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THE EVOLVING ROLE FOR TRANSACTIONAL ATTORNEYS RESPONDING TO CLIENT NEEDS IN ADAPTING TO CLIMATE CHANGE*

CELESTE HAMMOND**

I. OUR FOCUS IS THE DISTINCT ROLE OF THE TRANSACTIONAL ATTORNEY[1]

A. Definition of Transactional Activities

Defining the client activities that require the assistance of transactional lawyers has led to the question – what does a business transactions attorney do anyway?[2] Robin Malloy and James C. Smith identify "The Transactional Framework" in describing the role of the transactional lawyer.[3] Three key perspectives are

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1. *See* Celeste M. Hammond, *Borrowing from the B Schools: The Legal Case Study As Course Materials for Transaction Oriented Elective Courses: A Response to the Challenges of the MacCrate Report and the Carnegie Foundation for Advancement of Teaching Report on Legal Education*, 11 TENN. J. BUS. L. 9 (2009) (explaining the growing recognition of this distinct and valuable role); *see also*, Steven L. Schwarcz, *Explaining the Value of Transactional Lawyering*, 12 STAN. J.L. BUS. & FIN. 486, 505 (2007) (referencing an empirical study concluding that the primary value of the transactional attorney is in reducing transactional costs).

2. *So What Does a Business Transactions Attorney Do Anyway?*, Business Transactions Blog (Dec. 5, 2007), *http://www.businesstransactionsblog.com/2007/12/so-what-does-a.html.*

3. ROBIN P. MALLOY & JAMES C. SMITH, REAL ESTATE TRANSACTIONS: PROBLEMS, CASES AND MATERIALS: TEACHER'S EDITION 3 (4th ed. 2013).

needed by the transactional lawyer. The first is the objectives, goals, and expectations of the client, which may be a person or a business entity for a particular transaction. Second, the transactional attorney must understand the goals and expectations of non-clients who are parties to or involved in a transaction. This knowledge of the other parties' motives, expectations, and the dynamics of the deal are especially important in negotiations and when drafting documents to reflect the agreement. Third, the attorney must consider the attorney's perspective as he facilitates the deal. Concerns with professionalism and the economics of the practice should affect the attorney's conduct.[4] The attorney must identify carefully and in detail what the transactional purpose is – the subject of the transaction (whether a business or a parcel of real estate) if for no other reason than to determine which set of legal rules will apply. Additionally, the attorney must understand the objectives of the transaction (often capturing and creating wealth/value or controlling a valuable asset, whether a business itself or real property) and the goal to be achieved (merger and acquisition of business, construction of a building, or licensing a patent). Planning and managing the deal is the key role. It is in this role that the transactional attorney needs to be aware of the basic business/economic aspects of the transaction in order to manage "risk, exchange cost, and asset protection."[5]

This article focuses mainly on how that role of managing risk will expand and change as clients and non-clients deal with risks from the impact of climate change and failure to adapt to it. Jeffrey Lipshaw considers the "behavior of lawyers and business people in the course of complex commercial transactions and relationships"[6] to argue that economics and "adjudicative issues of hindsight interpretation" are not the only ways that lawyers deal with commercial uncertainty. In fact, he practically embraces the commercial contingencies he concludes to be part of the complex transaction. His philosophy provides a model for those who will deal with the uncertainty and contingencies which climate change risks and adaptation brings to the deal making. [7]

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4. *Id.* at 4.

5. *Id.* at 7–9; *see also*, Shelby D. Green & Temisan Agbeyegbe, *The Improvident Real Estate Deal: the Lawyer's Ethical Duty to Warn*, 39 REAL EST. L. J. 147, 153 (2010) (claiming that, "[a] transaction lawyer's role is to help his or her client facilitate the intended deal in a way that complies with prevailing legal limitations, but that also captures the expected value. This requires identifying and managing the wide assortment of risks usually attendant to the particular transaction.")

6. Jeffrey M. Lipshaw, *Contingency and Contracts: A Philosophy of Complex Business Transactions*, 54 DEPAUL L. REV. 1077 (2007).

7. *Id.* at 1146. (indicating that "the most effective real world deal lawyers will be prepared to address contingency and counsel their clients pragmatically, but with far more idealism than current proponents of the jurisprudence of either legal pragmatism or 'pragmatic moral skepticism' have acknowledged").

While its separation from litigation may be clear, a transactional practice includes many types of business documents that are developed through negotiations and drafting: "business contracts, including asset purchase, joint venture and development agreements; intellectual property licenses; employee, independent contractor and other personal service contracts; and entertainment contracts, including recording, producer, sideman, songwriter and publisher agreements."[8] These are examples of the written documents that transactional lawyers draft for clients to help them to reach their business goals, whether these goals include facilitating a merger or acquisition of another company; giving permission for another to benefit from an asset of the client, like a patent or copyright or even a real estate lease; or hiring and maintaining the services of others for the good of the client.

B. Gilson's Transaction Cost Engineer

Ronald Gilson's seminal 1984 article in the Yale Law Journal concludes that the business lawyer is a "transaction cost engineer" who adds value to the transaction and when the role is performed well, "the courts and formal law generally, shrink dramatically in importance."[9] What is this value? Gilson, in his later article addressing the issue, points to failure of the law as a discipline to have a methodology that addresses the relationship between transaction or organization structure and value." [10]

Reflecting on the 1984 article, George Dent thinks that transactional lawyers are more "enterprise architects" than merely transaction cost engineers because these lawyers often design their own or others' deals. Perhaps "enterprise engineer" is even more apt because these attorneys actually implement and build the designed transaction from "the entities' ramparts and the castle walls as well as its plumbing."[11] Skills, according to Dent, include gathering and verifying material information. He distin-

8. *See TRANSACTIONAL: Protecting What's Important Without Over-Lawyering,* SHEBAR LAW FIRM, *http://www.shebarlaw.com/PracticeAreas/Transacactional/transactional.html* (last visited January 10, 2014) (explaining Transactional practice as "Protecting What's Important without Over-Lawyering").

9. Ronald J. Gilson, *Value Creation by Business Lawyers: Legal Skills and Asset Pricing*, 94 YALE L.J. 239 (1984); *see also*, William J. Carney et al., *Just Exactly What Does a Transactional Lawyer Do?*, 12 TENN. J. BUS. L. 175 (2011) (arguing that "If the transaction or the organization for whom we are working isn't worth more as a result of our participation, then we're going to lose the work, and we're not going to have very much fun"). In support of his 1984 thesis, he referred to the work of Elinor Ostrom and Oliver Williamson who received the Nobel Prize in Economic Science in 2010. *Id.* They explored that gap due to this absence of a methodology. *Id.*

10. William J. Carney et al., *Value Creation by Business Lawyer: Legal Skills and Asset Pricing*, 12 TENN. J. BUS. L. 175, 179 (2011).

11. *Id.* at 180.

guishes the negotiations in transactions from those in litigation - an important skill is helping to decide whether the transaction should be done at all. If a deal is to be done, then the transactional attorney helps to select "the entity, the scope of the enterprise, the division of control, profits, and risks, and the issues Tina Stark has told us. . . . including provisions for resolving disputes and provisions for parties to exit or to terminate the undertaking."[12]

Good relevant advice is found to be valuable and is the essence of the transactional lawyer's role as counselor and advisor. The Model Rules of Professional Conduct support and provide guidance for this role: "in representing a client, a lawyer shall exercise professional judgment and render candid advice. In rendering advice, a lawyer may refer not only to law but to other considerations such as moral, economic, social and political factors that may be relevant to the client's situation."[13] Often the best advice is from the practical realm. What does the alderman think? How well connected are the parties who may disagree with your client's proposal? The lawyer does not need to advise and caution the client of every possible legal consequence, but of those that could result in adverse consequences if not considered.[14] As this article will show, climate change is an area where asking the "right" questions can add value, including the value of not doing the transaction at all.[15] There is a distinction between the zero sum context of litigation and transactional lawyering. The value added by the transactional attorney is in learning where the value is in a given transaction and facilitating and capturing the value of that transaction while assisting the client to comply with legal limitations and risks. Transactional lawyers identify and help the client to manage the wide assortment of risks that accompany particular transactions. Attorneys reflect the risk management and value-capturing strategies in written instruments. Yet, effective drafting requires that the attorney be an expert in the law and clear as to the client's objectives.[16] The transactional attorney ensures that the client is apprised of and understands all risks involved and the choices available to avoid them.[17]

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12. *Id.*; *see also,* Tina L. Stark, *At the Heart of the Matter: Reading Contracts and Dealing with Risks,* 12 TENN. J. BUS. L. 309 (2013).

13. MODEL RULES OF PROFESSIONAL CONDUCT, 4-5 (2013) [Hereinafter "MRPC"].

14. *Id.* at R. 1.4(a)(2).

15. *See, e.g.,* Carney, *supra* note 10, at 183 (emphasizing the skill of talking to clients to understand their business and goals, and noting in support, that business clients often have a top complaint that their lawyers do not understand their businesses).

16. MPRC, R. 1.1.

17. *See, e.g.,* Barnett v. Schwartz, 47 A.D. 3d 197, 1 (N.Y. App. Div. 2007) (noting that the attorney should have counseled the client against acquiring interest in property for use as a bakery because it was an unusable hazardous waste site).

Additionally, the value of a transactional lawyer will be in reducing what have been termed, "transaction costs." One example of such costs is information asymmetries between the parties to a deal. In a typical acquisition of a business or of commercial real estate the seller may have considerably more information about the condition of the business or the real estate than the buyer.[18] The astute buyer knows about this information asymmetry and acts to reduce the impact of it. One response is to do an investigation – known as "due diligence" by the buyer. A different approach would be to have seller make disclosures including both representations and warranties about the condition of the business or the real estate. Or, the expert lawyer may negotiate both approaches to be performed during the executory stages of the contract. Thus, the transactional lawyer helps to reduce or eliminate the information symmetry and reduce costs to the parties. Less uncertainty and reduced opportunity for strategic behavior means less costly precautions.

As Stephen Bainbridge has explained, "Transactional lawyers therefore must understand the business, financial, and economic aspects of deals so as to draft workable contracts and disclosure documents, conduct due diligence, or counsel clients on issues that require business savvy as well as knowing the law." [19] Manny Halper, long admired for his transactional work and for his commitment to explaining the role of the real estate transactional lawyer, set the tone for the new value added role when he commented, "What then are the roles that the real estate lawyers play? Clients expect real estate lawyers to be business consultants, technical experts, and professional negotiators. To function properly, real estate lawyers must also be legislators, philosophers and applied psychologists."[20] In short the transactional attorney plays many roles.

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18. Stephen Bainbridge, *Journal of Law, Politics, and Culture: The Function of Transactional Lawyers*, PROFESSORBAINBRIDGE.COM (June 8, 2009), http://www.professorbainbridge.com/professorbainbridgecom/2009/06/first-kill-all-the-transactional-lawyers.html.

19. *Id*; *see also*, Crimson Law Group, Practice Areas: Transactional Law, *http://www.crimsonlawgroup.com/practiceareas/transactionallaw* (last visited January 10, 2014) (explaining the role of the transactional/business lawyer and how the firm supports the needs of clients in this area).

20. Emmanuel Halper, *People and Property: The Role of the Real Estate Lawyer*, 13 REAL EST. REV. 14 (Spring 1983); *see also*, Robin Paul Malloy & James Charles Smith, REAL ESTATE TRANSACTION: PROBLEMS, CASES AND MATERIALS: TEACHER'S MANUAL, 3–9 (4th ed. 2013) (describing an excellent transactional framework including the perspective of the three key players in every real estate transaction, the purpose of transaction based upon both the subject of the transaction and the objective of it and transactional planning including dealing with risks, exchange costs, and asset protection.).

C. Focus on the Transactional Real Estate Attorney: A Case Study of the Evolving/Expanding Role of Transactional Attorneys.

The traditional role of the transactional real estate lawyer back in the 1940s and 1950s required little more than completing a conveyance of real estate or mortgage financing. It was an area of practice where attention to detail was the priority and creative insight, so much a part of Gilson's engineering model, was not needed. Many of the most prestigious Wall Street firms either avoided this area of practice or submerged it with others almost to the point of being invisible.[21]

The increasing importance for real estate practice followed as the industry became larger and more complex. Real estate companies went public and national with changes in the law being made to facilitate the needs of the industry. The typical real estate project of today, unlike the project of the past, will rely upon the many aspects of these new laws:

- PUDs and Planned Development Districts in addition to traditional land use regulations
- Condominium and other common interest types of ownership-condos, HOAs, time-shares have become common
- New forms of entities: Limited Liability Companies, single asset LLCs, joint ventures and partnerships to single asset LLCs
- Title insurance endorsements-policies alone are not enough
- New forms of financing: mortgages of course but also equity financing; sale leaseback, ground leases
- New financing sources: conventional lenders, pension funds, foreign investors, securitized loans
- Federal, state and local tax issues including TIFs, real estate tax moratoriums
- Federal securities disclosures
- Federal, state and local restrictions on land along coasts and in floodplains
- Environmental laws and regulation

All of this has had an impact on acquiring, financing, developing, owning, occupying and leasing real estate because they have forced both the client and the attorney to "adapt" to the new laws and to the new realities.

In the past 40 years – with the development of Environmental Law – the changes for the transactional real estate attorney have been as challenging for them as for their clients. The "lust" rules, asbestos containing materials, and brownfield sites all required that science become a part of practice. Soil tests to insure the load

21. Robert Nessen & Stanley Rogalevsky, *The Changing Role of Lawyers in Real Estate Transactions*, 5 REAL EST. FIN. 32 (Spring 1988).

bearing capacity for tall structures built on caissons has long been standard. Now, soil tests include a search for sinkhole prone soils. The impacts of climate change and the need to adapt is the next challenge facing transactional attorneys and their clients.

II. CLIMATE CHANGE IS REAL AND IS CHANGING HOW WE LIVE, WORK AND PRACTICE LAW[22]

A. The Science is Clear: Climate Change is Having Negative Impacts

The science is clear.[23] There is a problem: consequences for natural resources include increased heat, habitat modification, species extinctions, drought, extreme storms, and flooding – all analyzed widely in legal literature. Climate change is mainly due to increased use of energy with CO^2 emissions that have interfered with natural meteorological forces. Recent reports by the world's top climate scientists established a target upper limit on greenhouse gases in order to limit irreversible climate changes. "Climate change is the greatest challenge of our time," said Thomas F. Stocker, co-chairman of the Intergovernmental Panel on Climate Change (IPCC), the UN sponsored group of scientists that produced the report.[24] Nonscientists recognize the impact of climate change and the science causes but mostly focus on the human factor. William Nordhaus, an economist who has studied climate change for more than 30 years, maintains that "global warming begins and ends with human activities. . . Moreover, designing effective measure to slow or prevent climate change requires understanding not only of the physical laws that carbon dioxide obeys, but also the more fluid laws of economics and politics – those that

22. *See* William Nordhaus, THE CLIMATE CASINO – RISK, UNCERTAINTY, AND ECONOMICS FOR A WARMING WORLD, 3 (2013).

23. *See, e.g.*, U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 9 (2009) [hereinafter GLOBAL CHANGE REPORT], *available at http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.* (indicating that the warming of the climate is "unequivocal" and is "due primarily to human induced emissions of heat trapping gases."); *see generally*, Donald J. Wuebbles & Darienne Ciuro, *Radiatively Important Atmospheric Constituents*, in Engineering Response to Climate Change (2013) (discussing chemical constituents and radiative properties that drive climate change).

24. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS. SUMMARY FOR POLICYMAKERS 2 (Stocker et al. eds, *available at* http://www.climatechange2013.org/images/uploads/WGI_AR5_SPM_brochure.pdf. (indicating carefully the qualitative level of confidence from very low to very high); *see also*, Justin Gillis, *U.N. Climate Panel Endorses Ceiling on Global Emissions*, N.Y. TIMES, Sept. 27, 2013, *http://www.nytimes.com/2013/09/28/science/global-climate-change-report.html?ref=justingillis&_r=0* (announcing the new climate change study).

involve human behavior."[25] Thus, carbon increased by use of air conditioning in response to rising temperatures and development along ocean coasts are maladaptive. Nordhaus uses a metaphor of a climate casino that we are entering and rolling the dice. He determines that economic growth is producing unintended consequences that are changing climate and earth systems.[26] In 2008, Roger Pielke already blamed societal change for the disaster losses.[27] He points to "population growth in exposed locations, increasing wealth at risk to loss, and policies that lead to increased vulnerabilities."[28] Anticipating the importance of adaptation, Pielke concludes that "what we build, how we build and where we build"[29] are the most important factors.

Scholars differ in what they focus on to show impact of climate change. Nordhaus uses the rubric of managed[30] versus unmanaged systems[31] to look at agriculture and health as examples of managed/manageable systems and the Ocean and sea level rise as unmanageable and most difficult to adapt to. Yet, the most significant form of adaptation (mainly to increasing temperatures) is air conditioning that produces increased emissions that interfere with mitigation and are the source of the problem. [32] Margaret Spearman and Heather McGray of the World Resources Institute (WRI) reflect the international perspective in warning of potential threats to "human security-reduced agricultural production, heightened water scarcity, exposure to droughts, floods, storms and diseases."[33] Their work develops specific approaches to monitoring adaptation to make sure it is effective. Stephen Miller considers a number of responses to climate change and determines that building sustainable, compact cities is a "foundational component."[34] He explains his conclusion referring to the historical explosion of all cities with only a few exceptions. The urbanization of

25. Nordhaus, *supra* note 22, at 15.

26. *Id.* at 3.

27. Roger A. Pielke, Jr., *Weather-Related Losses in the Built Environment: Societal Change and Climate Change*, 33 REAL ESTATE ISSUES 9, 11 (2008).

28. *Id.*

29. *Id.*

30. Nordhaus, *supra* note 22, at 74 (mentioning how the most managed systems are manufacturing and health care in the economic sector and sleeping and surfing the Internet in the human activities).

31. *Id.* (noting that the most unmanageable systems are hurricanes, sea level rise, wildlife and Ocean acidification).

32. *Id.* at 70.

33. Margaret Spearman and Heather McGray, *Making Adaptation Count-Concepts and Options for Monitoring and Evaluation of Climate Change Adaptation*, Deutshe Gesellshart fur International Zusammenarbeit (GIZ) at 7 (Oct. 2011) *available at* http://www.wri.org/sites/default/files/pdf/making_adaptation_count.pdf.

34. Stephen R. Miller, *The Sustainable, Inevitable Exploding City*, in *Rethinking Sustainability to Meet the Climate Change Challenge*, 43 ENVTL. L. REP. 10342, 10346 (2013).

even third-world countries means that cities will be the place where adaptation can occur with sufficient vigor to make a difference.

