role of policy in lessening the impacts of climate change. For instance, the federal government created the Interagency Climate Change Adaptation Task Force, which has published a proposal for how federal agencies can better prepare for climate change impacts.[11] Some states and localities have also

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(2008).

5. *See* WILLIAM E. EASTERLING III ET AL., COPING WITH GLOBAL CLIMATE CHANGE: THE ROLE OF ADAPTATION IN THE UNITED STATES 1–2 (2004), *available at* http://www.pewclimate.org/docUploads/Adaptation.pdf; *Climate Change—Health and Environmental Effects: Adaptation*, *supra* note 1 ("[M]uch of adaptation may be planned and undertaken by private decision makers and by public agencies or governments.").

6. IPCC, MITIGATION, *supra* note 2, at 101.

7. Lindsay F. Wiley, *Healthy Planet, Healthy People: Integrating Global Health into the International Response to Climate Change*, 24 J. ENVTL. L. & LITIG. 203, 235 (2009).

8. *See* Orr Karassin, *Mind the Gap: Knowledge and Need in Regulating Adaptation to Climate Change*, 22 GEO. INT'L ENVTL. L. REV. 383, 385–88 (2010) (discussing how the attention given to adaptation "has primarily focused on funding adaptation in developing countries").

9. *Id.* at 423–27 (discussing the funding necessary to cover the costs associated with planned adaptation).

10. *See id.* at 385–86; Daniel H. Cole, *Climate Change, Adaptation, and Development*, 26 UCLA J. ENVTL. L. & POL'Y 1, 4 (2008) (discussing the international impact of the costs of climate change).

11. *See* Council on Envtl. Quality, *Climate Change Adaptation Task Force*, WHITE HOUSE, http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation (last visited Oct. 22, 2011) ("On October 14, 2010, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency report outlining recommendations to President Obama for

undertaken to plan for climate change.[12]

Many of these initiatives grapple with the proper response of law and policy to impacts on natural resources and ecosystems.[13] The idea is that policy tools, such as laws and regulations, can lessen the harms of climate impacts to the natural ecosystem. But unlike the push for more funding to discover and respond to climate alterations, the policy changes necessary to deal with natural resource preservation are not as clear-cut, and in any event, are also beholden to the fact that climate models cannot always predict specific impacts on smaller scales.[14]

Institutionally, there is fragmented authority to manage natural resources.[15] For example, a policy response to water availability changes may be difficult to accomplish because water resources management can be controlled by multiple federal agencies, such as the Environmental Protection Agency,[16] the Fish and Wildlife Service,[17] and the Army Corps of Engineers,[18] as well as state and local governments.[19] Thus, there are questions concerning the proper agency and level of government to act.[20] These possible policy responses to climate change from multiple agencies and multiple levels may work at cross-purposes, leaving less efficient adaptation or an even worse situation.[21]

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how Federal Agency policies and programs can better prepare the United States to respond to the impacts of climate change.").

12. Karassin, *supra* note 8, at 387 ("[T]enstates [sic] managed by the end of 2009 to complete or be in the process of devising an adaptation plan.").

13. *See* WHITE HOUSE COUNCIL ON ENVTL. QUALITY, PROGRESS REPORT OF THE INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE: RECOMMENDED ACTIONS IN SUPPORT OF A NATIONAL CLIMATE CHANGE ADAPTATION STRATEGY 18–19 (2010), *available at* http://www.whitehouse.gov/sites/default/files/microsites/ceq/Interagency-Climate-Change-Adaptation-Progress-Report.pdf (discussing the federal government's role in climate change adaptation).

14. *See* Wiley, *supra* note 7, at 235 (noting the vast spectrum of adaptation strategies).

15. *See* Alejandro E. Camacho, *Adapting Governance to Climate Change: Managing Uncertainty Through a Learning Infrastructure*, 59 EMORY L.J. 1, 26–27 (2009).

16. *See, e.g.*, Safe Drinking Water Act, 42 U.S.C. § 300f (2006).

17. *See, e.g.*, Fish and Wildlife Coordination Act, 16 U.S.C. § 661–66c (2006).

18. *See, e.g.*, Water Supply Act of 1958, 43 U.S.C. § 390b (2006).

19. *See, e.g.*, N.C. Dep't of Env't and Natural Res., *Division of Water Resources: Water Supply Planning Branch*, NCWATER.ORG, http://www.ncwater.org/About_DWR/Water_Supply_Planning_Section (last visited Oct. 23, 2011) ("The Water Supply Planning Branch is responsible for Local Water Supply Plans, the State Water Supply Plan, the Registration of Water Withdrawals and Transfers, and providing technical assistance to public water supply system operators and their consultants. Services include analysis of existing water supply systems, recommendations on new sources of water supply, coordination of regional cooperation between local water supply systems, and evaluation of future water demands.").

20. Robert L. Glicksman, *Climate Change Adaptation: A Collective Action Perspective on Federalism Considerations*, 40 ENVTL. L. 1159, 1164–65 (2010).

21. *Id.* at 1164 (noting the need for adaptation to come from all societal sectors); *see also*

As difficult as policy responses to changes in the natural environment can be, they are only the tip of the adaptation iceberg. Any changes in the natural environment call into question the societal and institutional agreements that are based in part on—or in—the natural environment. Thus, natural environment changes represent a potentially bigger challenge than first appears, as they may ripple through most of human society. Indeed, the IPCC specifically states that when we consider climate change adaptation, we should be looking at the change in "human systems" in addition to natural systems.[22] Unless we can essentially replicate or replace current natural systems exactly, coping with impacts in the natural world alone will be insufficient for humans to adapt to climate change.[23]

Commentators have proposed numerous solutions to this challenge. In her article on climate change adaptation, Professor Orr Karassin notes that it is possible that the private sector will respond to climate change without any government intervention.[24] To the extent that changes wrought by the climate create economic opportunities and costs, the opportunity to maximize individual benefits incentivizes responses.[25] Uncertainties regarding climate change impacts may also counsel against government intervention in adaptation because actions could be wrong or superfluous.[26] However, Professor Karassin concludes by noting that these very uncertainties call for government regulation in order to assure some predictability for private markets and investment.[27]

Several scholars have focused on government policy response in describing adaptation in resources and the environment, noting that the legal frameworks could be improved by resiliency or flexibility, or by the adoption of "adaptive management."[28] Others have proposed specific legal interpretations of existing laws to facilitate adapting the

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Hari M. Osofsky, *Multidimensional Governance and the BP* Deepwater Horizon *Oil Spill*, 63 FLA. L. REV. 1077, 1099–115 (2011) (identifying the challenges of "multilevel, multiactor" governance).

22. *See* IPCC, IMPACTS, *supra* note 3, at 361.

23. *See id.* at 373–74.

24. Karassin, *supra* note 8, at 390.

25. *Id.*

26. *Id.* at 390–91.

27. *Id.* at 391.