1. Identified Risks of Climate Change

WATER SCARCITY AND DROUGHT: Water scarcity and drought are included in the risks associated with climate change.[35] The sand storms in the southwestern part of U.S. (Colorado, Texas, and Arizona) are occurring with regularity to the extent that they can no longer be considered occasional, any more than the 500 year floods in the Midwest that occur every couple of years, but are the "calling card of an emerging climatological crisis."[36] The drought means that farmers are using up much more of the water from the aquifers than the precipitation replaces. Even with so-called dry farming techniques where farmers use only the replaced water each year, a rainfall of fewer than the twenty-five inches necessary to irrigate to grow crops and keep cattle will cause the farming towns to disappear. The drought in other communities has led to forest fires. This affects not only rural areas, but also cities where growing population bumps up against these threats. The economic impact has been quick and severe. For example, in 2011, the drought near Lubbock, Texas was so severe that farmers lost 60% of the cotton crop. With inadequate feed for cattle in Texas, the herd declined by more than one million. Moreover, hydrologists worry that the area is becoming the "epicenter of several overlapping crises."[37] The climate change is also coming just as the huge population shifts. Therefore, agriculture, which in New Mexico has been a user of 75% of the water, now competes with oil, gas, and other industries for the scarce water supply. The result is that "all players, whether small-town water districts or state governments, cities booming on oil revenues or rural hamlets struggling simply to stay alive, are jostling for access to aquifers that aren't generating anywhere near the amount of water they used to."[38] The threat to water supplies will play out in food scarcity.

TEMPERATURE RISING: Rapidly retreating glaciers; thawing permafrost; lengthening ice-free seasons in the ocean, lakes, and rivers; earlier snowmelt during past three decades; and temperatures rising faster in winter than in any other season, with average winter temperature in Midwest and Northern Great Plains more than seven degrees Fahrenheit are all expected to get worse. Justin Gillis of the New York Times is one of many who are tracing the link between rising temperatures and other disaster im-

35. Sasha Abramsky, *Dust Bowl Blues - A Severe Drought in the Southwest is Devastating Crops and Farm Communities – and sending a warning about Climate Change*, THE NATION, Aug. 5–12, 2013, at 14.

36. *Id.* at 15.

37. *Id.* at 17–18.

38. *Id.* at 18.

pacts.[39] He blames the absence of bitterly cold winters (eight degrees Fahrenheit and below) for the survival of the southern pine beetle and its infestation of New Jersey's pine forest (similar to the infestation of the mountain pine beetle in the southwestern part of the country).

WILDFIRES: The root causes of wildfires[40] include prolonged drought, elevated temperatures, high winds, and plentiful supply of vegetation for fuel. The long practiced suppression policy of the period from 1905 to the late 1960s reflected the goal of protecting new development. The result was cutting the acreage burned by half by 1950.[41] The shift in policy of both the National Park Service and the United States Forest Service to allow some burning to go uncontrolled as a form of fire adaptation met with opposition politically. The federal policy had left unattended the problem of increasing amounts of fuel built up during the suppression period. Wildfires increased in severity and in proximity to at-risk wild land-urban interface zones.[42] Firefighting costs will increase as well.

These causes of increasing wildfires parallel the pine beetle infestations in western U.S. and Canadian forests that are blamed for Colorado's fires.[43] Through tracing just one scenario, higher winter temperatures in the in the western United States, one sees the outbreak of the spruce bark beetles, followed by destroyed spruce trees, followed by more wildfires![44]

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39. Justin Gillis, *In New Jersey Pines, Trouble Arrives on Six Legs,* N.Y. TIMES, Dec. 1, 2013, at A.1.

40. Robert B. Keiter, *Wildfire Policy, Climate Change, and the Law,* 1 TEX. WESLEYAN J. REAL PROP. L. 50 (2012) (discussing causes, seriousness, and relationship with climate change and wildfires).

41. *Id.* at 503.

42. *Id.* at 508. (forecasting increasing wildfires especially in the American Southwest due to rise in temperatures, a drier climate, and even the earlier than normal spring green up due to more rain as having the effect of increasing the fuel for the wildfires); *see also,* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *in* CLIMATE CHANGE 2007: IMPACT, ADAPTATION AND VULNERABILITY at 619–620 (reporting that wildfire season is expanding and the duration of burning has increased from 7.5 days to 37.1 days in the last 30 years).

43. Alan Boyle, *Beetle Blame for Colorado's Fires? Climate Change Instead,* NBC NEWS (June 25, 2013), http://science.nbcnews.com/_news/2013/06/25/19120133-beetles-to-blame-for-colorados-fires-blame-climate-change-instead?d=1.

44. Daniel W. Bena, *The Lawyer and the Sustainable Development Practitioner: Is it a Marriage Made in Heaven,* American Bar Association Conference: Environment, Energy, and Resources Law, Utah (Mar. 21–23, 2013) *available at http://abaseerspring.conferencespot.org/paper22/1*; *see also,* Camille Bains, *B.C. Sawmills Close Over Pine Beetle Infestations,* HUFFINGTON POST BRITISH COLUMBIA, Oct. 25, 2013, *available at* http://www.huffingtonpost.ca/2013/10/25/mill-close-pine-beetle_n_4164599.html (indicating the loss of 400 jobs at only one sawmill in Quesnel, B.C.).

SEA LEVEL RISE: The threats from the sea rising is in different places, and these threats have various global impacts. In the United States alone, 50% of the population lives within fifty miles of a coast and the numbers are increasing.[45] Additionally, the uncertainty of the rate of the sea level rise has implications for adaptation.[46] The uncertainty on the rate, as with so much information about climate change, makes the urgency of planning debatable at a time when we need agreement. Island nations like the Marshall Islands (two parallel chains of low-lying coral atolls stretching across 800 miles just north of the equator with an estimated population of 68,000 in 2012) even face extinction as the sea level around the islands rises as a predicted three to six and a half feet by the end of the century.[47] Along with other island nations, the Marshall Islands would lose its sovereignty if and when it loses the objective criteria for statehood. The four criteria include a defined territory, a permanent population, a government, and a certain amount of independence from other nations.[48] Even without such a dramatic consequence of losing its statehood as one expects for the island nation, sea level rising is a very serious concern for those studying climate change, and much of the literature on climate change adaptation and the law responding to it focus on this threat.[49] Fundamentally, government must stop promoting coastal development as the base of economic growth and an expanded tax base because, in reality, such increased development leads to larger and more expensive infrastructure to protect against the dam-

45. *See* National Oceanic and Atmospheric Administration, *The Coastal Community Development Partnership*, *http://coastalmanagement.noaa.gov/partnership.html* (last visited December 2, 2013) (explaining the number of people potentially impacted by rising sea levels).

46. Justin Gillis, *Timing a Rise in Sea Level*, N.Y. TIMES, Aug. 13, 2013, at D6. *available at http://www.nytimes.com/2013/08/13/science/timing-a-rise-in-sea-level.html.*

47. Kristin Choo, *Washed Away- As Sea Levels Rise, Island Nations Look to the Law to Help Fend Off Extinction*, ABA J. (Mar. 1, 2012), *available at* http://www.abajournal.com/magazine/article/washed_away_as_sea_levels_rise_island_nations_look_to_the_law/.

48. *Id.* at 35 (quoting Jenny Grote Stoutenburg, a student from University of Hamburg who develops these criteria further in her quoted material). According to Caleb W. Christopher, legal advisor to U.N. mission of the Marshall Islands, "It would be unprecedented for a nation to lose its statehood because its land actually disappeared. . . . 'There's never been a time when a government – even a small government – has vanished without somebody else coming over and taking over and succeeding it.'" *Id.* at 35.

49. *See* Michael B. Gerrard, *Land Use Controls & Sea Level Rise*, COLUMBIA LAW SCHOOL CENTER FOR CLIMATE CHANGE LAW: ACOEL, Boston Oct. 2013; *see also*, Nick Madigan, *South Florida Faces Ominous Prospects from Rising Waters*, N.Y TIMES, November 10, 2013, *available at* http://www.nytimes.com/2013/11/11/us/south-florida-faces-ominous-prospects-from-rising-waters.html.

ages caused.[50]

The list of other impacts of climate change varies and is long, including the following:

- Extreme weather events: Hurricanes; tornadoes; heavy precipitation and floods
- Threats to ecosystems and biodiversity
- Decreased agricultural productivity and reduced food security
- Energy scarcity
- Transportation risks
- Threats to human health

B. Adaptation to Climate Change: A Working Definition

The opening lines from the report, *Making Adaptation Count*,[51] put the matter of adaptation into a clear context: "Adaptation to climate change is no longer an option. It is a necessity."[52] Before this term can be defined and explained, we need to look at the historical context, which shapes how we view today's world. We should start with the emergence of what we now call Environmental Law that began more than forty years ago when attorneys started to focus on the quality of our air and water.

With the passage of the National Environmental Policy Act of 1969 (NEPA),[53] a national policy was adopted "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."[54] Lawyers have increasingly become aware of sustainability, and realized the idea that by reducing use of the environment we would/could be more, rather than less, livable in the future.[55]

Another term that must be defined is "mitigation." Mitigation refers to the options for limiting climate change by, for example, reducing heat-trapping emissions such as carbon dioxide, methane, nitrous oxide, and halocarbons, or removing some of the heat-trapping gases from the atmosphere."[56] The policy of mitiga-

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50. *See generally*, ANNE SIDERS, MANAGED COASTAL RETREAT – A LEGAL HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS, (Michael B. Gerrard ed., Colum. Ctr. For Climate Change, Colum. L. Sch. 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2349461 (arguing that policies should discourage living near coasts).

51. Spearman, *supra* note 35.

52. *Id.* at 5.

53. National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. § 4321.

54. NEPA, 42 U.S.C. § 4331(a).

55. *See* John C. Dernbach, Lee A. DeHihns, & Ira R. Feldman, *The Growing Importance of Sustainability to Lawyers and the ABA*, 44 No. 6 ABA TRENDS 21 2013, *available at* http://ssrn.com/abstract-2316264 (reporting the ABA resolutions and SEER Activities beginning in 1991).

56. U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE

tion is to reduce atmospheric greenhouse gas concentrations.[57] Yet, in the short run, mitigation will not prevent a significant amount of climate change. The IPCC points out that "anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized."[58] And, while politically this may be a challenging policy to accept, at least it is clear. Robin Kundis Craig concludes, "Climate change mitigation has a known, if politically excruciating, solution – reduce the total concentrations of greenhouse gases in the atmosphere by reducing anthropogenic emissions of those gases."[59]

"Adaptation" is the new word to be defined. Adaptation to climate change is more complicated and less clear than sustainability. Robin Kundis Craig comparing it with mitigation, concludes, "Climate change adaptation, in contrast, requires continually evolving strategies to cope with continually changing locally and regionally specific socio-ecological conditions."[60] The National Research Council working under the direction of Congress "to investigate and study the serious and sweeping issues relating to global climate change and make recommendations regarding the steps that must be taken and what strategies must be adopted in response to global climate change" prepared its report in 2010.[61] It theorizes why climate change adaptation has been neglected in the United States for decades. One reason for this neglect is the fear held by some working for sustainability and mitigation that a focus on adaptation would distract from trying to reduce emissions. Another view is that adaptation alone would be the sole approach to dealing with climate change.[62] This issue has been politicized

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IMPACTS IN THE UNITED STATES 2009 REPORT, at 10-11 (2009) *available at* http://downloads.globalchange.gov./usimpacts/pdfs/climate-impacts-report.pdf; *see also,* Keiter, *supra* note 40, at 512 (2012) (defining mitigation in context of wildfires as involving "reducing carbon emission levels, which entails maintaining our forested landscapes as critical carbon storage sites and utilizing bio-fuels to replace fossil fuels.").

57. J.B. Ruhl, *A Summary of Present and Future Climate Adaptation Law* 5 (Vand. Law Sch. Pub. Law & Legal Theory, Working Paper No, 13-4, Feb. 8, 2013) *available at* http://ssrn.com/abstract_id=2214001.

58. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers, in* CLIMATE CHANGE 2007:THE PHYSICAL SCIENCE BASIS: SUMMARY FOR POLICYMAKERS: CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT, at 2, 12 (2007).

59. Robin Kundis Craig, *The Social and Cultural Aspects of Climate Change Winners*, 97 MINN. L. REV. 1416, 1419 (2013).

60. *Id.*

61. NAT'L RESEARCH COUNCIL, ADAPTING TO THE IMPACTS OF CLIMATE CHANGE 1 (The Nat'l Acads. Press 2010), *available at* http://www.climateneeds.umd.edu/reports/NRC-Adapting%20to%20the%20Impacts%20of%20Climate%20Change.pdf.

62. *See* Edna Sussman et al., *Climate Change Adaptation: Fostering Progress Through Law and Regulation*, 18 N.Y.U. ENVTL. L.J. 55, 56 (2010) (contrasting mitigation efforts with adaptive measures and explaining why policies

by those raising arguments about whether climate change is even "real."

The public perception has now started to change. As Rosina Bierbaum states in the Introduction to Chapter 28 Adaptation "over the past few years, the focus on climate change has transitioned from the question 'Is it changing?' to the equally important question: 'Can society manage the unavoidable changes and avoid the unmanageable?'"[63] The media is also beginning to recognize and publicize the threats from climate change such as sea level rising. A recent article in the New York Times predicts "South Florida's delicate barrier islands, coastal communities and captivating subtropical beaches will be lost to the rising waters in as few as 100 years." [64] The Los Angeles Times recently announced a policy of not publishing letters to the editor that deny the existence of climate change.[65]

The impacts of climate change are many and varied.[66] Impacts vary from location to location. Thus, as J.B. Ruhl comments, "[s]ome locations will have more rainfall, others less; some areas will experience more wildfire, others less; some species will thrive where they did not previously, others will suffer where they once thrived and at every location these conditions could be a moving target of change."[67] Therefore it is not surprising to find a multiplicity of nuanced definitions of adaptation. Those concerned about wildfires explain "[a]daptation represents the principal strategy for addressing the increased wildfire risks associated with warming temperatures; it will involve adjusting management of our forests and grasslands in ways that protect vulnerable communities, valuable resources, and forest ecosystems from devastating fire events."[68]

Adaptation to climate change "refers to changes made to better respond to present or future climate and other environmental conditions, thereby reducing harm or taking advantage of oppor-

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heavily favor mitigation).

63. Rosina Bierbaum et al., Arthur Lee, Joel Smith, *Chapter 28 – Adaptation, Draft for Public Comment*, at 983,984 (Jan. 11, 2013).

64. Madigan, *supra* note 57.

65. *See*, Donald J. Wuebbles and Nancy C. Tuchman, *Weathering the Harsh Truth, It's about time for all of us to act on climate change*, CHI. TRIB., May 31, 2013, at 19 (providing the analysis by a Noble Peace Prize atmospheric scientist of the evidence of climate change in Midwest and Chicago).

66. *See infra* Part II.B.

67. *Id.* at 5-6; *see also*, Daniel W. Bena, *The Lawyer and the Sustainable Development Practitioner: Is it a Marriage Made in Heaven? For Climate Change Adaptation: the Lawyer's Role*, AMERICAN BAR ASSOCIATION CONFERENCE, ENVIRONMENT, ENERGY AND RESOURCES LAW, March 21-23, 2013, *available at* http://abaseerspring.conferencespot.org/paper22/1 (defining adaptation as, "Actions to help the people who share the earth's resources to be able to thrive-environmentally, economically, and socially—in a climate-constrained world. This, in simplistic terms, is adaptation").

68. Keiter, *supra* note 42, at 512.

tunity. Nevertheless, there is a continuing place for mitigation because it is likely that effective mitigation measures will reduce or delay the need for adaptation." [69]

The IPCC defines adaptation as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."[70]

The U.S. Global Change Research Project provides another definition of adaptation: "measures to improve our ability to cope with or avoid harmful impacts and take advantage of beneficial ones, now and in the future." [71] In discussing the variety of forms that adaptation efforts can take, Neil Adger, et al., notes that it includes efforts to "build adaptive capacity and action that efforts can take."[72]

The Center for Progressive Reform (CPR) produces scholarship on topics related to climate change, while "rejecting the view that the economic efficiency of private markets should be the only value used to guide government action."[73] This organization of environmental law professors takes the position that it is too late to stop climate change. Alice Kaswan one of the CPR scholars pro-

69. *Id.* at 11; *see also* Keiter, *supra* note 42, at 512 (noting that adaptation in the context of increased wildfire risk "will involve adjusting management of our forests and grasslands in ways that protect vulnerable communities, valuable resources, and forest ecosystems from devastating fire events").

70. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *INTRODUCTION* TO CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY, 1, 6 (M.L. Parry et al. eds., 2007), *available at* http://www.ipcc-wg2.gov/AR4/website/intro.pdf.

71. U. S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES, 11 (Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, eds., 2009) [hereinafter USGCRB, Impacts in the United States]; *see also*, Donald Wuebbles, The National Climate Assessment: Climate Effects, Vulnerabilities and Adaptation (presentation at 14), (May 2, 2011) *available at* http://www.usc.edu/org/seagrant/research/adaptclimatechngWSpdfs/Wuebbles__02_May_2011.pdf (providing an atmospheric scientist's definition: "adjusting to a changing climate to reduce negative effects and to take advantage of ne opportunities: Limits climate change risks & damages; Maximizes benefits & opportunities; Reduces long-term costs; Improves the overall resilience.").

72. W. Neil Adger et al., *Successful Adaptation to Climate Change Across Scales*, 15 GLOBAL ENVTL. CHANGE 77, 79 (2005) *available at* http://scholar.google.com/citations?view_op=view_citation&hl=en&user=Adshs2wAAAAJ&citation_for_view=Adshs2wAAAAJ:edDO8Oi4QzsC.

73. CENTER FOR PROGRESSIVE REFORM, ABOUT THE CENTER FOR PROGRESSIVE REFORM, *available at* http://progressivereform.org/devDesign/aboutCPR.cfm; *see, e.g.*, ROBERT L. GLICKSMAN ET AL., *Climate Change and the Puget Sound: Building the Legal Framework for Adaptation*, White Paper # 1108 (June 2011) *available at* http://www.progressivereform.org/articles/Puget_Sound_Adaptation_1108.pdf (proposing a way for policymakers to implement adaptation in the Puget Sound Basin).

poses seven principles for achieving fairness in adaptation.[74] She also warns of adaptation/mitigation tradeoff because some mitigation strategies could have maladaptive consequences by increasing greenhouse gas emissions. For example, smart growth to reduce driving could increase urban heat, therefore increasing the need for air conditioning. Making sure adequate air conditioning is available in the face of increasing temperatures could increase greenhouse emissions from production of the energy to run the air conditioning equipment. Robin Kundis Craig goes so far as to argue that climate change means the death of sustainability insofar as the goal of sustainability is to maintain the status quo, which she characterizes as continual socioecological change. [75]

A careful evaluation of the adaptation needs of the oil and gas energy sector by counsel for that industry identifies adaptation methods the sector has undertaken.[76] Clara Poffenberger provides examples of some of these adaptation measures:

- Installation of additional back-up generators to be able to operate pollution control equipment during a system-wide power failure and initiate a controlled shutdown rather than a sudden uncontrolled shutdown of refinery equipment
- Routine removal of temporary contractor buildings/trailers in advance of approaching storm
- Installation of alternative pollution control equipment that allows for continuous fuel loading even with higher vapor pressure fuels
- Permit modifications to permit alternative operating scenarios under hurricane conditions
- Stronger moorings for production platforms
- Deeper pipelines and breakaway joints that shut off the flow if the line is broken
- Large supplies of back-up water, fuel, and other supplies and equipment
- New monitors on platform equipment to track wind

74. Alice Kaswan, *Domestic Climate Change Adaptation and Equity*, 42 ENVTL. L. REP. 11125 (2012) *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2184551; *see also*, Alice Kaswan, *Seven Principles for Equitable Adaptation*, 13 SUSTAINABLE DEV. L. & POLICY 41 (2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2259855 (discussing the principles for domestic climate change adaptation and equity).