28. *See, e.g.*, W. Neil Adger et al., *Successful Adaptation to Climate Change Across Scales*, 15 GLOBAL ENVTL. CHANGE 77, 81 (2005) (recognizing flexibility or the "ability to change in response to altered circumstances" as a key indicator of "the effectiveness of an adaptation action"); Glicksman, *supra* note 20, at 1162–63 (describing climate change adaptation in terms of increasing the resiliency "of natural and human ecosystems to the threats posed by a changing environment"); Daniel Schramm & Akiva Fishman, *Legal Frameworks for Adaptive Natural Resource Management in a Changing Climate*, 22 GEO. INT'L ENVTL. L. REV. 491, 496–97 (2010) (discussing "adaptive management").

natural environment.[29] Some scholars have attempted to look at climate change adaptation more broadly in regulation or in legal systems as a whole.[30] For instance, Professor Alejandro Camacho has suggested that examining adaptation in the context of resources suggests that the reality of climate change should alter the way regulatory agencies work.[31] In addition, the Center for Law, Environment, Adaptation and Resources (CLEAR) at the University of North Carolina School of Law has held workshops generally examining the issue of adapting legal systems in the face of climate change.[32]

It is time to tie these strands together in an overarching way—to discuss adapting to a changing world through all areas of law. Climate change will critically affect natural resources and the environment, and because both provide the basis for other types of relations and interactions, it follows that climate change will in turn affect contracts, property law, patent law, health law, insurance law, and banking law, to name a few areas.[33]

Is there a common way to examine changing circumstances or possibilities of changes and propose legal alterations in all areas? I believe there can be. In this Essay, I will propose a protocol for adapting laws generally, given the changing climate of our world, and will provide normative support for this particular protocol. Given the current legal framework that envisions laws working together and usually not at cross-purposes, using the legal system itself as a way to examine adaptive responses may also resolve issues associated with implementing policy solutions in a vacuum.

Part I of this Essay reviews the issue of climate change adaptation and specifically argues that a broad-based focus on adapting laws could provide a systemic way of addressing climate change impacts on multiple, diverse parts of society. Part II focuses on the existing adaptation scholarship and examines scholars who have attempted to think about adaptation in more than one context or from the normative

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29. *See, e.g.*, J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1, 13 (2008).

30. *See* Karassin, *supra* note 8, at 388.

31. Camacho, *supra* note 15, at 19–22.

32. *See* Ctr. for Law, Env't, Adaptation & Res., *Adapting Legal Regimes in the Face of Climate Change*, UNC SCHOOL OF LAW, http://www.law.unc.edu/centers/clear/workshops/climatechange/default.aspx (last visited Oct. 23, 2011) (describing a workshop hosted by the University of North Carolina School of Law's Center for Law, Environment, Adaptation and Resources (CLEAR) in October 2008).

33. *See id.* (listing relevant legal fields, including "environmental . . . climate change, disaster, public health, IP, and property"). *See generally* Ira R. Feldman & Joshua H. Kahan, *Preparing for the Day After Tomorrow: Frameworks for Climate Change Adaptation*, 8 SUSTAINABLE DEV. L. & POL'Y 61, 63–64 (2007) (analyzing how numerous strata of law are affected by climate change).

bases underlying adaptation choices. Part III reviews some current proposals for adaptation templates and then proposes a specific legal adaptation protocol as an appropriate tool because it is supported by, and based on, important normative principles. Part IV then applies the protocol using examples.

I. THE ADAPTATION OF LAW IS A LOGICAL LENS THROUGH WHICH TO VIEW CLIMATE CHANGE ADAPTATION GENERALLY

Law is the system of rules or standards that governs private and public actors.[34] Within the United States, law so suffuses our lives that it is easy to forget that law can be seen as part of a common construct. While undoubtedly, certain parts of law seem more important to certain persons, societal segments, or businesses, it is generally impossible to completely isolate one area of law from an overarching legal structure.

The very name "common law" suggests the interrelationship of laws that have evolved over time, and the law understands itself as rational and systematic.[35] Indeed, every American law student learns the trifecta of contracts, property, and torts, even if their interrelationship often inexplicably goes unacknowledged.[36] Under the classical theory of common law, the courts apply "a complete, coherent, and formal body of law, police the boundaries of legislative authority and define the ground rules for interaction among private individuals" through "contract[s], tort[s] and property."[37]

While progressives have criticized and substantially altered this traditional approach to law,[38] it is still foundational with respect to legal systems. New statutes should be narrowly read in the context of existing ones and the common law.[39] Though there are often complaints about the silo nature of certain areas of the law, which comes from focusing on one particular issue at a time, the law is like an organism that must

34. In this definition, "law" does not include actions of the government as market agent, such as a purchaser, though these can also affect the actions of the private sector.

35. *See* James Gordley, *The Common Law in the Twentieth Century: Some Unfinished Business*, 88 CAL. L. REV. 1815, 1819 (2000) (describing the search for a "rational and systematic explanation" of the common law).

36. *See Office of Career Services: The New 1L Curriculum*, HARV. L. SCH., http://www.law.harvard.edu/current/careers/ocs/employers/about-our-students/the-new-1l-curriculum.html (last visited Oct. 23, 2011) (noting that the traditional law school curriculum requires first-year law students to take torts, property, and contracts).

37. Jay M. Feinman, *Un-Making Law: The Classical Revival in the Common Law*, 28 SEATTLE U. L. REV. 1, 4 (2004).

38. *See id.* at 8 (recognizing the critiques raised by "pragmatists, Progressives, sociological jurisprudents, and legal realists").

39. *See* Midlantic Nat'l Bank v. N.J. Dep't of Envtl. Prot., 474 U.S. 494, 501 (1986) ("The normal rule of statutory construction is that if Congress intends for legislation to change the interpretation of a judicially created concept, it makes that intent specific.").

evolve from prior organisms. Changes in focus are added onto and integrated with what already exists. This evolutionary adaptation protects against accidental loss of prior useful tools. While this theory does not refute the need for wholesale change at times, it reflects a tradition in American legal thought described by Professor Bruce Ackerman as "[e]volution, not revolution; slow and unconscious adaptation, not self-conscious institutional engineering."[40]

The importance of "what comes before" is also seen in some of the economic underpinnings of the relationship between statutory intervention and the common law. Statutory intervention in the common law is often, if not usually, justified by claiming market failures that do not allow the common law trifecta to work properly.[41] Thus, environmental regulation that directly controls emissions may be justified by the notion that the operation of the common law cannot internalize market externalities leading to inefficient allocation of resources, or just as importantly, cannot respect individual entitlements free of interference at common law.[42] This primacy of a uniform common law is even seen in constitutional jurisprudence, where the right to individual protection has been described as a property interest that legislation cannot alter.[43]

Our legal systems also operate at multiple levels, which themselves require integration. Much of the U.S. Constitution is given over to the concept of federalism and the relationship between sovereigns.[44] Levels of jurisdiction are particularly important with respect to climate change adaptation, which has effects at many different levels of governance. As

40. Bruce Ackerman, *The Common Law Constitution of John Marshall Harlan*, 36 N.Y.L. SCH. L. REV. 5, 6 (1991).

41. *See* Feinman, *supra* note 37, at 13–14. Though he disagrees, Professor Cass R. Sunstein posits that most legal scholars believe that the common law is the "neutral" background on which intervention can be made. Robert Justin Lipkin, *The Quest for the Common Good: Neutrality and Deliberative Democracy in Sunstein's Conception of American Constitutionalism*, 26 CONN. L. REV. 1039, 1041–42 (1994).