75. Robin Kundis Craig, *Rethinking Sustainability to Meet the Climate Change Challenge: Climate Change Means the Death of Sustainability*, 43 ENVTL. L. REP. 10342, 10354 (2013), *available at* http://ssrn.com/abstract=2189530.

76. Clara Poffenberger, For the session Climate Change Adaptation: The Lawyer's Role of the American Bar Association Conference Environment, Energy, and Resources Law: *The Perspective of Counsel for the Oil and Gas Energy Sector*, (March 21-23, 2013) *available at* http://abaseerspring.conferencespot.org/paper23/1.

speed, wave heights, and pitch and roll during a storm
- Relocating critical equipment so that they will not flood, raising the elevation of the equipment
- Installation of insulation and other measures to protect against impacts from longer spells of extreme cold

It is significant that the list is so detailed and obviously will be modified as the risks of climate change vary.

Others see more of an integrated relationship between efforts at sustainability and adaptation. Jessica Owley argues that since the concept of sustainability is "inextricably linked with ideas of planning and management,"[77] sustainability "heightens" the importance of sustainability thinking. It is the management aspect of the sustainability movement that will be useful in adaptation to maintain resilience in systems. Michael Burger decides that "Sustainability is Good" [78]to motivate us "to innovate for greater energy efficiency, to transition to renewable energy economy, to reduce and alter consumption habits to mover roads and fortify infrastructure to account for sea-level rise, to translocate populations. . . from places that are no longer habitable, or even existent, and to take on the myriad other demands of climate change mitigation and adaptation."[79]

The public policy underlying adaptation remains as "reducing vulnerability to harm and increasing resilience to harms that climate change causes."[80] Resilience, especially in the real estate context of the built environment, is the result of successful adaptation. The Rockefeller Foundation identified the five core characteristics of resilient systems: (1) a spare is available when a vital component fails, (2) flexible approach to change and adapt in the face of a disaster, (3) limited failures that prevent such failures from expanding into other systems, (4) a capacity to re-establish function and avoid long-term disruption; and (5) constant learning with new solutions as conditions change (particularly appropriate with the uncertainty of climate change). [81] These apply not only to climate change but to financial crises and epidemic diseases as well.

Adaptation must be further distinguished from mitigation as these terms are applied to business transactions. A major focus of

77. Jessica Owley, *Rethinking Sustainable Development to Meet the Climate Change Challenge: Adaptive Management, Resiliency, and Why Sustainability Discussions Give Me a Headache*, 43 ENVTL. L. REP. 10342, 10348 (2013) *available at* http://ssrn.com/abstract=2189530.

78. Michael Burger, *Rethinking Sustainable Development to Meet the Climate Change Challenge: The Story of Sustainability*, 43 ENVTL. L. REP. 10342, 10357 (2013) *available at* http://ssrn.com/abstract=2189530.

79. *Id.*

80. J.B. Ruhl, *supra* note 59, at 6.

81. Judith Rodin, *Rebound: Building a More Resilient World*, HUFFINGTON POST (January 23, 2013), http://www.huffingtonpost.com/judith-rodin/rebound-building-a-more-r_b_2526870.html.

sustainability and mitigation is reducing energy use and energy costs. The focus is not on what happens to business activity and the built environment as the result of extreme weather events or climate change.[82] However much mitigation is a desired goal, it is too late to avoid the impact of climate change on resilience of the built environment, both in privately owned structures and publicly owned infrastructure.[83] Cinnamon Carlarne warns that "even climate change mitigation efforts are now in a post-cautionary phase" while with adaptation there is "both a need and – at least for a little while - the capacity to create proactive and flexible governance systems."[84] In 2008, Roger Pielke echoed her message, saying, "[t]here is a current adaptation deficit, and practices of maladaptation and unstainable development are serving to increase vulnerability in many places."[85]

The unpredictability of climate change – that is when it will occur, what will be its impact and what type(s) of the adaptation will be appropriate – is an inherent challenge to all planning, both the physical and the legal adaptation to it.

C. Accepted Modes of Adaptation

The timing of adaptation can range from anticipatory/proactive to reactive, responding after the climate change impacts the area. [86] Generally accepted modes of adaptation include: (1) to defend in the place against the impacts of the climate change – for example, with construction of a sea wall to protect the built environment; (2) to retreat from impacts of climate change, such as moving the built environment off flood plains and away from coasts; and (3) to accommodate the impacts in the place such as changing the function of the built environment along the coast

82. *See, e.g.*, Abbi L. Cohen and John M. Ix, Presentation at the American Bar Association Section of Real Property and Trust & Estate Symposium, slide 21: Climate Change Mitigation Efforts and the Effect on Doing Deals in the Commercial Real Estate Sector, (2009) *available at* http://www.americanbar.org/content/dam/aba/events/real_property_trust_estate/symposia/2010/2004.authcheckdam.pdf (pointing out other state and local energy initiatives).

83. Victor B. Flatt & Yee Huang, *Climate Change Adaptation: The Impact of Law on Adaptation in the Private Sector*, 2 (Center for Progressive Reform Briefing Paper No. 1209, July 2012) *available at* http://www.progressivereform.org/articles/Adaptation_Private_Sector_1209.pdf.

84. Cinnamon Piñon Carlarne, *The Future of the UNFCCC: Adaptation and Institutional Rebirth for the International Climate Convention*,49 (Ohio State Public Law Working Paper No. 172, 2012) *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2148438 (citing Lisa Heinzerling, *Climate Change, Human Health, and the Post-Cautionary Principle, O'Neill Institute Papers*, Paper 4 (2007), *available at* http://scholarship.law.georgetown.edu/ois_papers/4.).

85. Pielke, *supra* note 27.

86. *Id.*

to be more resilient.[87] *See* II.C, *infra*. New designs include hurricane proof roofs and elevated structures.

These approaches may be combined and may overlap. The complexity of adaptation to climate change is set up by the likelihood of a variety of impacts even within the same geographical area – e.g. increase in temperatures simultaneously with floods or droughts/fires. Indeed, different levels of government and even non-governmental organizations (NGOs) will need to deal with both the minutia of adaptation and with the need for comprehensive national and international planning.[88]

The variety of modes of adaptation provides additional understanding of adaptation to climate change. Focusing on the maxi view, Neil Adger, et al., includes efforts "to build adaptive capacity and action that implements operational adaptation decisions" and that "[a]ctions associated with building adaptive capacity may include communicating climate change information, building awareness of potential impacts, maintaining well-being, protecting property or land, maintaining economic growth, or exploiting new opportunities."[89] It is noteworthy that this description of adaptation emphasizes informing the general public, as well as by this article, attorneys and policy makers, about the facts of climate change and awareness of its catastrophic impacts. These actions are critical to gaining support for both taking the measures to adapt and the legal response to climate change.

DEFENDING IN PLACE: Examples of defending in place include building structures that reduce the risk of flooding, erosion, or inundation of land and structures.[90] Clara Poffenberger's examples work well to illustrate defending in place as an adaptation.[91] Anne Siders points out that this approach responds to the reluctance of government and property owners to abandon coastal sites or to change uses to those that are more forgiving to floods.[92] Some of these are "soft" approaches like development of the shoreline by growing plants, making marshes and supporting aquatic plants.[93] In comparison, seawalls built from concrete would be "hard" ap-

87. Ruhl, *supra* note 59, at 6.

88. Carlarne, *supra* note 86, at 53.

89. Adger, et al., *supra* note 74, at 79; *see* Carlarne *supra* note 86.

90. Robert R. M. Verchick, What Lawyers Should Know about Adapting to Climate Change 5 (September 6, 2013) (American Bar Association course materials for Conference on Questions for Architects) *available at* http://www.americanbar.org/content/dam/aba/events/international_law/2013/08/section-of-international-law-at-the-aba-s-2013-annual-meeting/090-Verchick-Robert-paper.authcheckdam.pdf

91. Poffenberger, *supra* note 79.

92. Siders, *supra* note 52.

93. U.S. EPA, SYNTHESIS OF ADAPTATION OPTIONS FOR COASTAL AREAS: MANAGEMENT GOAL D:
MAINTAIN SHORELINES UTILIZING "SOFT" MEASURES, 1, 10 (2009), *available at* http://water.epa.gov/type/oceb/cre/upload/CRE_Synthesis_1-09.pdf.

proaches. This resistance may be too costly and inefficient when the approaches must be implemented in a large area. [94]

ACCOMMODATION: Accommodating the impact of climate change refers to the ways humans learn to live with the changes wrought by climate change – excess heat, drought, increases in flooding and the like.[95] Examples include passive cooling technologies in the desert or places where extreme heat makes outdoor activity dangerous to health.[96]

RETREAT: Retreat by requiring and mandating migration of people, communities, and their supportive systems is the most extreme approach to adaptation on an emotional level and hence, a political level. It is the most difficult approach to implement. It may mean not only prohibiting new development, but leaving what has been destroyed behind forever. That the reasons for selecting retreat may vary is shown in the recovery in the Philippines to Typhoon Haiyan, which destroyed the most densely-populated squatter's settlement on land owned by the family of former first lady, Imelda Marcos.[97] The Marcos family wants to block rebuilding by the squatters, saying it is for their own good because even the evacuation center was overwhelmed by the disaster. Yet their sincerity is questioned both because the family has been trying to clear the land of squatters for years and because the government might now buy the land cleared by Haiyan for an extension of the Tacloban airport to accommodate more international flights. Thus, the uncertainty of how the destruction of shelter for 175,000 squatters will be resolved is slowing the recovery from the disaster.

Anne Siders proposes a policy she calls "managed retreat" from the shorelines. Siders noted the benefits of this approach to sea level rise and hurricanes stating, "by building resilience, preventing or limiting coastal development in vulnerable locations and reducing the impact of coastal hazards on infrastructure." She proposes this as contrasted with the more costly coastal armoring over the long run.[98] Sider refers to the Biggert-Waters Flood Insurance Reform Act of 2012[99] as a preliminary matter in the Managed Coastal Retreat Handbook.[100] The key provisions include phasing out subsidies for flood insurance by eliminating newly purchased properties, lapsed policies, and new policies cov-

94. Siders, *supra* note 52, at 2.

95. Verchick, *supra* note 93, at 6.(calling this process, "adjustment").

96. *Id.* at 6 (suggesting the role of the legal system where building codes could require such technology plus capture and reuse of rainwater).

97. Keith Bradsher, *Land Disputes Slow Recovery in Philippines*, N.Y. TIMES, Dec. 13, 2013, http://www.nytimes.com/2013/12/14/world/asia/land-disputes-slow-recovery-in-philippines.html?_r=0.

98. *See generally* Siders, *supra* note 50.

99. *Moving Ahead for Progress in the 21st Century Act*, Pub. L. No. 112-141, tit. IIA (West 2012).

100. Siders, *supra* note 52, at 10.

ering property for the first time.[101] For covered properties, increases in the premium will be range from 20% to 25% per year until all subsidies are eliminated. Effectively, that change means the current rate of $3,600 per year for a $250,000 valued home, would increase to $10,723 per year. Also, mapping of new flood plains by the Army Corps of Engineers would likely make additional properties within the requirements for flood insurance (mortgage lenders require it) even while the new law eliminates all subsidies!

Yet even measures that seem to be less extreme than a formal decision of retreat may in execution prove to result in retreat. For example, by eliminating subsidies for the insured, Biggert-Waters may effectively mean that an owner is not able to afford to continue to live in a flood plain property and that there are no buyers for it either. The current reaction to the federal law, which became effective April 1, 2013, pits the real estate and insurance sectors against each other.[102] The National Association of Realtors (NAR) sent out a Call for Action: Flood Insurance Issues Could Sink Your Sales in November 2013 because "[t]he legally required transition to true risk rates has plagued consumers with increases in rates beyond anyone imagined possible." [103]

CLIMATE MANUFACTURING: Climate Manufacturing is a fourth response to climate change adaptation that is being considered cautiously.[104] Karen Sokol agrees that the warming of the planet is likely to continue, although by how much and how soon is uncertain. She agrees that the outcome will be a "world less friendly to

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101. *Id.*

102. *See* Alan Zibel and Leslie Scism, *Flood Program Puts Industries at Odds,* WALL ST. J., Dec. 19, 2013, http://online.wsj.com/news/articles/SB10001424052702304773104579268620558111400?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702304773104579268620558111400.html (referring to lobbying of real estate agents and home builders that have resulted in Congress' plans to address proposals to delay increases for four years while insurance industry opposes delays).

103. *Call for Action: Flood Insurance Issues Could Sink Your Sales,* REALTOR Action Center (Nov. 19, 2013), http://www.realtoractioncenter.com/news/call-for-action-flood.html. (calling all members of NAR, asking them to contact members of Congress and Senators to support the "Homeowner Flood Insurance Affordability Act" it proposed to delay impact of Biggert-Waters legislation).

104. KAREN C. SOKOL, *The Possibility of Climate Manufacturing and the Need for Global Governance,* THE GLOBAL COMMUNITY YEARBOOK OF INTERNATIONAL LAW & JURISPRUDENCE: GLOBAL TRENDS: LAW, POLICY & JUSTICE ESSAYS IN HONOUR OF PROFESSOR GIULIANA ZICCARDI CAPALDO XXX, 563 (2013)(explaining what climate manufacturing is, why it may be useful response but worrying that it may have the effect of discouraging current efforts at mitigation and adaptation to climate change even when climate manufacturing is itself an unknown quantity which may have serious negative aspects to it).

the human habitation to which we are currently accustomed. . ."[105] She agrees that adaptation and not merely mitigation is needed because both national and international protocols reflecting the science have been resoundingly unsuccessful. This has led to "powerful multinational industries with vested interests in depleting the planet's known (as well as currently unknown) fossil fuel reserves,"[106] and exploring a "'Plan B: manufacturing a cooler climate –rapidly."[107] This option involves geoengineering to moderate global warming and is reported by the respected Royal Society, which includes independent scientists from all over the world.[108] The climate engineering would be in two categories: (1) "carbon dioxide removal (CDR) techniques, which remove CO2 from the atmosphere"; and (2) "Solar Radiation Management (SRM) that reflect a small percentage of the sun's light and heat back into space."[109] Yet, even at this early point in study of this option, the Royal Society is concerned that like global warming itself, the companies providing the geoengineering through SRM will not consider the safety of its products.[110] The Report reveals that there is already investment in the SRM methods, which are particularly attractive to those businesses that benefit from continuing to burn fossil fuels. The Royal Society states that this investment "create[s] the risk that geoengineering activities may be driven by profit motives rather than climate risk reduction." [111] Noting that since the Royal Society Report, there has been increased attention to both the benefits and risks of climate manufacturing as an option for dealing with climate change,[112] Sokol stresses the need for global governance beyond that which is currently in place to deal with the dangers of climate manufacturing. [113]

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105. *Id.* at 564.

106. *Id.* at 565.

107. *Id.*

108. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, IPCC REPORTS: THE ROYAL SOCIETY, GEOENGINEERING THE CLIMATE: SCIENCE, GOVERNANCE, AND UNCERTAINTY, at v-ix (Sept. 2009), *available at* http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/publicaitons/2009/8693.pdf.

109. *Id.*; *see also* U.S. GOVERNMENT ACCOUNTABILITY OFFICE, CLIMATE CHANGE: A COORDINATE STRATEGY COULD FOCUS FEDERAL GEOENGINEERING RESEARCH AND INFORM GOVERNANCE EFFORTS, at 3 (Sept. 2010) (taking the Royal Society's categories of CDR and SRM as base for examining what is known and unknown about the implications of climate manufacturing).

110. *Id.* at 568.

111. The Royal Society, *supra* note 110, at 51.

112. Sokol, *supra* note 107, at 569 (referring to Naomi Klein article in NY Times in late 2012 commenting on this).

113. *Id.* at 570; *see contra*, Jesse Reynolds & Floor Fleurke, *Climate Engineering Research: A Precautionary Response to Climate Change?*, TILBURG LAW SCHOOL LEGAL STUDIES RESEARCH PAPER SERIES, CCLR (Feb. 2013) *available at* http://ssrn.com/abstract=2340906 (making a "prima facie case" for climate engineering and urging testing deployment of SRM methods as a sort of insurance, yet urging a precautionary principle because of the irreversible

D. Economic Costs of Adaptation

An economic analysis of damages caused by effects of Climate Change and the cost of adapting/retreating and who will pay is critical here.[114] In a study commissioned by the British government analyzing the economic costs, the Stern Review predicted that the cost of doing nothing about the climate change would be the same as losing 5-20% of Gross Domestic Product (GDP) annually.[115] A study by the US Geological Survey and the World Bank summarized their findings that an investment of 40 billion dollars could prevent climate change caused damages of 280 billion dollars.[116] Yet, in early 2013, even Nicholas Stern admitted, "I got it wrong on climate change – it's far, far worse."[117] The 2006 Review estimated a 75% chance of an increase in global temperatures of between two and three degrees. Now, he believes we are on track for an increase of 4 degrees. The likely impact on food production is scary.

The economic costs of adaptation to climate change[118] are as important as the damage to the planet – funds to repair, funds to make resilient.[119] It is cheaper to adapt than to respond to catastrophes and disasters.[120] An example provided by Edna Sussman, et al., in considering climate change adaptation in New York demonstrates that government awareness of climate change and adaptation needs as the government plans infrastructure improvements is a positive approach to saving in the long term. The City of Keen, New Hampshire decided to add a larger sized culvert

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nature of much environmental damage for future generations).

114. *See generally* Daniel A. Farber, *Uncertainty,* 99 GEO. L. J. 901, 939 (2011).

115. *See generally* Nicholas Stern, *The Economics of Climate Change: The Stern Review* (2007). http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/sternreview_index.htm.

116. Bena, supra note 46.

117. Heather Stewart and Larry Elliott, *Nicholas Stern: "I got it wrong on climate change – it's far, far worse",* THE OBSERVER, Jan. 26, 2013, http://www.theguardian.com/environment/2013/jan/27/nicholas-stern-climate-change-davos.

118. *See* Frank Brill, *N.J. to ante up $30M to rebuild water infrastructure,* ENVIROPOLITICS BLOG, (June 12, 2013), http://enviropoliticsblog.blogspot.com/2013/06/nj-to-ante-up-30m-to-tebuild-water.html? (reporting that Hurricane Sandy left state of New Jersey with an unexpected $2.6 B bill to repair, rebuild and make the systems more resilient); *see also* Press Release, Munich Re,Natural catastrophe statistics for 2012 dominated by weather extremes in the USA (Jan. 3, 2013) on file at http://www.munichre.com/en/media_relations/press_releases/2013/2013_01_03_press_release (a reinsurer arguing that greater loss-prevention efforts are needed to "protect conurbations like New York better from the effects of storm surges").

119. Stern, *supra* note 117.

120. Donald J. Wuebbles, *Adapting to Climate Change, in* ENGINEERING RESPONSE TO CLIMATE CHANGE, 397 (Robert G. Watts ed., 2012).

at minimal additional cost when it planned a storm water infrastructure improvement. The culvert will respond to "extreme weather events and avoid flooding damage to the community in the future. Building a replacement storm-water infrastructure in the future to deal with such flooding would cost much more than the installation of larger culverts now." [121]

The costs to insure resilience are huge. Munich RE, a reinsurer, reported that the U.S. accounted for a great share of severe weather related disasters in 2012, in part because of devastation of Hurricane Sandy. Worldwide natural disasters caused 160 billion dollars in overall losses of which 65 billion dollars was insured. 67% of overall losses and 90% of insured losses were in the U.S.[122] Can we predict those costs?[123]

Who will pay? Daniel Farber offers four possible principles to allocate the costs of adaptation.[124] It is appealing to have beneficiaries of adaptation pay its costs. It reflects the theory of a market economy – at least until the market is unable to produce what it requires, in which case government comes in.[125] It will be most appealing when those beneficiaries can be easily identified. The second principle is to have the public pay: let the cost fall on the taxpayer. With the federal tax system having some degree of progressiveness, this will achieve the "maximum amount of loss spreading."[126] This approach has lower transaction costs than others, but it may not work well when adaptation causes self-protective action by beneficiaries. Farber's third principle involves a parallel to environmental law – have the polluter (or emitter here) pay.[127] This approach is appealing in providing an incentive for emitters to control and limit their emitting activities and may serve redistributive and loss-spreading goals. [128] However, be-

121. *See* Sussman, *supra* note 62, at 57; *see also* ADAPTING TO CLIMATE CHANGE: PLANNING A CLIMATE RESILIENT COMMUNITY (2007) (explaining the goals for improvements in infrastructure for Keene, New Hampshire); Justin Gillis, *White House Focus on Climate Shifts While Trying to Cut Greenhouse Gases,* N.Y. TIMES, Nov. 1, 2013, *http://www.nytimes.com/2013/11/01/science/earth/white-house-will-focus-on-climate-shift* (explaining the President Obama plan to encourage greater attention to the likely climate conditions of the future, which might require making the structures stronger or larger").

122. Press Release Munich RE, *supra* note 120.

123. *See generally* Elisabeth J. Moyer et al., *Climate Impacts on Economic Growth as Drivers of Uncertainty in the Social Costs of Carbon* (Coase-Sandor Institute for Law and Economics, Working Paper No. 13-02) (concluding that the "greatest uncertainty in the cost of climate change may lie not in the magnitude of the losses at any given time but in how those losses affect growth).

124. Daniel A. Farber, *Adapting to Climate Change: Who Should Pay,* 23 J. LAND USE & ENVTL. L. 1, 26 (2007).

125. *Id.*

126. *Id.* at. 28

127. *Id.* at 29

128. *Id.* at 30

cause emissions remain a problem for so many years, having emitters pay the cost of adaptation could have the effect of making emitters liable for many years into the future. Finally, Farber considers having climate change "winners" pay the costs of adaptation. This is consistent with the just desserts theory. At least in 2006 when the Stern Report was published, possible winners included high latitude regions like Canada and Scandinavia, which might have increased agriculture yields due to increased temperatures.[129] Critics of this approach point out that there is little to no incentives to emitters, and because the countries winning have small populations, it is not an ideal way to spread losses.[130]

Cinnamon Carlarne, "grieving" for the ineffectiveness of the United Nations Framework Convention on Climate Change (UNFCCC),[131] argues that the current crossroads will require multiple pathways at different levels, rather than one "right" pathway. She is hopeful that the future will develop and meet the goals set at the Copenhagen Climate Conference that produced the Copenhagen Accord in 2010.[132] Especially by laying the groundwork for the Green Climate Fund, the Copenhagen Accord will provide a "more nimble financing institution but also a type of clearing house for information. . ."[133] The disconnect between the fact that local/municipal governments may be best suited to implement adaptation efforts, but not necessarily be best at funding them, is discussed by the Climate Change Adaptation Task Force, which was created by Mayor Bloomberg in 2008 to develop adaptation strategies to secure the city's infrastructure from threats of climate change.[134] This report adds to the polycentric perspective here.

Global Risks 2013 8th Edition by World Economic Forum concludes that the persistent economic fragility globally plus environmental resistance to climate change especially for infrastructure is considered to be among those global risks considered to be the most likely to materialize within a decade and are dangerous.[135] "Economic difficulties worldwide are continuing to make greater demands on political attention and financial resources. Meanwhile, the impact of climate change is more evident as tem-

129. Stern, *supra* note 117, at 138.

130. Farber, *supra* note 126, at 34.

131. Carlarne, *supra* note 86, at 34.

132. *Id.* at 12.

133. *See id.* at 24 (pointing to the expected responsiveness of the Fund to the "decentralized and heterogeneous manner in which climate change laws and policies have evolved.").

134. Sussman, *supra* note 64, at 135 (2010).

135. *See Global Risks Report 2013* - Eight Edition, WORLD ECONOMIC FORUM, at 60, *available at* http://www.weforum.org/reports/global-risks-2013-eighth-edition (last visited Oct. 28, 2013) (analyzing 50 global risks in terms of impact, likelihood and interconnections, based upon survey of over 1000 experts from industry, government and academia).

perature rises and more frequent extreme weather events loom on the horizon. The economic and environmental challenges require both structural changes and strategic investments, but are countries prepared to manage both fronts, conceivably at the same time?"[136]

Moreover, the cost of inaction and delay in adaptation is enormous. The Stern Review, a study commissioned by the British government that analyzed the economics of climate change, estimated that the overall cost and risks of inaction would be equivalent of losing 5-20% of the GDP each year.[137] Ahead of the United States, countries in Europe have been studying climate change and adaptation to it.[138] The checklist developed by the Greater London Authority in 2005 reflects its conclusion that "[t]he impacts of climate change will increasingly affect the integrity of the built environment unless action is taken now. New buildings need to be able to withstand the impacts of climate change over the next 50 to 80 years to guarantee their long term sustainability."[139] A 2004 report out of the United Kingdom compares the economic value of climate change impacts with the costs of adaptation.[140] The Ceres report, Inaction on Climate Change: The Cost to Taxpayers, concludes, "[a]ctions to prevent and reduce damages from extreme weather events not only protect people and property, they are a sound investment: $1 spent on prevention save $4 in damages." [141]

Increasingly, Investors move climate change risks up towards the top of their agenda.[142] *See also* Part V.B. *supra*. As investors

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136. *Id.* at 16.

137. Stern, *supra* note 117; US Geological Survey and World Bank, an investment of $40B to reduce disaster risk could prevent disaster losses of $280B. Waskow, 2009 Testimony before the Subcommittee on Energy and Environment, House Energy & Commerce Commission, U.S. House of Representatives; *see also*, Wuebbles, *supra* note 122.

138. *See, e.g., Adapting to Climate Change: A Checklist for Development-Guidance on Designing Developments in a Changing Climate,* SE. CLIMATE CHANGE P'SHIP & LONDON CLIMATE CHANGE P'SHIP (Nov. 2005), www.climatesoutheast.org/uk/images/uploads/Adaption_Checklist_for_Development_Nov_2005.pdf (according to the Introduction, this publication is "primarily aimed at developers, their partners, design teams, architects, surveyors and engineers, but it is also expected to be useful to those with the wider development community, including investors, land purchasers, insurers and lawyers, as well as planners and experts from, for example, the Environment Agency").

139. *Id.*

140. *Costing the Impacts of Climate Change in UK: Implementation Guidelines Final Report,* The U.K. Climate Impacts Programme (June 18. 2004), www.ukcip.org.uk/resources/publications.pdf.

141. Nancy D. Israel, *Inaction on Climate Change: The Cost to Taxpayers,* CERES, at 3 (Oct. 2013), http://www.ceres.org/resources/reports/inaction-on-climate-change-the-cost-to-taxpayers/view.

142. Helga Birgden, *Climate Change Risks move UP the Investment Agenda-2013 Global Climate Change Survey,* MERCER (Sept. 26, 2013),

become more aware of climate change risks on their business, the understanding of the totality of costs will be more predictable and more worrisome.[143] Again, the British have been aware of this important concern for business. In 2005, *A Changing Climate for Business*, examined the implications for investors. [144] Others have begun to examine adaptation in the context of particular places. For example, Donald Wuebbles who was awarded the Nobel Peace Prize with Al Gore in 2007 uses Chicago as the context in which to propose how to make adaptive changes.[145]

The limitations of studying these costs are developed in a thoughtful article by Daniel A. Farber.[146] He emphasizes the problems that the "uncertainty" of the perils threatened by climate change cause for policymakers.[147] He uses the definition of uncertainty provided by economists, where the likelihood of catastrophic outcomes is not quantifiable.[148] This is to be distinguished from the concept of "risk" where the likelihood is quantifiable. He cites to the proposals of Cass Sunstein for a number of different versions of what he calls the "catastrophic risk precautionary principle" which even to Sunstein, though a long-time critic of the precautionary principle, may consider those of climate change differently.[149] Especially when precautions are to be undertaken given a wide range of possibilities from temperature increases to sea level rising to floods to droughts, even scientists struggle to provide accurate predictions of what catastrophes will occur and how to adapt to these (assuming that we are past the point of preventing them). It is difficult to estimate economic costs of adaptation or to compare cost of adaptation with the cost of increased catastrophes without adaptation.

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http://www.mercer.com/articles/155665.

143. *See id.*

144. Gerry Metcalf, Kay Jenkinson & Kay Johnstone, *A Changing Climate for Business*, THE UK CLIMATE IMPACTS PROGRAMME, at 9 (June 2010), www.ukcip.org.uk/resources/publications/documents/99.pdf.

145. Wuebbles, *supra* note 122, at 401-412.

146. Farber, *Uncertainty*, *supra* note 116 (2011).

147. *See* Sussman, *supra* note 64, at 61 (citing S.F. Cal., Environment Code § 101 (2003), which states,

> [w]here threats or serous or irreversible damage to people or nature exist, lack of full scientific certainty about cause and effect shall not be viewed as sufficient reason. . .to postpone cost effective measures to prevent the degradation of the environment or protect the health of its citizens. Any gaps in scientific data uncovered by the examination of alternatives will provide a guidepost for future research, but will not prevent protective action being taken

urging not waiting for all the facts about the impact of climate change and adaptation in developing new laws because of the delay between recognition of those facts and appropriate legal response).

148. Farber, *supra* note 116, at 901.

149. *See id.* at 919 (citing Cass R. Sunstein, *The Catastrophic Harm Precautionary Principle*, ISSUES LEGAL SCHOLARSHIP (2007), http//www.bepress.com/ils/iss10/art3).

How the costs of recovery and adaptation will be paid for remains unclear. In the U.S. it seems that many expect the federal government to pay for a large part of their losses from climate change disasters like Hurricane Sandy.[150] However, limits of the Stafford Act[151] require funds to be used only to restore facilities to their pre-disaster condition, not to make improvements or adaptations that might support resiliency in the future. Critics of the federal program under FEMA report that most of the money kicks in only after a disaster and it does not take into account whether houses in a floodplain should be restored in the long run. [152]

Calls for insurance to pay for damage to businesses and real property are louder and more frequent. The National Flood Insurance Program, created in 1968 and later mandating flood insurance for everyone with a federally backed mortgage situated on a 100-year floodplain in 1973, also suffers from short-sightedness of high federal subsidies for the insurance. This encourages people to build and stay in areas of high risk, including areas affected by sea level rising.[153] Reform legislation in effect April 1, 2013 eventually brings the 400,000 homes in the program up to market rate premiums. The new law for the first time requires the floodplain maps prepared by the Army Corps of Engineers to take into consideration "future changes in sea levels, precipitation and intensity of hurricanes."[154] However, even this innovative legislation has prompted political opposition once its impact on value of the real estate affected was appreciated. The National Association of Realtors warned that additional time was needed to study the impact on fair market value and marketability of real estate in the new flood plains and at the new premium rates lest many properties have premiums so high as to discourage buyers.[155] The National

150. Howard Kunreuther & Erwann Michael-Kerjan, *A Proposal for Insuring Public Facilities and Infrastructure Against Disaster Losses,* HUFFINGTON POST (Oct. 29, 2013), *available at* http://www.huffingtonpost.com/erwann-michelkerjan/a-proposal-for-insuring-public_b_4174643.html

151. 42 U.S.C. § 5121.

152. *See* Kate Sheppard, *Under Water – Flood, Rebuild, Repeat: Are We Ready for a Superstorm Every Other Year?,* MOTHER JONES (July 29, 2013), *available at* http://www.motherjones.com/environment/2013/07/hurricane-sandy-global-warming-flooding?page=2 (quoting Rep. Earl Blumenauer, (D-Ore.) (commenting on the "Sandy relief package passed by the House [of Representatives], nearly three months after the storm . . . [b]ut we really didn't condition the recovery on making sure that we minimize people going back in harm's way").

153. *Id.* at 25.

154. *Id.* at 61. (however, these new maps which will determine which properties must have flood insurance will not be mandated in the current map changes, the first in 30 years).

155. *See* Realtor Action Center, *Call for Action: Flood Insurance Issues Could Sink Your Sales,* NATIONAL ASSOCIATION FOR REALTORS, Nov. 19, 2013, http://www.realtoractioncenter.com/realtor-party/act/calls-for-action.html (asking them, all members of NAR via email, to contact members of Congress and Senators to support the "Homeowner Flood Insurance Affordability Act" that

Association of Mutual Insurance Companies proposed that the government directly assist lower-income consumers unable to afford the new premiums.[156]

Howard Kunreuther of the Wharton School of the University of Pennsylvania Risk Management and Decision Process Center proposes that states and local governments purchase insurance to protect their infrastructure assets.[157] They suggest a combination of such insurance and loans as a way to finance restoration and adaptation. They report on the example of the New York Metropolitan Transit Authority (MTA) after Hurricane Sandy as a success story. With 4.8 billion dollars in damages to railroad and subways, tunnels, stations and other equipment, MTA was able to rely on an insurance policy of 1 billion dollars to cover. Nevertheless, even that approach is not hopeful because MTA was unable to renew its insurance! The only policy available was for half the coverage and at twice the price.[158]

Sean B. Hecht has suggested that the role of insurers may be so significant that the insurance industry globally may play a quasi-regulatory role as limits and incentives for covering climate change risks are developed.[159] Where players are often large international firms with significant control of the market, the insurers can use contracts to achieve adaptation to climate change goals that government has not, and perhaps cannot, achieve. Such private governance already is felt in the area of environmental regulation where insurance firms provide a quasi-regulatory function.[160]

Other possible sources for financing include the bond market with investors in the financial markets offering catastrophe bonds. The bottom line: the economic response like that of technology and the law is unclear and in flux.

E. Positive Impacts of Climate Change? Really?

Finally in preparing to counsel clients about adaptation to climate change, we need to realize that adaptation is not just recovering from harm, there are and will be benefits and opportuni-

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the NAR had proposed to delay impact of Biggert-Waters legislation) (copy on file with author); *see also*, J. Peter Byrne, *The Cathedral Engulfed: Sea –Level Rise, Property Rights, and Time,* 73 LA. L. REV. 69, 84 (2012) (discussing how eventual elimination of insurance subsidies "should encourage retreat from rising seas and the choice to live further inland").

156. *See* Zibel, *supra* note 105.

157. Howard C. Kunreuther & Erwann O. Michel-Kerjan, A Proposal for Insuring Public Facilities and Infrastructure Against Disaster Losses, Huff Post Business (Nov. 27, 2013), *available at* http://www. Huffingtonpost.com/erwann-michelkerjan/a-proposal-for-

158. *Id.*

159. Sean B. Hecht, *Climate Change and the Transformation of Risk: Insurance Matters,* 55 UCLA L. REV. 1559, 1613 (2008).

160. *Id.* at 1614.

ties from climate change.[161] For example, economists had made predictions of an overall positive effect on agriculture in the U.S. from increased temperatures.[162] J.B. Ruhl refers to this group as "climate change winners." He warns that although current policy is about limiting the number of climate change losers, the future will be about dealing with the emerging group of climate change winners.[163] Robin Kundis Craig agrees with Ruhl: "some localities will generally profit from these shifts even as others (arguably most, especially as climate change progresses) become steadily or abruptly worse off."[164] Craig admits that even within communities that are generally worse off because of climate change, "some individuals and businesses are still likely to benefit – again, at least in the short run." [165] Still, Craig cautions that the wrong people may emerge as the winners and that those may become "political forces in their own right, rational or irrational as they may be."[166] These "bad" winners are perceived as winning at the expense of others. Likely examples of such bad winners are likely to include those who take advantage of the stresses on the water supply caused by climate change and the geo-engineers who seek to undo some of the impacts of climate change for their own benefit. [167] Craig argues that a social capital response is appropriate. Without any specific proposals for responsive law, Craig proposes that in thinking about climate change beneficiaries "we need to consider which kinds of beneficiaries the law should be seeking to constrain – and which kinds the law might need to protect."[168]

Attorneys should facilitate the process by which their clients will achieve these positive impacts of climate change as well.[169] Yet, positive predictions, particularly in the long term, are now being questioned in light of other climate change impacts like hurricanes, droughts and floods.[170] For example, recent reports by sci-

161. *See* Ruhl, *supra* note 59; *see also,* Craig, *supra* note 61.

162. *See* Farber, *Uncertainty*, *supra* note 116 (quoting Olivier Deschenes & Michael Greenstone, *The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather,* 97 AM. ECON. REV. 354, 377, 381 (2007) (where it predicts that overall profits will increase 4% but that California could lose up to 15%. Moreover, the study did not include possible impacts of extreme events like storms and droughts).

163. Ruhl, *supra* note 59, at 206.

164. Craig, *supra* note 61, at 1417.

165. *Id.*

166. *Id.* at 1422 (comparing climate change with the recent mortgage crisis and the financial crisis of 2008-09).

167. *Id.* at 1426-1427 (reporting the California businessman who chartered a boat, loaded with 100 tons of iron dust and spreading it on Pacific Ocean in an attempt to grow plankton for a native Canadian group even though scientists and both the Canadian and US governments condemned this experiment).

168. *Id.* at 1430.

169. Verchick *supra* note 93, at 2.

170. *Id.* at 5.

entists predict that globally the rising temperatures (which had been seen as beneficial for crops) will make it harder for crops to thrive.[171]

F. Barriers to Adaptation

Coming from the scientific perspective, Rosina Bierbaum points to obstacles that can impede efforts to achieve resilience.[172] These include "difficulties in using climate change projections for decision-making; lack of resources to begin and sustain adaptation efforts; fragmentation of decision-making; institutional constraints; lack of leadership; and divergent risk perceptions/cultures and values."[173] She provides a well-developed chart[174] for all of these barriers. She reflects the extent to which the science community has gone beyond the technical aspects of climate change and adaptation to consider other practical impediments to adaptation. It suggests that those of us in other professional fields need to pay attention to the excellent work of scientists.

III. ADAPTATION TO CLIMATE CHANGE IS A CATALYST TO THINKING ABOUT EMERGING LAW

Two years before Hurricane Sandy, Edna Sussman, who was the lead for the New York City Panel on Climate Change, and David C. Major of the Columbia University Earth Institute Center for Climate Systems warned that "adaptation is thus essential to effective climate planning."[175] Climate change's paradigm where the past does not predict the future offers suggestions and predictions about how the legal system will respond and support adaptation to climate change. These responses will vary given the likely polycentrism of the law. The National Research Council suggests that it will be more economically effective and less expensive to mainstream adaptation considerations into decisions with climate-sensitive outcomes. Examples include the reauthorization of laws affecting land use and water, the National Flood Insurance Program,[176] or the Coastal Zone Management Act.[177] Given its concern lest adaptation actually encourage additional development in threatened areas, the National Research Council calls for "retroactive" codes to force existing landowners to make the changes or re-

171. Justin Gillis, *Climate Change Seen Posing Risk to Food Supplies*, N.Y. TIMES, Nov. 1, 2013.

172. Bierbaum, *supra* note 65, at 1004.

173. *Id.*

174. *Id.* at 1005.