42. Victor B. Flatt, "*[H]e Should at His Peril Keep It There . . .": How the Common Law Tells Us that Risk Based Corrective Action Is Wrong*, 76 NOTRE DAME L. REV. 341, 359 (2001).

43. *See, e.g.*, Green v. Biddle, 21 U.S. 1, 29 (1823) ("The framers of our constitutions, by the prohibitions against impairing the obligations of contracts, intended to protect all rights dependent upon contract from being diminished or destroyed; and they could not certainly have intended to leave injuries to property . . . wholly unredressed . . . ."); *cf.* Duke Power Co. v. Carolina Envtl. Study Grp., 438 U.S. 59, 84 (1978) (highlighting a need for congressional intervention in the free market where the common law poses a disincentive to private industry participation).

44. *See* Fed. Mar. Comm'n v. S.C. State Ports Auth., 535 U.S. 743, 751 (2002) ("Dual sovereignty is a defining feature of our Nation's constitutional blueprint."); Gregory v. Ashcroft, 501 U.S. 452, 457 (1991) ("[O]ur Constitution establishes a system of dual sovereignty between the States and the Federal Government. . . . '[U]nder our federal system, the States possess sovereignty concurrent with that of the Federal Government, subject only to limitations imposed by the Supremacy Clause.'" (quoting Tafflin v. Levitt, 493 U.S. 455, 458 (1990))).

Professor J.B. Ruhl notes, "Adaptation . . . is about many different effects, varied across the nation, operating at many different and sometimes competing scales."[45] Because it is unclear which level of government is best suited for adaptive response—and choosing the wrong one may be counterproductive or politically difficult[46]—a response that moves through a system that is already integrated with respective roles, at least in the first instance, should prove more appropriate than random tinkering.

We thus begin with the propositions that our interactions and societies are governed by laws and that these laws operate within a complex web of interrelationships. In such a web, efforts to correct or alter societal problems must operate through law and must complement the system within which the law resides. This suggests that the legal system itself is a good vantage point from which to view the challenges that climate change will bring and perhaps is the primary tool to adapt to those changes. But if we are to use law in this manner, how should we do so? In what ways should we change or alter laws or policies to optimally adapt without causing unintended consequences?

II. CLIMATE CHANGE AND LEGAL ADAPTATION

Most scholars examining climate change adaptation and the law have focused primarily on the natural resources arena, though some have taken a broader view. Within this context, attention has focused on two major axes: the "system" to use when thinking about adaptation and the "scale" (governance level) at which adaptation should occur.

A. *Systems*

With respect to systems of legal adaptation to climate change, much has been written about the systemic introduction of resiliency in the law.[47] Resiliency focuses primarily on the way in which climate change may accelerate the rate of change of physical or natural systems and suggests that one way climate change should be dealt with is to replace the idea of a static environment with one that is changing or dynamic.[48]

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45. J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363, 426 (2010).

46. Glicksman, *supra* note 20, at 1173.

47. *See, e.g.*, Camacho, *supra* note 15, at 39; Ruhl, *supra* note 45, at 386 (describing this strategy and noting the benefits of "*enhancing resilience* to impacts, such as through improved emergency response techniques and habitat restoration methods"); J.B. Ruhl, *General Design Principles for Resilience and Adaptive Capacity in Legal Systems—With Applications to Climate Change Adaptation*, 89 N.C. L. REV. 1373, 1379–85 (2011) [hereinafter Ruhl, *Design Principles*] (discussing resilient legal systems); Schramm & Fishman, *supra* note 28, at 492 (discussing the need for "resilient and robust decision-making frameworks that can nimbly respond to new information and changes in ecological conditions").

48. *See* Camacho, *supra* note 15, at 13–14 (describing the uncertainty associated with

Previously, ecologists had recognized that systems undergo periodic shocks, but the assumption was "that natural systems fluctuate within an unchanging envelope of variability"—an idea known as "stationarity."[49] However, as Professor J.B. Ruhl notes, "[T]he stationarity premise is on thin ice in the era of climate change. Ecologists now warn of the no-analog future—ecological variability unprecedented in the history of ecology, riddled with nonlinear feedback and feed-forward loops, previously unknown emergent properties, and new thresholds of irreversible change."[50] Consequently, it may be difficult to specifically program law to accomplish goals, so all laws should be more flexible and thus more responsive to the rapid dynamism which will occur.[51] Scholars have thus argued that "[l]egal structures that promote tactical flexibility while keeping managers focused on achieving long-term sustainability objectives will be crucial to preserving biodiversity and ecosystem services well into an uncertain future."[52]

Along with resiliency, legal systems adaptation writing has focused on the use of adaptive management—a tool of environmental law—as a legal framework for addressing fast-changing, climate-altered facts on the ground.

> Adaptive management takes a holistic, ecosystem-level approach to environmental issues . . . . At its core it "involves synthesizing existing knowledge, exploring alternative actions, making explicit predictions of their outcomes, selecting one or more actions to implement, monitoring to determine whether outcomes match those predicted, and using these results to adjust future plans."[53]

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climate change adaptation); Bryan Norton, *Change, Constancy, and Creativity: The New Ecology and Some Old Problems*, 7 DUKE ENVTL. L. & POL'Y F. 49, 51 (1996) ("[E]cological systems are dynamic, changing systems."); Ruhl, *Design Principles*, *supra* note 47, at 1379 (describing the "resilient" legal system); Schramm & Fishman, *supra* note 28, at 493–95 (illustrating the predicted effects of climate change on our global environment).

49. *See* Ruhl, *Design Principles*, *supra* note 47, at 1394 (quoting P.C.D. Milly et al., *Stationarity Is Dead: Whither Water Management?*, 319 SCIENCE 573, 573 (2008)) (internal quotation marks omitted).

50. *Id.*

51. *See* Camacho, *supra* note 15, at 39 ("[V]arious legal scholars have asserted the importance of cultivating programs that allow for flexibility and learning in agency decisions. These assertions have paralleled the mounting appeals in the scientific literature to integrate adaptive management in resource regulation."); Ruhl, *supra* note 45, at 423 (calling for "[g]reater [v]ariety and [f]lexibility in [r]egulatory [i]nstruments"); Ruhl, *Design Principles*, *supra* note 47, at 1379–85 (describing the resilient legal system); Schramm & Fishman, *supra* note 28, at 496–97 (arguing for a more resilient and flexible legal structure and articulating specific problems with our existing rigid framework).