175. Sussman, *supra* note 64, at 60.

176. *See* National Research Council, *supra* note 63, at 154-55 (offering a case study in innovative adaptation for the National Flood Insurance program that was largely adopted in amendments effective April 1, 2013).

177. *Id.* at 123; *see also*, Siders, *supra* note 52, at 9–13.

treat.[178] This is harsh but economically effective.

J.B. Ruhl's chapter in the excellent ABA book on adaptation to climate change[179] breaks down the very few existing legal changes into five categories: "(1) coastal land use controls; (2) environmental impact assessment programs; (3) corporate disclosure requirements; (4) endangered species protection; and (5) anti-adaptation measure."[180] Some aspects, current theories, and scholarship are necessary to provide a backdrop/perspective to understand the law as it evolves in response to climate change adaptation.

A. Some Legal Scholarship Looks at Particular Disastrous Outcomes of Climate Change or on Particular Business Types[181] to Determine What Changes in the Law are Appropriate

Some legal scholars have focused on particular impacts of climate change such as sea level rise and wildfires in looking for a legal response. J. Peter Byrne has argued that the legal adaptation to climate change (in particular, sea level rising) does not "seek to mitigate or stop climate change but rather seeks to change legal regimes to cope with its physical consequences"[182] Byrne focuses on regulatory takings law and proposes approaches to this, rather than specific regulatory proposals. He seeks to identify issues with the new regulatory regime even before it is clear. Byrne expects that as with any property disadvantaged by legal change, those who are affected by land use regulation responding to climate change will prompt owners to claim takings and seek compensation.[183] Byrne argues that the United States Supreme Court has "pursued an ideal of essential, or natural, property right unchangeable without compensation. . . ."[184] Byrne further argues that the current absurd regulatory takings doctrine will need to change and become more flexible, evolving with the ecological change which sea level change will involve.[185]

In an article written for real estate attorneys, focusing on the threat of sea level rise, Sorell E. Negro refers to President Obama's June 2013 speech announcing the federal government's Climate Action Plan.[186] She proposes four ways for state and local

178. *Id.* at 130 (though all suggestions by National Research Council are tempered with provisions for long-term loans to comply).
179. J.B. Ruhl, *supra* note 59.
180. *Id.*
181. Poffenberger, *supra* note 79.
182. Byrne, *supra* note 157, at 70.
183. *Id.* at 72.
184. *Id.*
185. *Id.*
186. Sorell E. Negro, *Preparing, Adapting, and Rebuilding- Rising Sea Levels Raise New Legal Issues,* PROBATE & PROPERTY, at 55, Nov., Dec. 2013, *available at* http://www.americanbar.org/publications/probate_property_magazine_2012/20

governments to address that threat. First she predicts that beach re-nourishment will continue even though it is expensive and must be repeated over and over to restore beaches damaged by erosion. Retreat is likely a second governmental response to sea level rising.[187] Retreat would involve the government buying homes in vulnerable areas and allowing the shores to slowly and naturally move inward. For those who are reluctant to move, government may use eminent domain power to force retreat. This would result in new issues of valuing the real estate – what fair market value is relevant? Building and maintaining hard structures like seawalls have been the traditional responses to sea level rise.[188] As sea levels rise, additional coastlines will need this protection, but such hard structures have cumulative negative impacts on the shoreline and actually increase the intensity of storms![189] Finally, Negro argues that collection of more local data and more research is necessary to understand the key issues about sea level rising.[190] According to Robert B Keiter the increased risk of wildfires due to climate change[191] has resulted already in significant adaptive responses at the state level: strict zoning, and building and property maintenance standards for development in the "wildland-urban interface (WCI) zone.[192]

B. Other Scholars Consider the Limitations of Our Current Legal System Generally on Adaptation to Climate Change

Because of the durability of greenhouse gases, already emitted climate change will still occur even if we reduce emissions dramatically. The dimension of time is a conceptual challenge to thinking about what needs to be done and when it needs to be

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13/november_december_2013/2013_aba_rpte_pp_v27_6_article_negro_preparing_adapting_and_rebuilding.html (noting that "[s]ticking your head in the sand might make you feel safer, but it's not going to protect you from the coming storm. And ultimately, we will be judged as a people, and as a society and as a country on where we go from here.").

187. *Id.* at 57.

188. *Id.*

189. Laura Whalen et al., *Strategic Planning for Living Shorelines in the Delaware Estuary*, NAT'L WETLANDS NEWS, at 14, Nov.Dec. 2012, *available at*http://delawareestuary.org/sites/default/files/FinalLSarticle_EnvLaw_2012.pdf.

190. Negro, *supra* note 186, at 59 (citing Conn. Special Act No. 13–9, Para 1(1) (2013), *available at* www.cga.ct.gov/2013/act/sa/pdf/2013SA-00009-R00SB-01013-SA/pdf (requiring the Connecticut Department of Energy and Environmental Protection and the University of Connecticut to conduct and report "research, outreach and education projects to guide the development of technologies and regulatory provisions that increase the protection of ecosystems, coastal properties and other lands and attributes of the state that are subject to the effects of rising sea levels").

191. Keiter, *supra* note 42.

192. Robert R. Keiter, *The Law of Fire: Reshaping Public Land Policy in an Era of Ecology and Litigation*, 36 ENVTL. L. REV. 301, 358–65 (2006).

done, whether we are dealing with sea level rising or extreme weather.[193] The future of harm and the inappropriateness of the assumption of stationarity in the physical effects of climate change will dramatically affect the laws and legal system.

The concept of stationarity, which is "the idea that natural systems fluctuate within an unchanging envelope of variability,[194] has been judged to be inapplicable in the era of climate change but stationarity has suited environmental law fairly well. Scientists warn that the future will have no comparison with the past when dealing with climate change. Ruhl explains, "[e]cologists now warn of the no-analog future-ecological variability unprecedented in the history of ecology, riddled with nonlinear feedback and fee-forward loops, previously unknown emergent properties, and new thresholds of irreversible change."[195] Ruhl sees the need to examine the extent to which and if the social systems, in particular the legal system as it currently is fashioned, can stretch. He wonders whether we need to move away from the engineering resilience strategies towards the ecological ones, which "build adaptive capacity into the system."[196]

Rosina Bierbaum, et al., list "institutional constraints" that are barriers to adaptation including:

- Lack of institutional flexibility
- Rigid laws and regulations
- No legal mandate to act
- Use of historical data to inform future decisions
- Restrictive management procedures
- Lack of operation control or influence[197]

Jessica Owley notes that environmental law provides no parallel for climate change adaptation law as it develops. Compared to the law, which likely will respond to climate change, environmental law is static. She argues that when we set static rules regarding the land (e.g. our policy of land conservation focuses mainly on creating park-like areas where development is not permitted),[198] we may have the future in mind, but we do not include mechanisms to reexamine those rules or management strategies. The result is an extreme focus on fixed points that will not meet the requirements of adaptation to climate change, which brings so much uncertainty with it. Owley sees a necessary shift to resiliency so that, for example, environmental protection will

193. *Id.* at 72.

194. *See* 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, 1394 (2011) (quoting P.C.D. Milly et al., *Stationarity is Dead: Whither Water Management?*, 319 SCIENCE 573 (2008).

195. *Id.* at 1394.

196. *Id.* at 1395.

197. Bierbaum, *supra* note 65, at 983, 1005.

198. Owley, *supra* note 78, at 10349.

not be "an effort to retain ecosystems and amenities in their current state. . ."[199] Under this, resilience means continual efforts at assessing the system and response to changes which are not static.

C. Scholars Wonder Whether Concepts of Resilience and Adaptive Capacity in the Natural and Social Sciences are Useful/Relevant for Development of Laws to Deal with Adaptation to Climate Change

Legal scholars have begun to look at science, both natural and social science, for insight on how resilience and adaptive capacity might apply to the development of the law of climate change. J. B. Ruhl examines resilience in the context of science and suggests how the thinking there can apply to designing of law and legal systems.[200] In science, resilience is the "capacity of a system to experience shocks while retaining essentially the same function, structure, feedbacks and therefore identity."[201] He distinguishes between what is called engineering design which emphasizes a return to an equilibrium or a steady state after a disturbance[202] with ecological resilience design. The traditional engineering approach to resilience depends upon "reliability, efficiency, quality control and similar strategies,"[203] which focus on returning to equilibrium. In contrast, ecological resilience design values absorbing a disturbance without having its fundamental behavioral structure redefined.[204] It depends upon adjustments to system processes to manage the disturbance. Ecological resilience design works better when there is high variability and low predictability. This is the precise situation climate change presents. Ruhl sees a place for the engineering resilience design in legal systems in the legal system's underlying structure and processes such as the United States Constitution and the judicial decisions applying the design, which remain remarkably consistent. Ruhl cites the American common law system as an example of ecological resilience design when he suggests the highly dispersed judicial system with a capacity to respond to changing circumstances in different places is the basis for a resilient approach where there can be change without altering the underlying legal structure and process.[205] While he acknowledges that the engineering resistance approach can be

199. *Id.*
200. Ruhl, *supra* note 195.
201. *Id.* at 1375-76 (quoting Brian Walker et al., *A Handful of Heuristics and Some Propositions for Understanding Resilience in Social-Ecological Systems,* ECOLOGY & SOC'Y (June 2006), *available at* http://www.ecologyandsociety.org/vol11/iss1/art13/ES-2005-1530.pdf).
202. *Id.* at 1376 (citing many science articles that discuss the theory of system resilience at footnotes 7–9).
203. *Id.*
204. *Id.* at 1377.
205. *Id.* at 1381.

useful even in a legal system (e.g. in environmental law the question has become whether it is possible to fashion a usable system based upon a "series of abstract substantive principles").[206] Ruhl argues that conditions of "high variability and low predictability point in the direction of ecological resilience strategies as the default design rule"[207] for climate change adaptation law. It is not surprising that he prescribes and predicts that the evolving law of climate change will avoid "rigid standards and comprehensive rational planning, relying instead on experimentation using continuous monitoring, assessment, and recalibration." [208]

Reflecting on the work of Robin Kundis Craig,[209] Robert L. Glicksman,[210] and his own work,[211] Ruhl outlines principles for climate change adaptation law.[212] In predicting that the legal systems most likely to be challenged by climate change are environmental law and water law, he first argues that the current approach of "comprehensive rational planning" and so-called "front-end" processes to make decisions will need to be modified/replaced by laws that recognize that not all effects can be predicted and assessed *before* each decision is made. Following the, the "dynamic, learning-oriented decision process," which Daniel Farber proposes,[213] lawmakers will be required to integrate new information continuously. Second, Ruhl also expects that "new governance theory," with its emphasis on stakeholder participation, collaboration, and flexibility, will suit adaptation to climate change law because it will allow a broader group of approaches than the current rigid system that relies on uniform regulation.[214] Third, Ruhl calls for what has been termed, "dynamic federalism" which invokes overlapping federal, state, and even local jurisdictions.[215] That approach recognizes that local, state and federal governments will need to respond to climate change, and that to continue to act as if there is and should be a specific, unchanging authority for each

206. *Id.* (discussion based upon work of Bruce Pardy and A. Dan Tarlock).
207. *Id.* at 1387.
208. *Id.* at 1390.
209. Robin Kundis Craig, *"Stationarity is Dead" – Long Live Transformation: Five Principles of Climate Change Adaptation Law*, 34 HARV. ENVTL. L. REV. 9 (2010).
210. Robert L. Glicksman, *Ecosystem Resilience to Disruptions Linked to Global Climate Change: An Adaptive Approach to Federal Land Management*, 87 NEB. L. REV. 833 (2009).
211. J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363 (2010).
212. Ruhl, *supra* note 195, at 1395–1402.
213. *Id.* at 1396 (explaining the alternative process for decision, called "climate impact assessments" by Daniel Farber); *see also*, Daniel A. Farber, *Adaptation Planning and Climate Impact Assessments: Learning from NEPA's Flaws*, 39 ENVTL. L. REP. NEWS & ANALYSIS 10605 (2009) (addressing climate impact assessments).
214. Ruhl, *supra* note 195, at 1397.
215. *Id.* at 1397–1398.

level of government is not useful in this context,[216] since governments at different levels interact to meet the needs of society.[217] Finally, Ruhl predicts that the transgovernmental networks approach one sees in the context of international law is an appropriate one for adaptation to climate change.[218] This theory of lawmaking emphasizes the important role of "similarly situated technocrats" who care less about their own silo and who are willing to function together in an "organic enterprise."[219]

While the transgovernmental model is subject to the charge that it is not efficient and is indefinite, Ruhl argues that those would be good qualities for the "high variability and low predictability"[220] which it would address in regards to climate change. The shift from the business as usual/engineering resilience model to the proposed ecological resilience design model of law, which would develop through a dynamic federalism and transgovernmental approach to climate change, will not be easy or direct. Because the death of stationarity in ecological systems, for example, is only beginning to be accepted, there may be resistance to recognizing the need to reflect stationarity's death in terms of the law. Ruhl predicts success in developing a "fundamentally different set of legal structures and processes"[221] when (and if) climate change disrupts our current concepts of variability and predictability.

D. Scholars Consider Whether a Separate or Distinct System of "Adaptation to Climate Change" Law is Likely to Develop or Whether Instead the Special Aspects of Adaptation Will be Reflected in Legal Changes that are More Similar to the "Law of the Horse"

J.B. Ruhl and James Salzman have written an excellent article to consider an important question about how the law will evolve in response to climate change adaptation.[222] They mention six fields of law each of which could be disrupted in the case study of coastal sea rising: Environmental Law; Water Law; Land Use Law; Agricultural Law; Insurance Law, and Littoral-Property Rights. [223] They raise the question about how the law adapting to climate change will be organized and suggest two possibilities for

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216. *Id.* at 1398.

217. *See generally* Patricia E. Salkin, *Sustainability and Land Use Planning: Greening State and Local Land Use Plans and Regulations to Address Climate Change Challenges and Preserve Resources for Future Generations*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 121 (2009) (discussing the "dynamic federalism" approach with regards to land use).

218. Ruhl, *supra* note 194, at 1399.

219. *Id.*

220. *Id.* at 1401.

221. *Id.* at 1402.

222. J.B. Ruhl and James Salzman, *Climate Change Meets the Law of the Horse*, 62 DUKE L.J. 975 (2013).

223. *Id.* at 1010.

how the law adapting to climate change will be organized.

One possibility would be the development of a separate comprehensive, coherent rule of climate change adaptation law. This would be similar to development of Environmental Law, which was not even recognized until 1969 as a term, though it has since become a "significant and separate area of theory and practice."[224] A credible field of law serves three purposes. First, it can provide a powerful political statement that gains attention of the public and is the basis for recognition of a legitimate field of legal practice.[225] Second, having a distinct field of law can increase efficiency because it might be easier to create a new field rather than to change a number of current fields of law.[226] Finally, sometimes the current legal doctrine is simply inadequate; they cite reliance on nuisance law before development of environmental law.[227]

Ruhl and Salzman suggest that the advantage of a single field of climate change adaptation law is that it "allows careful analysis of the envelope of variability within which the field operates and on which its assumptions are based."[228] Also, by focusing on one comprehensive field of law, it allows for "comparisons between fields to assess which are likely to undergo greater pressure to adaptor, at the extreme, to snap."[229]

A disadvantage of this approach is that it fails to "capture the *cumulative* effect of numerous intersecting fields undergoing stress on their respective stationarity-based foundations."[230] Especially because the policy issues about adaptation are likely to come from the intersection of environmental, social, and economic conditions across many fields, this field-specific approach may not be a good one. Ruhl and Salzman characterize an attempt to construct one substantive, regulatory field regarding the law of adaption to climate change as the creation of the EPA did, as a "fool's errand."[231]

The second possibility is the reality that there is no more a law of climate change adaptation than there is a "Law of the Horse."[232] Using examples from sea level rising impacts of climate change, they conclude that climate change adaptation law is not likely to develop to replace any particular field of law, but rather "to manage how those fields interact at scales relevant to climate

224. *Id.* at 982.
225. *Id.* at 988 (commenting on proposals now to recognize a separate field of Disaster Law).
226. *Id.* at 989.
227. *Id.*
228. *Id.* at 1015.
229. *Id.*
230. *Id.* (emphasis in original)
231. *Id.* at 1018.
232. Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 207–216 (Easterbrook credits Karl N. Llewellyn for creating the phrase which refers to an "unnecessary effort to bring together unrelated and duly self-contained bodies of law").

adaptation decision-making."[233]

Ruhl and Salzman suggest that climate change adaptation law be viewed as a *process*, rather than as a *substantive* field of law. They contrast environmental law, which supplanted nuisance law with a *substantive* law regarding pollution, with a law that can develop to respond to all the variety of ways in which climate change will affect different areas. A substantive field of climate change law would be too unwieldy.[234] A procedural strategy for climate change adaptation would reflect a public policy to reduce vulnerability and increase resilience and adaptation equity.[235] Using the example of coastal region and sea level rising, Ruhl and Salzman define these three public policy goals. Vulnerability seeks to protect those living in the region from "more frequent and intense storm surges and heat waves."[236] Resilience focuses on "recovering from the damage caused by flood and heatwave events. . ." Adaptation equity reflects the goals of those insisting on social justice as part of adaptation and adaptation law;[237] it seeks to "ensure that measures reducing vulnerability and increasing resilience do not disadvantage specific groups."[238] This approach predicts that there will be a merger of water law, land use law, property law, and human rights justice law that will structure the changes in the law as it evolves/adapts to Climate Change.[239]

E. There is Agreement That the Legal Responses to Adaptation to Climate Change Will Take Place at All Levels

The work of Cinnamon Carlarne illustrates the global approach. Carlarne has been a serious observer of the attempts of the United Nations Framework Convention on Climate Change (UNFCCC) to develop an International Climate Convention that embraces legal pluralism, polycentric theory. She notes developing a legal system to deal with adaptation to climate change is all the more challenging because of the "relative novelty of the issue of adaptation."[240] The infancy of adaptation is problematic. Although climate change adaptation planning is now taking place at virtually every institutional and governmental level, these efforts are still "[L]argely in their infancy and relative untested;" the real question posed by Carlarne is how, at this emergent stage, the

233. Ruhl and Salzman, *supra* note 222, at 1015.
234. *Id.* at 1018 (commenting, "It is hard to imagine what a substantive climate adaptation law would even look like").
235. *Id.* at 1020-1021.
236. *Id.* at 1022.
237. *See* Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENVTL. L. REP. 10 (2008).
238. Ruhl and Salzman, *supra* note 222, at 1022.
239. J.B. Ruhl, *supra* note 211, at 376.
240. Carlarne, *supra* note 86 (the UNFCCC negotiations began in 1992).

UNFCCC and other IGOs can help create a framework[241] to guide adaptation actions. Carlarne argues that UNFCCC has "the power of law, mandate and momentum"[242] needed to facilitate adaptation to climate change globally at all levels. Even though she envisions and proposes a prominent role for UNFCCC, Carlarne is aware that "[i]t is unrealistic to expect UNFCCC or any other institution to create a one size fits all strategy for any one adaptation challenge – e.g., human health, food security, sea level rise, water quality – much less for adaptation efforts as a whole."[243]

More realistic, according to Carlarne, is for UNFCCC to "(1) facilitate coherent national adaptation planning and (2) coordinate the implementation of adaptation strategies."[244] "Bottoms up" planning will deal more effectively with the minutiae of climate change adaptation. Providing an institutional framework is critical. UNFCCC should emphasize what it sees as necessary commonalities: notions of subsidiarity (which means that a higher level of governance will be used only in situations where a proposed action cannot be achieved at a lower level),[245] transparency, and science-based decision-making.[246] UNFCCC should also function to share all information and good practices as it promotes "synergy and strengthening engagement with national, regional and international organizations, centers and networks in order to enhance the implementation of adaptation actions."[247] Victor B. Flatt and Yee Huang discuss the "Bottom's up" perspective on adaptation in a briefing paper they prepared for the Center for Progressive Reform.[248] It looks at the 90% of economic output that is not run by government (the public sector) to recommend the role of government and law in dealing with climate change adaptation efforts.

A brief review of the range of adaptation efforts at the local, state, federal and international levels and the legal systems involved will be useful here.

While emissions causing climate change are global allowing mitigation to be used anywhere and everywhere, much climate change adaptation often requires a local response to impacts that are inherently local. Changes in law at the community and local

241. *See* Rebecca M. Bratspies, *Sustainability is the Answer – Now What Was the Question?*, 43 Envtl. L. Rep. 1042, 1052 (2013) (suggesting that in our democratic society, mobilizing the power of law as a framing institution will be critical. Even selecting between alternative frames reflects the importance of defining what constitutes a choice of sustainability).

242. Carlarne, *supra* note 86, at 48–49.

243. *Id.* at 52–53.

244. *Id.* at 54.

245. *See id.* (explaining the notion of subsidiarity in the EU).

246. *Id.* at 55.

247. *Id.* at 55 (quoting the report of a UNFCCC Working Group).

248. Victor B. Flatt and Yee Huang, *Climate Change Adaptation: the Impact of Law on Adaptation in the Private Sector*, Briefing Paper No. 1209, THE CENTER FOR PROGRESSIVE REFORM (2012).

level may include land use regulations to maintain natural barriers, not mandates to construct hard barriers. The enforcement of building codes require: "weather resistant construction practices and materials" and prohibition of development in areas that are highly vulnerable to floods and wildfires are several of the general recommendations for all programs in the 2013 Ceres Report.[249] Cities are considering plans across the typical lines of departmental responsibility for water, utilities and emergency response.[250] Scholars like J. Peter Byrne offer legal bases for adaptation strategies at the local level such as retreat from sea level rise.[251] Byrne reviews legal moratoria on development,[252] the land use device of rolling development restrictions/easements, which become increasingly restrictive as sea level changes;[253] and exactions[254] in support of restricting future development and even retreat. John Nolon suggests that even where there is no government requirement of an environmental impact review, where a local project application has been made, "state and local site-plan review requirements may require a review of certain environmental impacts where they have a close nexus with the proposed project."[255] Nolon opines that local government has either express or implied power to include standards that protect property and people form impacts of climate change such as storm surges.[256] Many examples of local governments that are engaged in adaptation planning suggest the need for adaptation legal response. Toronto,[257] the Great Lakes,[258] Chicago,[259] and Boston[260] are all involved

249. Israel, *supra* note 143, at 27 (2013).

250. *See* Vicki Arroyo and Terri Cruce, *State and Local Adaptation, in* LAW OF ADAPTATION TO CLIMATE CHANGE at 569-600.

251. Byrne, *supra* note 157.

252. *Id.* at 107.

253. *Id.* at 109.

254. *Id.* at 112; *see also,* John R. Nolon, *Post-Zoning: Alternative Forms of Public Land Use Controls: Land Use and Climate Change: Lawyers Negotiating Above Regulation,* 78 BROOKLYN L. REV. 521, 548 (2013) (explaining strict regulations to prevent new development to avoid development in dangerous areas is a Catch -22 situation which might end up with a court requiring compensation to the property owner under *Lucas v. South Carolina Coast Council*; much depends on "preexisting background principles of state law."); *see* Christopher Serkin and Gregg P. Macey, *Post-Zoning: Alternative Forms of Public Land Use Controls,* 78 BROOKLYN L. REV. 305 (2013) (describing new methods of developing land use regulation for climate adaptation including Community Benefits Agreements which offer community organizations a way to protect themselves from extracting promises from developers).

255. Nolon, *supra* note 255, at 563.

256. *See* Town Of Carlisle, *N.Y. Site Plan Regulations* 56 (2013) (the purpose of the regulation is for land to be subdivided and developed "free from the peril of flood, fires, health endangerment, or other menace prior to the erection of buildings."), *available at* http://www.schohariecounty-ny.gov/CountyWebSite/towncar/CarlisleSitePlan.pdf.

257. Kirsten Feifel, *The City of Toronto's Climate Change Adaptation Strategy: From Development to Implementation, Appendix D. Adaptation Case Stud-*

in the process.

State governments provide another layer of government response to climate change adaptation. This is consistent with adaptation planning from the local to the global and the multi-layer model that is developing. John Nolon reports that in New York, the State Department of Environmental Conservation (DEC) has been directed to "incorporate climate change adaptation strategies into DEC programs, actions and activities, as appropriate."[261] This would include identifying potential adverse impacts, using best scientific information, incorporating adaptive management in planning and actions and readjusting as new information becomes available.[262] J. B. Ruhl envisions borrowing from the comprehensive planning tradition of land use law to require cities to develop comprehensive "climate adaptation master plans covering the breadth of adaptation policy."[263]

There is more attention by scholars and more governmental resources being expended to national and regional adaptation strategies. However, even in developed countries like the United States Cinnamon Carlarne warns that "planning efforts are still at a relatively early stage: it is almost more accurate to say that governments are making plans to engage in adaptation planning exercises."[264] However, development of law in response to these is delayed. For example, the Environmental Protection Agency (EPA) has developed a Climate Change Adaptation Plan (available for public comment on February 8, 2013)[265] that identifies actions possible under EPA's existing authority and suggests additional authority.[266] Yet, the publication notes the uncertainty of whether its authority might be enlarged and how even current authority will function when considering impact of climate change in setting standards or issuing permits. Of more concern is a close review of

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ies Compendium, in ECOADAPT 201, 201–04 (2012).

258. Julie O'Leary, Jennie Hoffman & Lara Hansen, *Fostering a Climate-Informed Community Perspective in the Great Lakes: The Great Lakes Community Climate Program, Appendix D. Adaptation Case Studies Compendium, in* ECOADAPT 139, 139–141 (2012).

259. Rachel M. Gregg and Jessica I. Hitt, *A Roadmap for Action: The Chicago Climate Change Action Plan, Appendix D. Adaptation Case Studies Compendium*, in ECOADAPT 79, 79–82 (2012).

260. Boston Green Ribbon Commission, *Boston's Climate Action Plan*, HOME, http://www.greenribboncommission.org/ (last visited Feb. 9, 2014).

261. New York Department of Conservation, *Commissioner's Policy-Climate Change and DEC Action*, CLIMATE CHANGE GUIDANCE DOCUMENTS, http://www.dec.ny.gov/regulations/65034.html (last visited Jan. 11, 2014).

262. *Id.*

263. J.B. Ruhl and James Salzman, *supra* note 222.

264. Carlarne, *supra* note 86, at 45.

265. U.S. Environmental Protection Agency, *Federal and EPA Adaptation Programs*, EPA http://epa.gov/climatechange/impacts-adaptation/fed-programs.html (last visited Jan. 11, 2014).

266. Poffenberger, *supra* note 79, at 4.

the gaps in the EPA programs as well as legal uncertainty that might be resolved by another governmental agency at the state or federal level. For example, the EPA's role of ensuring quality of drinking water, but not quantity, misses the likelihood that changes in quantity may affect water quality.[267] Still, the United States Supreme Court determined that it is not the job of the EPA to "resolve massive problems in one fell regulatory swoop" but instead, to "whittle away at them over time, refining their preferred approach as circumstances change and as they develop a more-nuanced understanding of how best to proceed."[268]

J.B. Ruhl asserts that dynamic federalism offers the advantages of "plurality, dialogue, redundancy, accountability, and economies of scale."[269] It envisions overlapping and flexible distribution of authority between federal, state, and local governments. Ruhl argues that this approach gives more space for policy considerations and promotes synergy between government and informal networks. He concludes that while a hierarchical federal system might seem to be more efficient, the dynamic federalism he espouses "builds scalability, modularity and response diversity into the system, all of which are likely to enhance resilience for a legal system aimed at responding to climate change."[270]

Cinnamon Carlarne is just a short step from Ruhl's dynamic federalism with her polycentric approach: "a system that 'exists when multiple public and private organizations at multiple scales jointly affect collective benefits and costs.'"[271] Elinor Ostrom, who was awarded the Nobel Prize in Economics in 2009, suggested that the original notions of polycentric systems should be expanded, noting that, "simply recommending a single governmental unit to solve global collective action problems – because of global impacts - needs to be seriously rethought and the important role of smaller-scale effects recognized."[272] The polycentric approach has the advantage not only of multiple, diverse actions but also "reinforces notions of trust and reciprocity that are central to sustained efforts to address resource management problems at multiple levels."[273] Thus, EPA's Climate Change Adaptation Plan acknowledges that adaptation must include federal, including other federal agencies, as well as other governmental and private partners, throughout

267. *Id.*
268. Mass. v. Envtl. Prot. Agency, 549 U.S. 497, 523 (2007).
269. J.B. Ruhl, *supra* note 195.
270. *Id.* at 1401.
271. Carlarne, *supra* note 86, at 38 (quoting Elinor Ostrom, *Nested Externalities and Polycentric Institutions: Must we Wait for Global Solutions to Climate Change before Taking Action at Other Scales?*, 49 ECON. THEORY 2 (2012) for a definition of polycentric system).
272. Elinor Ostrom, *A Polycentric Approach for Coping with Climate Change*, World Bank Policy Research Working Paper No. 5095 (2009).
273. Carlarne, *supra* note 86, at 40.

the country and the world.[274]

The bottom line is that no matter how challenging and uncertain the legal responses to climate change turn out to be, legal change is part of adaptation strategy.[275] J.B. Ruhl compares the changes that adaptation to climate change will require with those experienced by U.S. settlers who moved west in the 1800's. These settlers had to adapt to the very different conditions for farming than they had in the East. For example, they used new dry farming techniques and new seeds to adapt to the extremes of heat and the droughts that were beyond their experience on the East coast. And with those ecological/science changes, the law changed as well. Ruhl cites the famous shift in the West from the riparian rights water doctrine of the Eastern part of the United States to the prior appropriation system[276] as evidence that major changes including climate change require adaptation on many levels including the legal system.

IV. THE TRANSACTIONAL ATTORNEY'S ROLE IN RESPONDING TO CLIMATE CHANGE ADAPTATION

A. Local Practice Will Supplement the National – Local is Back on the Agenda

Adaptation to climate change will make local knowledge and its contacts a valuable resource again. Until relatively recently transactional practice was local. Attorneys represented clients in the state in which they were licensed and those businesses were located and operated in that state. Many companies were incorporated in Delaware and qualified to do business elsewhere, maybe nationally. Attorney licensing rules prohibited multi-jurisdictional practice. As business became national and then global, so did transactional attorneys' work. A slow recognition of multi-jurisdictional practice[277] for transactional lawyers followed. National lending and investment, which has become global, led to national transactional practices.[278] Local facts and conditions will become more important – what is happening in Florida is not what

274. Poffenberger, *supra* note 79, at 5.

275. *See* J.B. Ruhl, *supra* note 195.

276. *Id.*

277. Janet M. Johnson, "What You Need to Know About Handling Real Estate Transactions in Other States- Ethical and Practical Issues in Multijurisdictional Real Estate Practices," ETHICS AND PROFESSIONALISM IN TRANSACTIONAL PRACTICE CLE SEMINAR, The John Marshall Law School Center for Real Estate Law, Chicago, IL (May 2, 2012), available at http://www.schiffhardin.com/File%20Library/Publications%20(File%20Based)/PDF/Johnson_Real-Estate-Transactions-Speech_John-Marshall.pdf

278. *See* Ruhl and Salzman, *supra* note 223, at 1023-1026 (2013) (advocating the procedural overlay implementation mechanism approach which itself outlines that broad array of law that a transactional attorney would need to be aware of.).

is happening in North Dakota. There are predictions that local and state governments will need to have unique responsibility and authority to adapt to climate change. Will this national and global trend of practice retreat when dealing with Climate Change?[279] No, but local aspects of practice will supplement this trend because climate does not follow political boundaries. Adaptation is "inherently localized" and the response must be localized as well.[280]

B. TEAM Work and Collaboration with Other Professionals and Consultants Will be More Important than Just Documenting Agreements

It is reasonable to expect that adaptation to climate change will result in transactional attorneys becoming more involved with the teams that work on transactions and projects. Only when the issues are identified and resolved, is it possible to draft a comprehensive contract. The transactional attorney's ability to ask questions is added value to the team. Transactional drafting is more than just recording the terms of the deal and adding the "boilerplate" to make it legal. Transactional drafting also incorporates the answers to the questions "what about. . .?," "what if. . .?" which transactional attorneys must ask. The answers to questions help to insure that the agreement reflects clients' goals. Attorneys will need to learn to collaborate effectively with other professionals such as architects, engineers, and land use planners.

Traditionally attorneys provided advice in response to what clients proposed. Today's transactional attorney needs to be more proactive and keep clients advised about changes in the law expected or promulgated. Law firm "client alerts" and visits by clients to firm websites will reveal areas of expertise and industries served by attorneys.[281] Law firms are advertising their expertise, including in transactions, as part of the marketing programs. Clients and potential clients are beginning to understand the differences between attorneys specializing in business and transactional practice areas from those who specialize in litigation in all its forms.

C. Nimbleness

The days when attorneys could keep current by reading advance sheets are long gone. The transactional attorney's reading

279. *See* Byrne, *supra* note 157 (division between states and localities within the state in coastal areas can create complex problems of legal authority and confusion about which rule of law applies).

280. Stephen R. Miller, *Sustainable Cities of Tomorrow: A Land Use Response to Climate Change*, chapter in RETHINKING SUSTAINABLE DEVELOPMENT TO MEET THE CLIMATE CHANGE CHALLENGE, ENVTL. L. INST., due 2014, at 14.

281. Jenner etc regarding this topic – unable to locate this source

now includes the trade journals and industry newsletters primarily directed at the clients, rather than their attorneys. Knowing what is affecting industries helps the attorney know what should be of concern to clients. Climate change can be viewed as something that attorneys will need to be "nimble" about. Since it is an area filled with so much uncertainty and subject to change, knowledge will enable attorneys to advise clients about how adaptation could have an impact on them.[282] The applicable law will change a lot and in uncertain ways. The Law of Adaptation will not be found in one or two pieces of legislation that attorneys will ponder (*see* Part III *supra*). It will not resemble Environmental Law, which is static and more predictable. Part VII *infra* of this article suggests how attorneys will learn and keep current on the emerging adaptation law.

D. Bottom Line: Answer the Client: "What Legal Difference Does Climate Change Adaptation Law Make?"

What duty does a transactional lawyer owe to commercial clients? Although most scholarship focuses on the harm caused by climate change, clients deserve information and advice about how to benefit from climate change adaptation – to become so-called "climate change winners."[283] Ruhl acknowledges that "climate change will produce benefits from many human communities and other species, in some cases substantial benefits."[284]

Gail Suchman argues in her 2008 article that due diligence about carbon is the "latest twist in transactional due diligence" and that it reflects a need for specialized environmental due diligence that became apparent in the 1970's "following a rash of asbestos litigation and the adoption of federal and state legislation and regulations to protect the environment."[285] Will the transactional attorney be expected to know that the client will not own land in the future because sea rising is reducing shore land of South Carolina and New Jersey? Or that there will be no water supply to the real estate in ten years?[286] Or that the land will be

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282. *See generally* Bena, *supra* note 46.

283. *See* J.B. Ruhl, *The Political Economy of Climate Change Winners*, 97 MINN. L. REV. 206, 207 (2012) (explaining the concept of climate change winners); *see also*, response by Craig, *supra* note 218.

284. J. B. Ruhl, *supra* note 212, at 383-384 (though he acknowledges that most focus has been on preventing climate change because of its "perceived distributional harm").

285. E. Gail Suchman, *Carbon Due Diligence: What is It and Why Do It?*, 3 BLOOMBERG CORP. L. J. 330 (2008); *see also*, Denise Kalette, *Emerging Field of Climate Change Law Requires Improved Due Diligence*, NATIONAL REAL ESTATE INVESTOR, March 6, 2008, *available at* http://www.printthis.clickability.com/pt/cpt?action=Emerging+.

286. *See* Julian Conrad Juergensmeyer, *Rainwater Recapture: Development Regulations Promoting Water Conservation*, 43 J. MARSHALL L. REV. 359 (2010) (raising just that problem in his article for the symposium issue on Wa-

on the yet to be determined flood plain map finalized next year by the Army Corps of Engineers? From his perspective as in-house counsel for PepsiCo, Inc., global sustainable developer, Daniel Bena offers his list of tangible steps companies will need to perform, "each including input from counsel:"

- Connect climate "adaptation" and "resilience" to the company and corporate culture, building on existing mitigation initiatives
- Integrate climate adaptation into core strategic business planning processes
- Align business objectives with adaptation priorities
- Build a portfolio of climate-resilient goods and services
- Build mutually beneficial strategies with stakeholders; build communication channels
- Partner with internal and external decision-makers [287]

The appropriate role of the transactional attorney is not to focus on justice or public policy,[288] but to reduce vulnerability of owners and users and to promote resilience.[289] The risks to clients must be understood and reduced.

No matter what the law dealing with adaptation to climate change is, clients will really only want the answer to the one question: "what *legal* difference does climate change adaptation make?"[290] J. B. Ruhl looks at the question in terms of "but for" terms: Is climate change adaptation clearly identified in any statute, regulation or court opinion? And does the latter raise the need for conduct or factual determination which would not be otherwise made in order for the action to proceed or the decision to be resolved?[291] Ruhl avoids predicting how the law might turn out and, instead, suggests that lawyers need to identify the kinds of questions clients will be asking as "public and private actors begin to anticipate and act on climate change."

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ter as a Limited Natural Resource stemming from 2009 Kratovil Conference on Real Estate Law and Practice at JMLS).

287. Bena, *supra* note 46 (Bena derived this list from the 2011 UN Caring for Climate Initiative report).

288. *See* RK Craig, The Social and Cultural Aspects of Climate Change Winners, 97 MINN L. REV. 1416 (2013) (expressing concerns about the limited approach and also predicting a social capital response by those who are not the winners and who are harmed by climate change.).

289. *See* J.B. Ruhl and James Salzman, *supra* note 222, at 1027 (suggesting the proper role for those attorneys whose role in in public policy development).

290. J.B. Ruhl, *supra* note 59, at 8, 20; *see also*, Poffenberger, *supra* note 79, at 5 (arguing that lawyers should consider risks arising from legal developments in changing law as well as risks in documents).