52. Schramm & Fishman, *supra* note 28, at 492.

53. *See id.* at 498 (quoting Carol Murray & David Marmorck, *Adaptive Management and*

Like resiliency, adaptive management anticipates flexibility in legal response, but introduces it at an iterative administrative level, rather than solely in the original legislative process. Professor Camacho, in particular, has suggested that adaptive management can be applied to government regulation itself.[54] He argues that "[b]y incorporating an adaptive-learning framework into the regulatory process itself, regulatory agencies[,] . . . charged with administering complex, unproven laws, can finally begin to help make regulation evolve."[55] The use of adaptive management as a tool has many critics who complain that its proponents often use it as a screen to cover information gaps[56] or to "conceal political accommodations."[57] Notwithstanding these critics, adaptive management's iterative nature—which purports to finetune new decisions with new information—can accommodate a situation in which information is unclear, yet it still seems prudent to begin with management of some sort. Future climate change impacts exemplify such a situation.

B. *Scale*

Another strand of climate change adaptation of law has focused on which levels of government and law are best suited to address climate change impacts.[58] Professor Robert Glicksman has noted that the failure

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Ecological Restoration, *in* ECOLOGICAL RESTORATION OF SOUTHWESTERN PONDEROSA PINE FORESTS 417–18 (Peter Friederici ed., 2003)); *see also* Camacho, *supra* note 15, at 23 ("This increasingly influential model seeks to address information gaps in management plans that surface during plan formation by including systematic monitoring procedures for obtaining more data to adjust the management strategies during implementation.").

54. Alejandro E. Camacho, *Can Regulation Evolve? Lessons from a Study in Maladaptive Management*, 55 UCLA L. REV. 293, 358 (2007).

55. *Id.*

56. Daniel A. Farber, *Adapting to Climate Change: Who Should Pay*, 23 J. LAND USE & ENVTL. L. 1, 2 (2007); *see also* Camacho, *supra* note 15, at 42 ("Some have even observed that certain agencies have sought to use the adaptive management label as a screen for approving action when they are faced with uncertain effects but have little interest in subsequent monitoring and adaptation."); Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1466–68 (2011) (discussing the failures of adaptive management when opportunities for learning to fill information gaps are not present).

57. *See* Holly Doremus, *Adaptive Management, the Endangered Species Act, and the Institutional Challenges of "New Age" Environmental Protection*, 41 WASHBURN L.J. 50, 88 (2001) ("Adaptive management can be used as a smokescreen to conceal political accommodations that sacrifice the protection of species or natural systems.").

58. *See* Glicksman, *supra* note 20, at 1165 (providing "a framework for determining how to structure a policy to facilitate adaptation to climate change that assigns appropriate roles to all levels of government"). *See generally* RONALD D. BRUNNER & AMANDA H. LYNCH, ADAPTIVE GOVERNANCE AND CLIMATE CHANGE ix (2010) (concluding that "adaptive governance is an emerging pattern of science, policy, and decision making, and so far a missed opportunity for reducing net losses from climate change on larger scales at all levels in the international system, from local to global").

to consider this issue might result in counterproductive actions or in different levels of government acting at cross-purposes.[59]

Scholars who have taken positions on the governance issue have generally noted that there should be more adaptation governance at the local level.[60] Local focus on adaptation allows the government to tailor its response to specific harms that are occurring. As Professor Glicksman has observed, "[E]ffective adaptation policy may depend on knowledge of and the ability to respond to diverse local conditions. State and local policymakers may be able to make the necessary adjustments more effectively than the federal government can."[61] Local policy also has the benefit of being more responsive to the wants and needs of constituents and is thus more democratic.[62] According to Professors Robert D. Brunner and Amanda H. Lynch, in the absence of clear outcomes, participation in decisionmaking is particularly important[63]:

> [S]tate and local adaptation efforts will [also] be crucial because many of the likely impacts of a changing climate will affect matters where state and local government already play an important role, including the construction and protection of urban infrastructure, regulation of land use, enforcement of building codes, and, certainly not least, natural disaster response.[64]

Lastly, because of its relation to local effects, the political will to take action is likely to be present.[65] Indeed, despite the fact that political will for comprehensive federal climate change legislation has been difficult to build and maintain, "the political will and other resources necessary to address adaptation . . . already exist in niches here and there. These niches can be expected to grow as the adverse impacts of climate change become more obvious in more communities."[66] A survey by the U.S. Conference of Mayors released in June 2011 shows that 31% of cities already incorporate climate change adaptation into

59. Glicksman, *supra* note 20, at 1183.

60. *See* BRUNNER & LYNCH, *supra* note 58, at 235; Glicksman, *supra* note 20, at 1172; *see also* Sarah Krakoff, *Planetarian Identity Formation and the Relocalization of Environmental Law*, 64 FLA. L. REV. 133–38 (2012) (advocating for and describing "local climate action groups" and the importance of fostering local efforts to adapt to climate change).

61. Glicksman, *supra* note 20, at 1172.

62. *See* BRUNNER & LYNCH, *supra* note 58, at 245–46.

63. *Id.* at 244–46.

64. WINSTON HARRINGTON, RESOURCES FOR THE FUTURE, ISSUE BRIEF 10–17, PROMOTING INNOVATIVE CLIMATE ADAPTATION THROUGH FEDERALISM 1, 2 (2010), *available at* http://www.rff.org/RFF/Documents/RFF-IB-10-17.pdf.

65. *See* BRUNNER & LYNCH, *supra* note 58, at 103.

66. *Id.*

their fiscal planning.[67]

These rationales for localism echo the general experience with environmental law. In her recent article on the "intrusiveness" of environmental laws, Professor Katrina Kuh notes how much more a local populace will accommodate seemingly intrusive laws, presumably because of the closer nature of governance.[68]

There are recognized drawbacks to this approach—most importantly, the issue of transboundary effects and the lack of resources that may be necessary to undertake the changes in regulation and physical structure required to deal with climate-induced changes. Professor Glicksman has noted this difficulty and proposed a cooperative federalism approach to climate change adaptation in which the federal government provides grants and resources to state and local governments empowered to decide how best to allocate the resources.[69] This scale-conscious approach would promote cooperation and efficiency amongst various levels of government.

III. APPROACHES TO LEGAL ADAPTATION IN THE FACE OF CLIMATE CHANGE

A. *Do Axes of Climate Change Adaptation Analysis Suggest a Template for Systematically Approaching Climate Change Adaptation?*

The systemic and scalar discussions of addressing climate change adaptation in law both recognize that existing legal systems, whether they address natural resource protection or some other area, are highly complex.[70] Regardless of its origin—perhaps because there are multiple levels of regulation, perhaps because the systems inevitably are perturbed by new information—we start with the premise that complexity is one of the most important realities of legal and regulatory approaches to policy.

Both of these axes of analysis, as well as general scholarship of climate change adaptation, further note that the changes wrought by the speed of climatic disruption add a new level of complexity and challenge to current legal systems that these systems were not designed

67. John McArdle, *31% of U.S. Mayors Weigh Adaptation in Project Planning—Survey*, E&E NEWS PM (June 17, 2011), http://www.eenews.net/eenewspm/2011/06/17/archive/4?terms=31%25+of+us+mayors.