291. *Id.*

V. AFFECTED BUSINESSES, INVESTORS, REQUIRED DISCLOSURES RULES AND INSURANCE AVAILABILITY ARE DRIVERS FOCUSING ATTENTION ON THE IMPACTS OF CLIMATE CHANGE AND THE NEED TO ADAPT TO IT

A. Business Entities Tend to Look at the Near Future

The perspective of most business is the relatively short-term profit or, for the upstart entrepreneur, the development of a business that can be sold soon and at a great profit. This means that climate change and the need for adaptation may not be on the radar screen. Except for hurricanes and extreme weather-related events that happen quickly and cause significant amounts of damage, the impact of climate change occurs over a long time period and may not be readily apparent to most businesses.[292] Once needed repairs are made, in places not subject to such visible climate change events and even when such events do happen, owners as well as occupants, their employees and vendors and customers are not going to be very concerned about the possible impact that climate change could have on their businesses, buildings, and supportive public infrastructure at some time in the future. Increased insurance rates or new insurance company requirements (or the unavailability of insurance) may be cause for alarm but may not be enough to cause a call for action which will at the end of the day cost the business money.

The same is true about the lack of concern of governmental units in areas where climate change has not yet been a concern that requires taking measures to insure that they can keep critical public services operating. For these entities, life continues as it always has until the big event that serves as the wakeup call. Without the expensive and disruptive climate change event, there is little incentive to make efforts and spend money – money which is often in short supply – to adapt critical structures to be resilient to climate change. Grass roots movements often begin only after a major event. Recent calls by President Obama for all parts of the federal government to analyze and make plans dealing with climate change indicate that this attitude of indifference may be changing.[293]

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292. *See* South East Climate Change Partnership, *Adapting to Climate Change: a Checklist for Development November, 2005*, LONDON CLIMATE CHANGE PARTNERSHIP at 9 (for an early argument for the 'business case for adapting to climate change' lest climate change "affect a business' bottom line and reputation.").

293. "REMARKS BY THE PRESIDENT ON CLIMATE CHANGE" Georgetown University, Washington, D.C., *available at* http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change.

B. *Activist Investors increasingly View Climate Change as a Risk to be Considered*

One group that has been active and continues to be actively involved in working to make sure that there are disclosures about both climate change and adaptation to climate change includes investors like the California Public Employees' Retirement System and the California State Teachers' Retirement System. Because they are willing to look down a longer road than most individual businesses or the mutual funds on which so many investors rely for their financial security, investors of this sort are invested in businesses and real estate for the long haul. These larger investors are in it for the long run and will make requirements that the short-term smaller investors are not willing to devote the time and resources to. A report in fall 2103 by Mercer indicates in its 3rd annual Global Investor Coalition (GIC) Survey of pension funds and investment managers on climate change that, "100% now assess their investments for climate change impacts."[294] Climate change impact assessments were seen as a key to decision to buy or sell equities.

These activist investors plus the officials of states such as California, New York, Oregon and others in 2007 demanded that the Securities and Exchange Commission (SEC) require disclosures about what risks of climate change will affect a particular business publicly listed on the exchanges and how that business will adapt. The SEC issued interpretative guidance about existing disclosure regulations to indicate what will be required regarding legal and business developments about climate change.[295] The guidance not only focuses on emissions, but also indicates that disclosure of adaptation is required. It says, "there may be significant physical effects of climate change that have the potential to have a material effect on a registrant's business and operations" and that "financial risks associated with climate change may arise from physical risks to entities other than the registrant itself."[296]

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294. Birgden, *supra* note 144; *see also,* Mercer, *Through the Looking Glass How Investors Are Applying the Results of the Climate Change Scenario Study,* MERCER (Jan. 2012) (indicating that investors are affected in decision making); *see also,* Andrea Vittorio, *Investors See Climate Change as Risk that Influences Decisions: Report,* BLOOMBERG, (Aug. 2013) (reporting that climate concerns are leading to divestment or preventing particular investments from being made, "with 23 percent of asset owners doing so in 2012 compared to 9 percent in 2011").

295. Securities Exchange Commission, *Commission Guidance Regarding Disclosure Related to Climate Change,* 75 FED. REG. 6290 (Feb. 8, 2010).

296. *Id.* at 6291 (giving as examples climate related physical changes and hazard that pose credit risks to banks whose borrowers are in at-risk areas and companies dependent on suppliers impacted by climate change such as those purchasing farm products from sites adversely affected); *see contra,* J.B. Ruhl, The Political Economy of Climate Change Winners, 97 MINN. L. REV. 206 (2012) (noting that the Guidance requires disclosure of benefits of climate

By using SEC disclosures rules and proxy proposals, activist investors can and will spur change.[297]

Robert Verchick explains how the SEC disclosure rules will have an impact on commercial real estate either as an asset of a business or as an investment itself.[298]

> [A]lthough the specific questions we should ask an acquisition or investment target will necessarily depend on the specific property or company, and the scope of terms and timing of the evolving legislative and regulatory framework, most industry sectors are thinking about the effect of climate change and their energy profiles. Prudent investors in commercial real estate, at a minimum should be prepared to start the dialogue as well."[299]

This dialogue would likely include questions like the ones addressed in this article about the impact of climate change on natural resources, land and business operations. *See* Part II.A.1 *supra.* Does the location of the property render it sensitive to sea level rise or other meteorological effects of global warming? Is the area at-risk for flooding likely to interfere with occupant's access to markets and suppliers via highways and railways? How will the business adapt? How will the client deal with the risks? These are likely investor questions. J.B. Ruhl suggests that "businesses that fail to disclose risks, costs and liabilities associated with cli-

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change as well). *See* Robert C. Kirsch and Nathaniel B. Custer, *Disclosure of Environmental Liabilities: SEC Obligations, Auditing Standards and the Effect of Sarbanes-Oxley, The Impact of Environmental Law on Real Estate and Business Transactions: Brownfields and Beyond,* 2 SU035 ALI ABA 2055 (2013) (indicating the four triggers which the 2010 SEC Guidance mentions: 1) newly enacted or pending greenhouse gas laws and regulations, 2) treaties and other international accords, 3) indirect consequences and business trends brought on by climate change, and 4) the physical effects of climate change.).

297. Todd Woody, *The Carbon Time Bomb in Your Retirement Account,* THE ATLANTIC, (Dec. 9, 2013), *available at,* http://www.theatlantic.com/technology/archive/2013/12/the-carbon-time-bomb-in-your-r (reporting on development of new function key for desk top computers, Carbon Risk Valuation Too, (CRVT) by Bloomberg New Energy Finance that allows investor to "run various scenarios, such as when and how fast governments' might move to decarbonizes their economies" which will allow investors to do "some of the back of the envelope analysis themselves. . ."). However, the legal maneuvering to fit within the "ordinary business" exception in Rule 14a-8(i)(7) must be acknowledged. *See* Securities Exchange Commission, *Division of Corporation Finance Shareholder Proposal No-Action Letters Issued Under*
Exchange Act Rule 14a-8, Nov. 2, 2011, http://www.sec.gov/divisions/corpfin/cf-noaction/14a-8.shtml (describing correspondence between PNC and the SEC which includes: (1) letter dated December 24, 2012 from PNC to SEC requesting an exemptive order so that PNC could exclude from its 2013 Proxy Materials certain disclosures on its direct greenhouse gas emissions requested by Boston Common Asset Management, LLC, a shareholder in PNC; and (2) letter dated February 13, 2013 from SEC to PNA denying the request for exclusion.).

298. Verchick, *supra* note 93.

299. Cohen, *supra* note 85.

mate change impacts in connection with stock or asset purchase transactions could face liability for failure to disclose."[300] A basic premise is that "legal counsel should look ahead, identify and assess risks, and develop options to deal with or avoid those risks."[301] Assessing risk and developing options are part of the teamwork that will be operative.

C. *The Insurance Industry Gains Power as it Takes on Risks of Adaptation*

Traditionally, owners and operators of property and businesses have relied on insurance to provide coverage of risks for private players. As Daniel Farber explained in his article on allocating the costs of climate change – what he terms "loss-spreading" – insurance would have its strongest function when harms are caused by extreme weather events where who is harmed is unpredictable. For harms caused by more predictable threats like sea level rise on the coasts, the case for insurance is weaker.[302] Moreover, if the costs of such insurance become too high or it is not available, government will take on the role as it has for Hurricanes Katrina and Sandy even though the economic situation is very negative and not to be relied upon. Insurance companies charge fees for the coverage that they provide and the fees represent the level of risks that the insurance company underwriters attribute to the insured property or business activity. As the level of risk increases, so do the premiums. Exclusions from coverage also keep the costs of premiums lower. Extra coverage can be obtained by having the insurance provider add special endorsements for which coverage is provided at an additional charge.

Because insurance companies are in the business of managing risks of their insured clients, there are times when the risks jeopardize the financial stability of the insurance company itself.[303] In

300. J.B. Ruhl, *supra* note 59, at 18 (noting as well potential liability for real estate brokers, lenders and other real estate professionals where purchasers or lenders claim that there was a failure to disclose in situations where properties are damaged by storm surge and other climate change impacts).

301. Bena, *supra* note 46 (describing the view of an environmental lawyer within PepsiCo, Inc. where Bena is Senior director of Global Sustainable Development . . . "this is elegant in its simplicity-intuitive in concept yet far reaching in application. If we dissect the premise, the core elements are 'looking ahead' – not only at near-or mid-term risks, but also for long-term risks. In fact, many of the risks posed by a climate crisis of the magnitude of that we face require looking over a longer-term horizon, since the solutions to mitigate these risks will often take many years, even decades.").

302. Farber, *supra* note 126.

303. *See* SEC Guidance, *supra* note 297; *see also*, Irene Shulman, *Analysis of California, Washington and New York Insurer Climate Risk Surveys for the 2011 Reporting Year*, COLUMBIA LAW SCHOOL, CENTER FOR CLIMATE CHANGE LAW (August 2012) (noting that the insurance industry already is adjusting to its own perception that climate change is the number one risk facing the industry and that "National Association of Insurance Commissioners promul-

such instances, the insurance company will stop providing a type of coverage or withdraw entirely from a particular market.[304] When that happens, government often steps in to provide coverage. The federal Flood Plain Insurance program[305] and the hurricane coverage in Florida[306] are examples of this development. While called insurance, the rates have been kept low and are not reflective of true underwriting risks. Programs such as these, while providing monies to rebuild, do not come with the underwriting requirements that insurance companies impose on those seeking to purchase insurance. Indeed, the federal flood plain insurance program has been changed so that the premiums property owners pay will reflect the true costs of the risks in the future. *See* Part II.C. (retreat), *supra.*

Several types of insurance are particularly important to business clients of the transactional attorney. Business interruption insurance[307] originally was issued to protect property owners' rental income – so-called use and occupancy insurance.[308] The current purpose is to "return the policyholder to the position it would have occupied if the disaster had not occurred."[309] Christopher French argues that the policies are contracts of adhesion and probably more importantly, the courts have provided inconsistent interpretations of the standard form business interruption loss valuation provisions.[310] Without more consistent results in the

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gated a uniform standard for mandatory disclosure by insurance companies to state regulators of financial risks due to climate change and actions taken to mitigate them").

304. *See* Wharton Risk Management and Decision Processes Center: Climate Change, http://www.wharton.upenn.edu/riskcenter/climchng.cfm (describing the project description which indicates its primary areas of research: (1) direct climate and weather related impacts which "will impact many lines of insurance, notably: property and casualty (P&C); business interruption (BI); health and life; crop; and marine insurance"; (2) Director's and Officers Coverage; (3) New technologies, emission control policies and trading systems; (4) impact on shareholder's value).

305. *See, e.g.*, Erwann Michel-Kerjan and Howard Kunreuther, *Redesigning Flood Insurance,* Vol 333 SCIENCE 408 (July 22, 2011) published by AAAS www.sciencemag.org (suggesting how the program needs to change).

306. *See* Howard Kunreuther, Erwann Michel-Kerjan and Nicola Ranger, *Insuring Climate Catastrophes in Florida: An Analysis of Insurance Pricing and Capacity under Various Scenarios of Climate Change and Adaptation Measures,* Wharton Working paper #2011-07, (2011) *available at,* http://opim.wharton.upenn.edu/risk/ (providing detailed analysis of cost for likely private insurance premiums as a function of (1) recent projections of future hurricane activity in 2020 and 20140; (2) insurance market conditions e.g., soft or hard market); (3) the availability of reinsurance; (4) the adoption of adaptation measures or not).

307. Christopher C. French, *The Aftermath of Catastrophes: Valuing Business Interruption Insurance Loses,* VILLANOVA Working paper No. 2013-3020 (2013), *available at,* http://ssrn.com/abstract=2203695.

308. *Id.* at 5.

309. *Id.*

310. *Id.* at 8–19.

courts or clearer drafting of those provisions, business interruption insurance policies and their protections against climate change risks will remain uncertain.

Directors and officers coverage protects the insured from lawsuits brought by shareholders and customers.[311] The theory of plaintiffs would be that management ignored possible impacts by climate change on the financial bottom line or even that the board neglected to make required disclosure of climate change and adaptation risks. Failing to prepare companies for climate-related financial risks would be a basis for liability especially if the basic knowledge about climate change and information related to the particular company was ignored. Michele Schroeder concludes that the development of climate change practice groups in national law firms is an indication that climate change claims under the D & O policies is on the rise.[312] She anticipates that failure to disclose climate change risks in violation of SEC rules can be basis for liability.[313] While Schroeder considers insurance for environmental risk in real estate, she has not yet written about climate change risk because from her perspective as counsel for insurers the "court cases indicate that claim recovery in that area is next to impossible."[314]

What future role the insurance industry will play in responding to risks of climate change and adaptation to it receives increasing attention. In appreciating the strong relationship between business functioning and insurance of risk, commentators have written about the future. J.B. Ruhl notes the insurance industry's conviction that climate change will be a problem and he reflects that "insurers tend to be astute at detecting significant shifts in relationships and expectation looming on the horizon and try to anticipate how new forms of injury will work their way through the insurance coverage and liability system."[315] Because the insurance industry needs to maintain a successful business model, Sean Hecht predicts, and hopes, that insurers will respond dynamically to climate change and "play a role in providing appropriate incentives to businesses, consumers, and risk managers."[316] A quasi-regulator role for the insurance industry will support the

311. Wharton, *supra* note 304.

312. Michele Schroeder, *Environmental Insurance: View from the Insurers and Market Update, ALI CLE Course of Study Materials*, VCS0508 ALI-ABA 161 (2011).

313. *Id.; see also*, Rachel S. Kronowitz, *How to Mitigate the Effects of Climate Change Disclosure Requirements on D & O Insurance*, ANDREWS INS. COVERAGE LIT. REP., (October 2008) (emphasizing the basis for liability).

314. Schroeder, *supra* note 312 (comment by Schroeder is from email from Michele Schroeder to Celeste Hammond, January 2, 2014 copy on file with author).

315. J.B. Ruhl, *supra* note 212, at 395-396.

316. Sean B. Hecht, *Insurance, Chapter 14 The Law Of Adaptation To Climate Change*, ABA 511, 534 (2012).

implementation of successful adaptation that government has not yet accomplished. Victor Flatt and Yee Huang worry about the power of the insurance industry, which "pervades nearly every aspect of the private sector and is an important leverage point for facilitating adaptation."[317] Insurers have the ability to "incentivize behavior that will reduce climate-related losses and build resilience. . . as well as to finance adaptation measures and to compensate for climate change-related losses."[318] They point out how the insurance industry may reduce government policies, especially mispricing of risks, which may encourage negative adaptive actions.[319]

VI. USING A TRANSACTIONAL CASE STUDY: DEVELOPMENT OF A PROJECT AFTER HURRICANE SANDY— ADDING ADAPTATION TO CLIMATE CHANGE TO THE CHECKLIST[320]

The project which is the subject of this case study involves the acquisition of a parcel of land upon which the developer proposes to construct a multi-building complex with a hotel, office building, small lifestyle shopping mall with movie complex, and a residential tower to be comprised of condominium units. Other properties in this developer's portfolio suffered significant damage from Hurricane Sandy and also from floods in the Midwest. As a result of these experiences, the project developer is concerned about the impacts of climate change and the need to adapt the new project to make it resilient. To what extent will the risks of climate change and the need to adapt to it affect the developer's interest in acquiring the parcel of land and its ability to obtain permits, insurance, and the financing needed to construct and then to complete and lease the project? The developer's ultimate goal is to immediately sell the hotel and condo units and then to sell the remainder of the completed project when it is leased and occupied.

Checklists are an essential part of all transactions because they identify the matters which must be accomplished at each stage in the process; the attorney as engineer/architect of the deal are reflected when checklists are created. Checklists move transactions forward. Powell on Real Property Law has provided an example of the traditional type of checklist – the kind of checklist that all transactional attorneys have. These checklists are updated as new requirements are added by local governments and agencies that must also be satisfied. Often these new requirements must be satisfied in order to obtain transfer stamps and to have

317. Flatt, *supra* note 86, at 7 (2012).

318. *Id.*

319. *Id.* at. 8–9 (suggesting overarching principles and goals for the insurance industry in support of climate change adaptation).

320. The author is grateful for the experienced assistance of Virginia M. Harding, a long time "dirt" lawyer for developing this case study.

instruments recorded. [321]

Because of developer's concerns about the risks of climate change and the need to adapt to build a resilient project, the traditional checklists for each phase of the project will need to be revised to add issues and concerns so that the completed project will have been adapted to be resilient to climate change at least as far as current technology can achieve that.

A. Acquisition Checklist Revisions: Identification of Potential Climate Change Risks Based on Location.

These checklist items are in the nature of due diligence questions that should result in the preparation of reports and studies by project consultants.

1. Will any portion of the project land vanish over time?

If the project location is adjacent to the ocean, then an investigation about the likelihood that a portion of the property will vanish over time due to sea level rise and/or shoreline erosion should be done. A key inquiry would be looking forward to what can be expected in the future but should also include a site history which would indicate what changes have already occurred over time - not that dissimilar to the site history found in a Phase I Environmental Report in which the physical records about the property are examined. This investigation would indicate the extent to which the property already was subject to periodic floods and the extent to which shoreline erosion had already taken place. The extent to which the risk of flooding would increase over time such that the land would be designated as being in a flood plain would be a key part of the reports. At a minimum, the results of such investigations could require changes in the site plan for the project and in the building designs so that building systems are not located at or below grade where the risk of flood damage is greatest. Based on the results of the investigations and the costs of the measures that would be reasonably needed to adapt the property to these consequences of climate change, the developer may decide not to proceed. This result is not dissimilar to what can happen when the Phase II Environmental Assessment Report shows that the property will require remediation and clean up not initially expected.

2. Is this property likely to have hotter, longer, and drier summers?

The reports considering these items should not only cover the changes that have already occurred but also those that are likely to take place in the future. The information provided will enable

321. Eric Damian, *Due Diligence for Counsel to a Developer or Lender*, Powell on Real Property § P9.10.

the air-conditioning systems to be designed to handle higher temperatures. These findings could result in changes to how the buildings are sited and designed to be more energy efficient and heat resistant. Greater heat and less summer rain could encourage the use of landscaping which is designed with drought resident plants to reduce the need for watering. This is an area of investigation where sustainability principles become important.