68. *See* Katrina Fischer Kuh, *When Government Intrudes: Regulating Individual Behaviors that Harm the Environment*, DUKE L.J. (forthcoming) (manuscript at 18–19), *available at* http://ssrn.com/abstract=1760453.

69. Glicksman, *supra* note 20, at 1172, 1192–93.

70. *See* Alejandro E. Camacho, *Transforming the Means and Ends of Natural Resources Management*, 89 N.C. L. REV. 1405, 1436–37 (2011); Glicksman, *supra* note 20, at 1164 (observing that fixing the significant gaps in the U.S. approach to climate change adaptation requires a complex organization and coordination of "federal, state, local, and tribal actors").

to address. This observation has spurred some of these scholars to suggest specific practical methods of approaching legal adaptation.

1. Scale

As discussed in Section II.B, with respect to issues of scale, more than one scholar has emphasized the importance of climate change adaptation at the local level.[71] In many cases, localism is proposed as an antidote to the perceived ineffectiveness of top-down regulation and what some describe as a lack of political will. It is also relevant in the context of the necessity of adaptation tools, such as land use and building codes, which are local in nature.

Professor Glicksman assumes that responses to climate change must occur at all levels of governance[72] and suggests how a division between levels of government should be realized. In effect, he suggests that different adaptation policies should rest with the level of government least subject to collective action problems.[73] Essentially, states and localities should take the lead on adaptation when they address the problem without detrimentally affecting others, but a federal response is appropriate to avoid transboundary problems or if a state fails to act. In many ways, Professor Glicksman's approach echoes the Founders' approach to federalism, which suggested government at the most direct level possible.[74] It follows that when direct governance is not possible due to market failures or inaction, a higher level of government should engage.[75]

Thus, this analysis of scale is consistent with the idea that an adaptation framework should be hung on our current legal scaffolding, as issues of multiple levels of governance with adaptation are similar to what has constructed our current federalism jurisprudence.

2. Systems

Much of the systems' focus on legal adaptation centers on dynamism. Professor Ruhl's discussion of the "no analog" future suggests a reexamination of existing goals in natural resources policy to

71. *See* BRUNNER & LYNCH, *supra* note 58, at 235–36, 242–43, 246; Elizabeth C. Black, *Climate Change Adaptation: Local Solutions for a Global Problem*, 22 GEO. INT'L ENVTL. L. REV. 359, 360 (2010) ("Unlike mitigation, adaptation efforts largely involve local decision-making, making it difficult to ensure that those responsible for creating the problem also play a role in solving it.").

72. *See* Glicksman, *supra* note 20, at 1192.

73. *See id.* at 1193.

74. *See* Robert L. Glicksman & Richard E. Levy, *A Collective Action Perspective on Ceiling Preemption by Federal Environmental Regulation: The Case of Global Climate Change*, 102 NW. U. L. REV. 579, 585, 588 (2008).

75. *See id.* at 585–88 (discussing federal–state relations and how federal law "trumps" conflicting state law under the preemption doctrine).

determine what can be accomplished using current knowledge about the changing climate.[76] For instance, the approach to managing endangered species may need to be radically rethought, as it may not be possible to preserve them pursuant to our current plan.[77] This approach suggests that existing policies may need to be reexamined through the lens of practicality, in effect suggesting a triage of existing goals—at least in the natural resource area—to see which ones are still feasible.[78] Beyond triaging, the systems approach suggests that there may come a point for rethinking goals entirely, though Professor Ruhl does not elaborate on how this will occur.[79]

Professor Holly Doremus notes, with respect to environmental law, that society has created laws that are quite rigid because this "precommitment" to the natural world is a necessary antidote to the short-term economic pressures that also exist in our society.[80] However, this need for important normative goals conflicts with the reality of climate change.[81] For instance, Professor Doremus has noted that in the context of natural systems, having a fixed goal may mean giving up a central tenet of restoring the environment to some historic or natural state.[82] She has posited that a combination of moving baselines—recognizing nature's changes—with nature preserves that can evolve with little human interference may be one way to avoid the pressure on environmental goals while still preserving flexibility.[83]

The calls to apply more adaptive management to resource laws, as suggested by Daniel Schramm and Akiva Fishman of the Environmental Law Institute (ELI), are consistent with Professor Doremus's theory, in that the calls recognize that the world is no longer static and that resource agencies must plan for this dynamism by focusing on the problems, goals, and objectives, rather than on the rote process.[84] While Schramm and Fishman do not explicitly call for a revisitation of goals, they suggest it as one possibility in their discussion of legal mandates for periodic review and adjustment, in which regular review of resource management policies allows needed adjustment in light of changing

76. *See* Ruhl, *Design Principles*, *supra* note 47, at 1394–95.

77. Ruhl, *supra* note 29, at 6–7.

78. *See, e.g.*, Ruhl, *supra* note 45, at 388 (noting that one practical response to climate change is moving from the affected area).

79. *Id.* at 400.

80. Holly Doremus, *Adapting to Climate Change with Law that Bends Without Breaking*, 2 SAN DIEGO J. CLIMATE & ENERGY L. 45, 49, 50, 53–54 (2010).

81. *Id.* at 59.

82. *Id.* at 46.

83. *Id*. at 75–76.

84. *See* Schramm & Fishman, *supra* note 28, at 491–92 ("The principles of adaptive management provide a strong conceptual basis for evaluating and strengthening legal frameworks for climate change.").

circumstances and insights.[85]

Professor Camacho's application of lessons from adaptive management to regulation itself suggests that legal adaptation can occur in the regulation of existing law. If regulators currently understand that laws apply to a static system, then a change in that understanding should prompt better decisionmaking.[86] By recognizing that regulation should be adaptive, agencies can change procedures to adjust how and when decisions are made, as well as to better recognize uncertainties that the agency will need to revisit.[87] This does not explicitly call for a reexamination of goals, but rather a new flexibility in regulation which would allow for more iterative decisionmaking, presumably with reference to goals.

In putting forward this possibility, Professor Camacho suggests specific alterations that should be considered, including information-sharing between agencies, perhaps through the development of clearinghouses, and revisiting prior decisions to finetune implementation.[88] In its approach to adaptive resource management in developing countries, the ELI suggests a similar strategy and adds the idea of sun-setting laws to force lawmakers to revisit the usefulness of their decisions in the face of changed circumstances.[89]

There are recognized drawbacks to these proposals to increase dynamism in the law. Professor Doremus notes the difficulty of countering short-term opportunism in the face of dynamism.[90] Professor Camacho observes that agencies are already underfunded and that the information-sharing necessary for his proposal would require better funding.[91] In its proposal for increasing the flexibility of decisionmaking, the ELI recognizes that increasing flexibility can also introduce a lack of decisionmaker accountability.[92] Thus, it wisely goes on to suggest that stakeholders (the public itself) must be engaged enough to make decisions as to where the authority for flexibility and changes lie—essentially dividing the big-picture policy decisions from mere decisions of implementation.[93]

A comprehensive look at these current systems approaches to legal adaptation demonstrates an important commonality. In addressing the

85. *See id.* at 501–03.

86. *See* Camacho, *supra* note 15, at 38–39.

87. *See id.* at 39–40.

88. *Id.* at 49.

89. *See* ENVTL. LAW INST., LEGAL AND POLICY TOOLS TO ADAPT BIODIVERSITY MANAGEMENT TO CLIMATE CHANGE: RESOURCE MANUAL 57–60 (2011), *available at* http://www.elistore.org/Data/products/d21-04.pdf.

90. Doremus, *supra* note 80, at 48, 50–51.

91. Camacho, *supra* note 15, at 74.

92. ENVTL. LAW INST., *supra* note 89, at 11–12.

93. *Id.* at 25–26, 28, 30.

need for more resiliency—or in Professor Doremus' case, the need for goal flexibility—and greater speed of response, all note the importance of considering the original policy goals to anchor dynamism, an anchor which provides accountability[94] to affected stakeholders, who presumably depend on the deliberative nature of the policymaking in appropriate legislative bodies.

B. *Existing Templates for Adapting Laws in the Face of Climate Change*

While a review of the literature and ideas concerning legal adaptation have commonalities that suggest an approach to adapting legal regimes, aside from the natural resources context, the legal literature provides little in the way of "how to" proposals.

Professor Robin Craig has put forward five principles to approach climate change adaptation for natural resources. Specifically in her calls for monitoring, resiliency, and coordination (principles 1, 2, and 3), she echoes the appeals for increasing both resiliency and adaptive management.[95] Her call for "principled" flexibility in resource management goals is comparable to a focus on original goals.[96] While these goals may be impossible to meet, they should not be abandoned willy-nilly.

In the field of disaster planning, which also relies on planning for uncertainty and which requires resiliency, Professor Robert Verchick has proposed that changes in law to prepare for disaster should reference and be consistent with what he calls the three lessons from environmental law: "Go Green; Be Fair; and Keep Safe."[97] Verchick describes "going green" as using natural systems as much as possible to avoid disaster, "being fair" as ensuring that no single group of people bears a disproportionate share of the burdens of preparation, and "keeping safe" as requiring the consideration of all risks associated with disaster in decisionmaking, not just the traditional values upon which agencies may rely.[98]

The Center for Progressive Reform (CPR) has proposed these references as appropriate for guiding climate change adaptation in its analysis of Adaptation for the Puget Sound Region.[99] It enhances the

94. Doremus, *supra* note 80, at 46, 50, 84.

95. Craig, *supra* note 4, at 40, 43, 53.

96. *Id.* at 63.

97. ROBERT R. M. VERCHICK, FACING CATASTROPHE: ENVIRONMENTAL ACTION FOR A POST-KATRINA WORLD 3–4 (2010).

98. *Id.*

99. ROBERT L. GLICKSMAN ET AL., CENTER FOR PROGRESSIVE REFORM, CLIMATE CHANGE AND THE PUGET SOUND: BUILDING THE LEGAL FRAMEWORK FOR ADAPTATION 4 (2011), *available at* http://www.progressivereform.org/articles/Puget_Sound_Adaptation_1108.pdf.

"keep safe" lesson to emphasize the precautionary principle, arguing that the unavailability of information should suggest that policymakers take the more cautious approach.[100]

In his writing on the precautionary principle, Professor Doug Kysar recognizes that caution is particularly important with respect to approaching situations with lack of—or discontinuous—information.[101] Care is necessary not only because of the inability to understand risk, but also because of his assertion that cost–benefit analyses will systematically undervalue risk in such a situation, requiring a strong buffer in the form of the precautionary principle to balance the problem.[102] Professor Kysar's theory is consistent with Professor David Dana's assertion that because humans give more credence to immediate costs and benefits, the precautionary principle can serve as a balancing point for avoiding catastrophic environmental harm.[103]

The reference points identified by Professor Verchick in his *Facing Catastrophe* book and adopted by CPR as appropriate for guiding climate change adaptation are certainly consistent with and suggested by the literature on adapting legal regimes. In particular, the focus on "going green" and "keeping safe" both reflect a conservative approach to systems alterations, an approach which respects the natural background. Professor Doremus's approach to resource adaptation also favors reference to the "natural system," even if it is a climate-changing natural system.[104]

These approaches are consistent with a requirement of respecting the original goals of laws wherever possible. In particular, because our resource goals tend to focus on the retention of the "natural" system or background, and it is resource changes that will alter the physical backdrop for human systems, a call to maintain the physical system wherever possible is also a call to retain the status quo in the form of original goals wherever possible.

The "being fair" principle is consistent with calls in adaptation literature regarding the importance of public participation at the local level in the consideration of any legal alterations in the face of climate change.[105] Citizen participation at this level is one way to ensure that all parties have voices in the discussion and that disenfranchised groups are not shut out or disadvantaged by changes that may occur.[106]

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100. *Id.*

101. Douglas A. Kysar, *It Might Have Been: Risk, Precaution and Opportunity Costs*, 22 J. LAND USE & ENVTL. L. 1, 7, 12 (2006).

102. *Id.* at 6, 12.

103. David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U. L. REV. 1315, 1325 & n.32 (2003).

104. Doremus, *supra* note 80, at 75, 77.

105. *See* BRUNNER & LYNCH, *supra* note 58, at 244.

106. *Id.* at 245.

C. *Template for Legal Adaptation*

How then can we use these ideas to create a template to approach the question of legal adaptation systematically? In addressing how legal regimes should be altered in the face of climate change, a template must answer the questions of how and why, and in particular, it must address why a specific approach to adaptation makes sense normatively.

In terms of "how," based on prior literature and analysis, this Essay proposes the following normative matrix for reviewing and proposing alterations to legal regimes due to climate change. Decisions on altering an existing legal regime should first identify which parts of the current regime will be stress points in a changed future, and how legal and policy alterations can address those stress points while preserving the original purposes of the regime and considering both distributive justice and efficiency.

While the need for general efficiency may seem self-evident, why should we hew to prior identified legislative purposes? Why should we consider distributive and justice effects?

A focus on previously identified legislative purposes is consistent with the literature on the importance of policy goals in adaptation. The fact that the literature's focus on the goals is not greatly fleshed out is consistent with the very important concept of deliberative governance—that policies are best made in an open debate with values tradeoffs. Practically speaking, this concept means that agencies can and should work within their statutory mandates where possible. But when facts on the ground make this impossible or, for political accountability reasons, unlikely, the legislative process must be involved.