3. Is the project location subject to frequent periods of drought?

This is a matter that needs to be investigated not only for the potential impact that a drought would have on (i) the project landscaping, (ii) increasing the risk of wildfires, but also, and more importantly, (iii) because periods of prolonged drought can result in decreases in the sources of water for the property. With droughts occurring in places not commonly expected, the impact of droughts on a source of water that will supply the project needs to be investigated. The 2009 Kratovil Conference on Real Estate Law & Practice: "Water as a Resource: Impact on Real Estate Ownership, Development and Land Use Policy" explored the issue of water supplies.[322] That conference took place at a time when Atlanta had just experienced a significant decrease in the lake that supplies its water. For places such as New York City that rely upon water in upstate reservoirs, the levels of water in such reservoirs could be an issue. For communities that rely upon water from the Colorado River, the due diligence issue might be to determine what alternatives are available to meet the need for water if the supply from the River goes down Further, the supply of water even from the Great Lakes is in danger.[323] As part of the investigations, it is important to know not only where the water for the project will come from, but also the extent to which such supplies are in short supply – even without a drought - and of any alternatives that might be available to address any shortfalls in the water. Would the developer of this project be prepared to utilize wa-

322. *See* John Marshall Law School, *The Center for Real Estate Law*, www.jmls.edu/realestate (see website for more information about the 2009 Kratovil Conference). Articles from the Conference were published in The John Marshall Law Review (2010): Lincoln L. Davies, *East Going West?: The Promise of Assured Supply Laws in Modern Real Estate Development*, 43 J. MARSHALL L. REV. 319 (2010); Julian Conrad Juergensmeyer, Rainwater Recapture: Development Regulations Promoting Water Conservation, 43 J. MARSHALL L. REV. 359 (2010); Richard J. Roddewig, *Law as Hidden Architecture: Law, Politics, and Implementation of the Burnham Plan of Chicago Since 1909*, 43 J. MARSHALL L. REV. 375 (2010); Virginia M. Harding, *Burnham, Water, and the Plan of Chicago: A Historical Explanation of Why Water Was Ignored and the Consequences of Ignoring Water*, 43 J. MARSHALL L. REV. 413 (2010).

323. *See* David Schaper, *States Approve Compact to Protect Great Lakes*, NPR (July 8, 2008), http://www.npr.org/templates/story/story.php?storyId=92297955 (explaining that the Great Lakes Compact was entered into to protect the supply).

ter created by cleaning and disinfecting existing supplies of brown water? This is an instance where the droughts due to climate change will combine with the increased use of ground water for crop irrigation, watering, landscaping, and increases in population in areas where water was already a scarce commodity.

4. Has the infrastructure that provides vehicular access and utility services (gas, electric and telecommunications) to the property been updated and retrofitted to make it resilient to storms and hurricanes?

These are due diligence questions that focus on access and utility services - on matters that rarely were given any attention. Typically the developer's big concern was about the sufficiency/capacity of the local wastewater treatment plant to sewage from the project. If it was not, then who would finance the cost of the needed plant expansion? The developer should receive reports giving the age and condition of the critical components of infrastructure which includes roads, rail lines, bridges, power plants, waste water treatment plants and lines, cables and towers used to provide electricity, gas, telephone and cable services. Have any of these been updated and retrofitted to make them less likely to sustain damage that would disrupt service and access to the property? Are any measures being talked about or in the planning stage that would make these facilities more resilient? What governments and other entities are responsible for maintaining the infrastructure? Has there been a history of washouts, landslides, floods, storms and other climatic events that disrupted service for extended periods of time? Are the local service providers even thinking about adding resiliency to their systems?[324] What about public utilities? We need only to look at the natural gas lines in Chicago where floodwater seeped into the 100 year old iron pipes and the cell towers in New York where generators at the base did not function during Hurricane Sandy. According to Ralph Child, utilities, like so many other clients affected by climate change, have a tendency to put their heads in sand and not admit vulnerability.[325]

325. *See generally* Ralph Child, *Climate Change: Emerging Law of Adaptation*, AM. C. ENVTL. LAW. BLOG (Jan. 2, 2013), http://www.acoel.org/2013/01/default.aspx (showing that the child in the phone conversation with the author reported this tendency of utility clients).

5. What, if anything, has the seller and others said about the impact of climate change in filings with government agencies?

As the consequences of climate change loom larger on the public radar screen, it is expected that more disclosures about the impact of and plans to adapt to those changes will become more common. While the SEC already requires disclosures, it is expected that states and federal agencies will require the annual submission or publication of reports discussing what has been done and what is being planned to adapt to the risks of climate change. Due diligence responding to climate change may make requests for such reports and internal memoranda of any studies done on climate change risk and adaptation more common. While this case study involves the acquisition of vacant land for development, this line of inquiry would be expanded to include requests from and reports submitted to insurance carriers concerning climate change risks if buildings were being acquired.

While outside the scope of this article, all transactional attorneys know that more and more jurisdictions have added disclosure documents to residential real estate transactions. I would not be surprised if the trend toward mandatory disclosures might start to include commercial transactions as well. The difference between buyer as consumer in residential transactions and the more sophisticated buyer may not be all that large in light of increasing disclosure requirements of agencies, including the EPA and SEC. Instead of the real estate brokers who lobbied extensively for the residential disclosures, this movement may be led by lenders and the insurance industry. And, perhaps the developer client will need to make disclosures to the buyers of the condominiums.[326]

6. What additional requirements will the title company impose to insure title to land that is subject to sea level rise or erosion?

Will loss of land in the face of sea level rise and shore erosion be covered by title insurers? This insurance is different than most types in that it protects from losses based upon the condition of the real property *before* the title policy issues. This is in contrast with most insurance that covers events occurring *after* the policy issues. (think life insurance, automobile insurance, and homeowners' fire and casualty insurance). Like so many other areas of the common law affected by climate change impacts, what the impact of sea level rise and erosion is may evolve. Current rules of accretion and avulsion generally do not respond to sudden changes as we expect from some climate change impacts.[327]

326. *See Illinois Residential Disclosure Act*, 765 ILCS 77/5 (2006) (requiring detailed disclosure by sellers of residential property).

327. Byrne, *supra* note 157, at 70, 80, 83.

7. Are there any zoning and other land use restrictions – current and pending - which mandate adaptation and sustainability?

Because these government regulations can impact on-site layout and building design and increase costs, knowing what is out there is important. When were these regulations last updated? Do they mandate any special requirements to adapt to climate change? Do the land use regulations include any unusual provisions to address or make the area more resilient to climatic events? Are any changes being considered or discussed by government or by groups within the community? Some local governments already now include sustainability requirements promulgated by non-government organizations like U.S. Green Building Council. Knowing what is happening in the applicable community has always been one of the best reasons to engage local consultants and real estate attorneys. Are any changes in flood plain maps anticipated? Are any pending or likely? Flood plain maps are updated periodically and current ones may be outdated.

8. If there are offsite facilities and infrastructure essential to the use and occupancy of the project do they need to be adapted to make them resilient to climate change?

What is the age and condition of the critical components of infrastructure which includes roads, rail lines, bridges, power plants, waste water treatment plants and lines, cables and towers used to provide electricity, gas, telephone and cable services? Older components may be more likely to suffer damage in a climatic event. Has there been a history of washouts, landslides, flood damage, wildfires etc. What measures, if any have been taken to make these items more resilient? Will rebuilding of roads and bridges continue to be guaranteed if some real estate becomes unusable because of persistent flooding or wild fires?

Are public monies or other funds available to pay some or all of the costs of adaptation? Or are these costs that the project developer must pay? Even if there are government programs, to what extent do such programs have monies currently available?[328]

9. Insurance - Is the property in an area where property insurance is readily available?

Everyone has heard about issues related to flood insurance, but with insurance claims mounting, what new requirements will insurance companies impose upon owners seeking insurance. Underwriters are often the leaders in requiring changes in structures to reduce risks. For example, insurance companies require fireproof construction and fire-safe landscaping as a condition of offer-

328. *See id.*, at 106; DA Farber, *Adapting to Climate Change: Who Should Pay*, 23 J. LAND USE & ENVTL.L.1 (2007). *Cf.* Verchick, *supra* note 93.

ing owner's insurance against wildfires. [329] However, because fire related losses are only 3% of the total, other types of claims (for hurricanes, earthquakes, and larger scale claims) are of more concern to insurers.[330] Whether the increased rates for insurance in areas where wildfires pose a strong threat lead to a decrease of real estate development is not clear because of political resistance led by the real estate and lenders.[331] The new Federal Flood Plain Insurance, which has a goal of charging market rate for the risk of flooding, also faces political resistance now that Congressmen are becoming informed by their constituents of what that means (reported increases in insurance premiums from about $1,000 per year to $28,000 per year) may cause a backlash of homeowners sufficient to modify the law and thus to defeat what may have become a strong incentive /stick not to build on flood plains.[332]

10. Is the property located in a jurisdiction where the matter of Retreat is being considered and discussed?

If it is, then what is the likelihood that the property could be subject to requirements of retreat? If it is, then the developer may decide to move on and find another property on which to build the project.

B. Loan Checklist Revision

1. Long-term arrangements? Lenders are really 'flippers' too, as are their single asset borrowers.

The concept of "long term" or "permanent loan" has changed in recent years. The 30 year loan has now changed to something shorter five to seven years – just as borrowers wanted rights to get out from under a long term loan when rates had gone down, lenders wanted to have the loan interest rates guaranteed for a period of time – once known as the "lock-in period." Climate change may encourage lenders to want to have the right to "call" the loan upon the occurrence of a climatic disaster or upon the passage of legislation requiring retrofits to adapt to climate change. How will climate disasters be dealt with in our common law definitions of the doctrine of waste?

329. Keiter, *supra* note 42, at 516 (listing the other requirements to insure against wild fire: homeowner fire-proofing education, increased rates in areas of high risk of wildfires, and initiatives for state and local agencies to adopt protective forest management policies).

330. *Id.*

331. *Id.* at 517.

2. Insurance Proceeds

The "normal" tension between lenders and borrowers as to use of insurance proceeds following a casualty stems from whether proceeds are used to repay loan or the proceeds are to be used to rebuild and restore the property. This issue can become more complicated if real estate assets are damaged by climatic events that occur regularly. Should the right or obligation to use proceeds to rebuild include a requirement to make the property more resilient to climatic events? What if the insurance proceeds are sufficient to build what was destroyed but not sufficient to achieve resilience?[333]

C. Commercial Leasing Checklist Revisions

Commercial leases often involve long-term arrangements. An obligation to rebuild is typical, but some of the challenges we saw in lending will exist especially regarding divvying up insurance proceeds.

1. Force majeure[334]

Is this clause triggered by climate disaster? It may be that if damage was "preventable," if the other party had taken "reasonable precautions" in light of "reasonable measures for climate change adaptation," the force majeure clause would be no protection.[335] When do new measures become "reasonably prudent?" Will new adaptation requirements change what needs to be specified in the clause?

2. Insurance (of course)

To the extent that there are insurance issues between the parties to a commercial lease, climate change and adaptation to it will create checklist items for the landlord, the tenant, and the lender.[336]

3. Passing costs of adapting to respond to climate change onto tenants is not that much different from passing costs of energy saving retrofits onto tenants

The tenant who is unable to occupy its space until repairs are made is a tenant whose business will be adversely impacted even if it has a platinum business interruption insurance policy.

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333. *See* Byrne, *supra* note 157.

334. Poffenberger, *supra* note 79.

335. *Id.* at 6.

336. *See* DANIEL BOGART JR. AND CELESTE M. HAMMOND, COMMERCIAL LEASING- A TRANSACTIONAL PRIMER (Carolina Academic Press, 2nd ed. 2011) (need parenthetical); *see also*, Ruhl, *supra* note 212, at 395 (expecting insurance issues for all areas of transactions).

4. Title Insurance

"What can we get from the title company about this?" is a question transactional attorneys often ask when faced with a somewhat new or novel risk. Is it feasible or even reasonable to ask the title company to issue an endorsement giving assurances that the insured parcel is not subject to climatic risk "X"?

VII. HOW TRANSACTIONAL ATTORNEYS WILL LEARN THE NEW CLIMATE ADAPTATION LAW

Whether it becomes a separate, new field like environmental law did in 1969 – a separate body of Climate Change Adaptation Law - or just changes in many areas of existing laws affecting real estate transactions approximating the Law of the Horse, attorneys will need to learn about the many aspects of climate change in order to be able to advise and counsel clients about the risks and opportunities it brings and to incorporate that knowledge and counsel in the transactions their clients enter into.

A. It is Not Likely to be from Legal Education

There are unimaginable pressures on Legal Education including a huge burden to educate and train "practice ready" J.D. grads as a new goal of legal education. And, this is at a time when resources are scarce. Oh, maybe a clinic on Adaptation to Climate Change or at least a general course on Climate Change Law, with a portion of it devoted to adaptation will become part of the curriculum at larger law schools[337] as has become common with mitigation and sustainability.[338] Such a course would at least raise awareness and could lead students to be "practice readier" in a field where few current lawyers have a clue.[339]

John Nolon makes an impressive argument that this is just the sort of transitional area that the academy should teach its students.[340] He views the field of climate change as ripe for "narrowing the gap" identified by the ABA's Task Force on Law Schools and the Profession in 1992[341] and subsequently by the Carnegie

337. *See Michael B. Gerrard-Courses,* COLUMBIA LAW SCHOOL, http://www.law.columbia.edu/fac/Michael_Gerrard (last visited Jan. 11, 2014) (indicating courses taught by Guerrard at Columbia Law School which has a Center for Climate Change Law).

338. Bogart, *supra* note 336 (there is no chapter on adapting to climate change.).

339. *See generally,* Ira S. Nathenson, *Best Practices for the Law of the Horse: Teaching Cyberlaw and Illuminating Law through Online Simulations,* 28 SANTA CLARA COMP, & HIGH TECH L.J. 657 (providing suggestions on how to teach Cyberlaw as Law of the Horse; can teaching Climate Adaptation Law be far behind?).

340. Nolon, *supra* note 255.

341. A.B.A., LEGAL EDUCTION AND PROFESSIONAL DEVELOPMENT-AN EDUCATIONAL CONTINUUM 385 (American Bar Association 1992) *available at*

Foundation's Educating Lawyers.[342]

B. *Law Reviews and Law Journals*[343]

As much as law professors experience an ongoing delight and obligation to study and to recommend changes in the law, their scholarly work is not widely read by practitioners.[344] Academic publications are not likely to be the source for teaching transactional lawyers about Climate Change.

C. *CLE! That's it!*

Increasingly, lawyers keep up-to-date by participating in Continuing Legal Education (CLE) programs as well as in their work on program planning committees and as speaker and authors of CLE materials. The author is completing an empirical study of CLE programs to determine whether Climate Change and Adaptation to Climate Change are beginning to receive attention in CLE programs.[345] Though the project has not been completed it is apparent that climate change and adaptation to it is only beginning to receive attention. The author is reviewing the CLE programs of the Top CLE providers over the past 40 years. That review starts at the beginnings of the Quiet Revolution and the stirrings of Environmental Law. The definition of "top CLEs" combines a research role with practitioner response. The author has had the privilege of participating as a CLE researcher, author, presenter, and audience member through membership in American College of Real Estate Lawyers (ACREL).[346] The American College of Environmental Lawyers (ACOEL)[347] produces similar high quality CLE. ALI ABA[348] also is known for its CLE programs although they tend to focus on a few areas of practice and offer updates annually of both the materials and the presentations, rather on producing totally new programs.

ABA Sections produce CLE for their members e.g. Real Prop-

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http://www.americanbar.org/content/dam/aba/publications/misc/legal_education/2013_legal_education_and_professional_development_maccrate_report.

342. WILLIAM M. SULLIVAN ET AL., EDUCATING LAWYERS: PREPARATION FOR THE PROFESSION OF LAW = (The Carnegie Foundation 2007).

343. *See generally* Adam Liptak, *The Lackluster Reviews That Lawyers Love to Hate,* N.Y. TIMES, Oct. 22, 2013, at A15, *available at* http://www.nytimes.com/2013/10/22/us/law-scholarships-lackluster-reviews.html?_r=0 (arguing that not even judges read the articles).

345. *See* J.B. Ruhl, *supra* note 212, at 377 (referring to his review of 1015 files in Westlaw's Journals and Law Reviews (JLR) database using the terms "climate change" and "adapt!" to identify relevant articles for his work).

346. AMERICAN COLLEGE OF REAL ESTATE LAWYERS (ACREL), www.acrel.org (last visited Jan. 11, 2014).

347. AMERICAN COLLEGE OF ENVIRONMENTAL LAWYERS (ACOEL), www.acoel.org (last visited Jan 12, 2014).

348. Now known as ALI CLE and can be found at www.ali-cle.org.

erty Law, Business Law, Environmental/Natural Resources Law, Construction Law, Local Government Law and others related to commercial transactions practice and Climate Change. Local bar associations regularly produce few CLE in the field; the New York Bar Association and the Chicago Bar Associations are the exceptions. There is also a trend for law schools to present conferences that, while academic, provide CLE credit. The best of those include practitioners and industry professionals as scholars, presenters, and authors.[349]

Production of well done, innovative and relevant CLE programs also provide those participating with positive publicity, especially for practitioners labeled "expert practitioners" as a result. This is consistent with the marketing efforts for law firms of all sorts and sizes. Firm webpages give firm attorneys ways to indicate their expertise. Some web sites include videos of presentations[350] and links to articles.

D. Blogs, Too [351]

Especially with attorneys who already have a basic knowledge of the field of climate change and now even adaptation to climate change, blogs are becoming known ways to keep up with a focused field like climate change adaptation law and practice. The following is a list of excellent blogs that will provide interactive way to track the developments in adaptation to climate change from the perspective of the real estate transactional lawyer:

- Green Building Law Blog maintained by Shari Shapiro of Cozen O'Connor *http://www.greenbuildinglawblog.com*
- American College of Environmental Lawyers maintained by Ralph Child and others *http://www.acoel.org*
- Climate Lawyer Blog maintained by J. Wylie Donald, of McCarter & English, *http://climatelawyers.com*
- Center for Progressive Reform BLOG maintained by a national group of environmental law professors, including Rob Verchick and Alice Kaswan. *http://www.progressivereform.org/CPRblog.cfm*

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349. *See* JOHN MARSHALL LAW SCHOOL CENTER FOR REAL ESTATE LAW, www.jmls.edu/realestate/kratovil (last visited Jan. 11, 2014) (showing that the John Marshall Law School holds these conferences).

350. *See* http://email.jmls.edu/real-estate/2013-kratovil/general.html (providing the brochure for the Kratovil Conference).

351. *See generally* D. Gordon Smith, *Bloggership: How Blogs are Transforming Legal Scholarship: A Case Study in Bloggership*, 84 WASH. U. L. REV. 1135 (2006) (showing that BLOGS also concentrate on climate change).

VIII. CONCLUSION

The goal of this article is to provide a clearer understanding of the special role of transactional/business attorneys. Only now and only at a few law schools, including The John Marshall Law School, is this perspective on practice receiving the attention it deserves. Part of producing 'practice ready' graduates is to provide training and education to prepare the students for transactional practice – after all, it is the area of practice where most of them will be involved.

What the role of transactional attorneys will be in representing their clients who are adapting to Climate Change is more uncertain than how the world will adapt to Climate Change. This article hopefully provides a framework for the continuing inquiry.