In several recent publications and discussions of climate change adaptation, the importance of legislative purpose is often ignored or forgotten. Many proposals jump to a solution that requires an administrative agency or expert body to determine the best way to go forward under the changed circumstances wrought by climate.[107] But what guides decisionmaking? Untethered from any agreed-upon goal, new policy lies in the hands of a few, anathema to the tradeoffs that should be considered in such important decisions. As posed by environmental law attorney Matthew Zinn, "[E]ven if a cadre of 'ecological mandarins' could be assembled to comprehensively assess and compare the impacts of competing adaptations in developing a coordinated adaptation plan, how would they balance the diverse impacts of competing adaptations?"[108]

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107. *See, e.g.*, Glicksman, *supra* note 20, at 1164 (discussing the Interagency Climate Change Task Force); VERCHICK, *supra* note 97, at 3.

108. Matthew D. Zinn, *Adapting to Climate Change: Environmental Law in a Warmer World*, 34 ECOLOGY L.Q. 61, 85 (2007) (footnote omitted).

This may be the particular concern underlying Brunner and Lynch's emphasis on the necessity of local-level decisionmaking. Experts at a national level may not understand or give effect to the intensely local concerns wrought by climate change. Without investment in a deliberative process, people may not support federal adaptation policies.[109] This suggests that any major change in policy must be subject to some rigorous discussion of tradeoffs by the body politic.[110] Such discussion would also help to protect vulnerable groups in the decisionmaking process.

Thus, until public debate occurs, it is important to give effect to what has come from such a system before, as current goals and policies generally have been adopted through the considered democratic process.[111] It is true that because legislation applicable to a subject may be passed at different times, with different goals, and with different breadth, Congress itself may not be fully aware of prior legislation. But this fact does not defeat the principle of deliberating at this level. The very notion of the nondelegation doctrine is based on the principle that agencies may act only within major policy bounds decided by Congress.[112] In his concurrence in the well-known *Benzene* case,[113] then-Associate Justice William Rehnquist noted that allowing policymaking in the Executive Branch deprived the public of its role in a republican form of government.[114] As one court has stated, "The constitutional doctrine prohibiting delegation of legislative power rests on the premise that the Legislature may not abdicate its responsibility to resolve the 'truly fundamental issues' by delegating that function to others or by failing to provide adequate directions for the implementation of its declared policies."[115] If an existing legal regime

109. *See* BRUNNER & LYNCH, *supra* note 58, at 245.

110. *See* Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resource Law Under Climate Change*, 27 YALE J. ON REG. 171, 254–55 (2010). *See generally* Dave Owen, *Probabilities, Planning Failures, and Environmental Law*, 84 TUL. L. REV. 265, 271–72 (2009) (discussing how questions of plan uncertainty are frequently addressed on "an ad hoc basis" with "little transparency"; these plans often involve low odds for success and generally lead to an impediment to public participation, increased vulnerability to biases, and regulatory dysfunction).

111. This proposition, of course, is the subject of intense theory and scholarship discussing whether legislation well represents the public interest. For a general discussion of public choice theory and legislation, see DANIEL A. FARBER & PHILIP P. FRICKEY, LAW AND PUBLIC CHOICE 64 (1991).

112. Michael B. Rappaport, *The Selective Nondelegation Doctrine and the Line Item Veto: A New Approach to the Nondelegation Doctrine and Its Implications for* Clinton v. City of New York, 76 TUL. L. REV. 265, 270–71, 281 (2001).

113. Indus. Union Dep't AFL-CIO v. Am. Petroleum Inst. (The Benzene Case), 448 U.S. 607 (1980).

114. *Id.* at 672–73 (Rehnquist, J., concurring).

115. CEEED v. Cal. Coastal Zone Conservation Comm'n, 118 Cal. Rptr. 315, 329 (Cal. Ct.

contains the flexibility to accommodate policy purposes through administrative changes without statutory intervention, this approach would be preferable to statutory alteration in the face of climate change.

It is also conceivable that prior policy goals cannot be maintained if the physical world is or will be so changed that existing goals simply cannot be met—think of the analogous situation of changed circumstances related to bequests. In these cases, one can apply a variation that meets *most* or *some* original policy goals. But it is also possible that the original project purposes or goals should be completely reexamined, opening up other possible factors for consideration. In such a case, the use of the deliberative legislative process—which gives legitimacy to the laws in the first place—suggests that any new goals or goal alterations should be achieved through the same means.[116]

The need to consider distributive and justice issues in adapting legal regimes is similarly foundational. Human-induced climate change often creates externalities that alter allocation of resources, and adapting to climate change can also increase burdens on the less economically or politically powerful.[117] The protection of entitlements is one basic principle of the common law.[118] The significance and weight of entitlement protections necessarily implies that for any kind of legal change in interpretation or administration, particular attention must be paid to the allocation of rights and how externalities may operate to

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App. 1974) (quoting Kugler v. Yocum, 445 P.2d 303, 306 (Cal. 1968)); *see also* Benjamin M. McGovern, *Reexamining the Massachusetts Nondelegation Doctrine: Is the "Areas of Critical Environmental Concern" Program an Unconstitutional Delegation of Legislative Authority?*, 31 B.C. ENVTL. AFF. L. REV. 103, 108 (2004) (quoting Askew v. Cross Key Waterways, 372 So. 2d 913, 920–21 (Fla. 1978)).

116. At this point, the reader may now throw her hands up and declare this impossible. In the summer of 2011, reasoned political deliberation is perceived as being at an all-time low. Moreover, those who believe in the important principles underlying current environmental laws may be justifiably afraid of a legislative sabotage by anti-environmental interests, which are currently quite vocal.

The significance of this problem cannot be overstated, but it is not one I will address at length here. I will assert that sooner or later, our environmental goals of the 1960s and 1970s must be reexamined in light of our changing world, and resistance to this inevitable process may be one reason for a backlash. It will be difficult. As Professor Richard Lazarus has stated, "[E]nvironmental protection laws . . . impose substantial costs on some and confer substantial benefits on others." Richard J. Lazarus, *A Different Kind of "Republican Moment" in Environmental Law*, *in* THE JURISDYNAMICS OF ENVIRONMENTAL PROTECTION: CHANGE AND THE PRAGMATIC VOICE IN ENVIRONMENTAL LAW 369 (Jim Chen ed., 2003).

I find some comfort in Professor Doremus' assertion that Americans basically support "environmental protection as a worthy goal." Doremus, *supra* note 80, at 46. However, we will have to revisit that importance and be prepared to justify the need for environmental protections.

117. Michael Vandenbergh & Brooke A. Ackerly, *Climate Change: The Equity Problem*, 26 VA. ENVTL. L.J. 55, 56–57 (2008).

118. *See* Victor B. Flatt, *This Land Is Your Land (Our Right to the Environment)*, 107 W. VA. L. REV. 1, 6 (2004).

obliterate such rights.[119]

Indeed, many environmental law statutes can be seen as addressing this rights-based perspective in the absence of effective common law responses.[120] Thus, in considering adaptation of laws, justice and allocation must be primary issues because any legal adaptation solution will likely affect distribution of resources, either by failing to adequately compensate for the distributive alterations from climate change or possibly by exacerbating them through new externalities.

Professor Ruhl has highlighted the distributive justice concerns of adaptation policy at the international level, noting:

> Just as climate change impacts will be felt unevenly across the globe, so too is the capacity to adapt unevenly distributed. In both cases, unfortunately, it is the least developed countries that drew the short straw—they will feel climate change more severely and have the least capacity to reduce vulnerability and boost resilience.[121]

However, he also notes that "a domestic version of the human rights dimension of adaptation policy is likely to emerge,"[122] with low-income communities more vulnerable and less able to implement effective adaptive measures.[123] He notes that a movement to ensure the equitable application of adaptation policy would not necessarily strive to protect a right to environmental quality, "but rather a right to equitable distribution of the benefits of climate change adaptation, which may or may not align with environmentalist norms of minimum conditions of environmental quality."[124]

Similarly, other scholars have recognized that "[t]he profound injustices that inhere in climate change's disproportionate effects are obvious,"[125] and that "[t]he federal response to the climate crisis . . . has failed to take seriously the potentially devastating impacts of climate change and climate change policies on poor and of-color communities."[126]

Thus, a template for legal adaptation in the face of climate change would (1) examine where climate change puts pressure on operation of laws; (2) seek to alter the implementation of that law or to alter the law

119. *Id.* at 29–30.

120. *Id.* at 20.

121. Ruhl, *supra* note 45, at 406.

122. *Id.* at 407.

123. *Id.*

124. *Id.* at 409.

125. Maxine Burkett, *Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism*, 56 BUFF. L. REV. 169, 187 (2008).

126. *Id.* at 170.

itself to hew as closely as possible to the law's original purposes; and (3) make these alterations in the most efficient manner possible while also correcting, or at least not exacerbating, any distributive reallocations. Where original purposes cannot be accommodated or are so broad as to fail to constitute a clear legislative principle, policy changes should be made in the democratic forum, not by administrative fiat.

IV. APPLICATION EXAMPLES

The CLEAR workshop on adapting legal regimes sought to utilize this template with legal scholars specializing in multiple areas of law that could be affected by climate change, including hazard response law, natural resources law, public health law, and local and state government law. Observations from the workshop provide examples of how the template could work in practice.

In examining the area of hazards and hazard response law, for instance, the workshop scholars determined that the availability of adequate information about a risk is a pressure point occurring because of the changing climate.[127] Specifically, the National Flood Insurance Program (NFIP), though deficient overall, would allow for better and updated information without legislative changes.

In the group examining natural resources laws, the scholars focused on the "multiple use" mandate, common to many resource management laws. In theory, such a legal mandate should be the "best" option for climate change adaptation because it provides a "resilient" law that can alter resource usage without statutory change. In practice, however, it has proven to be just the opposite, as agencies routinely cling to a static balance of uses.[128] Thus, unlike other areas, original purpose—beyond mere flexibility—was more difficult to identify. In practice, the scholars noted how agencies attempt to maintain all uses in similar proportion to historic requirements.[129] Because this purpose seems to be to maintain all existing uses, which may not be possible, the group focused on the uses that increase sustainability, preserving resources for all—including future generations. This solution at least blunts the reallocation harms

127. *See* Ctr. for Law, Env't, Adaptation & Res., *Adapting Legal Regimes in the Face of Climate Change Workshop: Hazards Discussion Group*, UNC SCH. OF LAW, http://www.law.unc.edu/centers/clear/workshops/climatechange/overview/discussiongroups/hazards.aspx (last visited Oct. 23, 2011).

128. *See* Ctr. for Law, Env't, Adaptation & Res., *Adapting Legal Regimes in the Face of Climate Change Workshop: Natural Resources Discussion Group*, UNC SCH. OF LAW, http://www.law.unc.edu/centers/clear/workshops/climatechange/overview/discussiongroups/resources.aspx (last visited Oct. 23, 2011).

129. *Id.*

associated with the effects of climate change on resources.[130] The workshop group also suggested that any changes to the "multiple use" mix should be legislatively addressed, as these are important policy decisions.[131]

A different workshop group analyzed the legal sphere of public health.[132] This group determined that almost the entire legislative framework of public health is inadequate to face the challenges brought on by climate change.[133] Thus, the group identified specific ways to improve the entire system. In particular, this workshop group stressed the need for better information and better information-gathering to address new disease-borne vectors.[134] However, because the existing systems neither emphasize information or information-gathering, nor provide flexibility for implementation, the group suggested the consideration of legislative changes in a democratic forum.[135] Interestingly, such changes are now being discussed at the national legislative level.

A workshop group that addressed the impact of climate change with respect to local zoning laws believed this area of law so critical to future adaptation that it suggested that the legislature revisit the entire system—primarily because federal involvement may be necessary and the federal government historically has played no role in local zoning policy.[136]

Though three of these four areas of broad legal examination identified so many problems that existing goals must be reconsidered, the template still provides an important tool in implementing adaptation of laws in the face of climate change. Legislative changes can take many forms, and an initial examination of pressure points on laws or groups of laws can often identify specific solutions that might improve the system with legislative changes. In the case of the "multiple use" paradigm, the examination also shows how seeming legislative flexibility may be insufficient if alteration is not likely to occur in practice because any alteration is so weighted with policy consideration.

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130. *Id.*

131. *Id.*

132. *See* Ctr. for Law, Env't, Adaptation & Res., *Adapting Legal Regimes in the Face of Climate Change Workshop: Public Health Discussion Group*, UNC SCH. OF LAW, http://www.law.unc.edu/centers/clear/workshops/climatechange/overview/discussiongroups/publichealth.aspx (last visited Oct. 23, 2011).

133. *Id.*

134. *Id.*

135. *Id.*

136. *See* Ctr. for Law, Env't, Adaptation & Res., *Adapting Legal Regimes in the Face of Climate Change Workshop: Local and State Government Discussion Group*, UNC SCH. OF LAW, http://www.law.unc.edu/centers/clear/workshops/climatechange/overview/discussiongroups/government.aspx (last visited Oct. 23, 2011).

Regardless of whether a legislature adopts this expert reasoning and analysis, it provides a focus for consideration that moves the adaptation solution forward.

CONCLUSION

The world is changing due to climate, and that change is accelerating. As our society depends on the natural world, all facets of our society face the same need to change. How we adapt to climate change is one of the most important questions that humanity has faced. Because our existing laws provide an integrated structure for managing our world and society, this structure is a logical place to direct adaptation efforts.

In reviewing discourse on how to use the law for adaptation, we discern three important principles: that we need to hew to original purposes; that we must be aware of distributional unfairness; and that when original purposes are no longer possible, major policy decisions should be made with the input of the public in a democratic and efficient manner. Drawing on these principles, the proposed template facilitates a systematic approach to climate change adaptation through laws. The stress points at which climate change creates the most difficulty under current law and policy will become more and more obvious as the climate continues to change. These points can also be studied systematically. Once these stress points are identified, one can propose how the laws can be implemented to achieve their original purposes while also avoiding distributional injustice. In cases in which the original purposes cannot be met administratively, the analysis provides an appropriate discussion of needs and tradeoffs that a legislative body can then examine. When policy changes are necessary, the input of the public is critical.