

STATE COMPETITION AS A SOURCE DRIVING CLIMATE CHANGE MITIGATION

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I. INTRODUCTION

The rapid proliferation and diversification of climate change policy initiatives at the state level in the United States runs contrary to much conventional thinking about climate policy development. Various state governments are presently taking significant steps to mitigate climate change. This trend is particularly interesting in its sharp contrast to the federal government’s official stance on climate change, which includes formal disengagement from the Kyoto Protocol as well as an

enduring inability to take incremental steps to reduce greenhouse gases through new legislation. At the same time, the ways in which states approach the climate change issue differ markedly and are in considerable flux. Some states, such as California, New Mexico, and New York, continue to pursue and expand fairly aggressive climate change policies, while other states, such as Alabama and Michigan, have taken few if any such steps. Perhaps most interesting are those states that implement policies with beneficial consequences for the climate without referring to them as climate change mitigation efforts or attempts to control greenhouse gas impacts. This raises a number of questions: What impels some states to take actions that effectively run counter to federal government policy? What explains the substantial differences between states in their respective policy responses to climate change? What other drivers of climate change mitigation exist besides purely environmental concerns?

These observations and questions are at the heart of a larger discussion about the societal and political aspects of climate change. There is today a growing awareness, in the United States and abroad, that we need to look “beyond climate” to understand the factors and conditions that either promote or impede the successful implementation of climate change policies.¹ This article seeks to contribute to this growing debate by analyzing and categorizing various drivers of state action. In doing so, we will use the concept of “state competition” as a generic tool for the analysis of the various state policy initiatives. In essence, we argue that the very competition among states for economic development (in its broadest sense) creates conditions that either promote or impede the development of proactive climate change policies. States compete on numerous issues, and over areas and resources that, depending on the particular circumstances, could be important sources of competitive advantage or de facto liabilities. The question that follows is to what extent, and under what circumstances, proactive climate change policies could provide a new source of competitive economic advantage in states’ overall “competitive strategy portfolio.” The results of this inquiry may also be relevant for other federal or federated systems of government, such as Australia’s, Canada’s, and the European

¹ See BARRY G. RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY 1–37 (2004).

Union's, which leave considerable policymaking authority to member states, provinces or nations.

The concept of state competition implies that interests other than primarily environmental ones also may drive proactive climate change policies. Analytically, our ambition is to extend beyond the traditional explanations for proactive measures and identify the circumstances under which competition among states may generate environmentally beneficial results. Such a discussion could potentially make at least two major contributions. First, the notion of competition provides another angle of view on an area of research that is still very much an open field. Second, by using "competition" as a generic tool of analysis, we will also develop an instrument to study the interaction between public and private interests. Within the competition framework, we can ask and potentially answer various generic questions, such as: Under what conditions can we expect public-private synergies to take place? What makes public policies and corporate interests compatible under certain circumstances and not under others? For these broader issues, one might argue that climate change mitigation in all its complexity constitutes an almost ideal area of study. The ambition of this paper is thereby to answer the following question: *How, in what ways, and under what circumstances will competitive concerns of state governments influence the ways in which climate change policies are formulated?* Underlying this operational question is the notion that policy initiatives related to climate change mitigation could under some circumstances provide a new source of competitive economic advantage. The question is when and how.

The notion of examining policy development in a federal system from the perspective of interjurisdictional competition is hardly new. For example, the 1990s debate in the legal scholarship on "environmental federalism" questioned whether federal regulation was necessary in order to bring about effective national environmental policy.² Federal-level-policy advocates

² See Richard L. Revesz, *The Race to the Bottom and Federal Environmental Regulation: A Response to Critics*, 82 MINN. L. REV. 535 (1997) [hereinafter Revesz, *The Race to the Bottom*]; Kirsten H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "to the Bottom"?*, 48 HASTINGS L.J. 271 (1997); Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1996); Richard Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race to the Bottom" Rationale for*

argued that in the absence of national regulation, competition among states for relocating industries would create a “race to the bottom” in which states would be unable to set environmental standards at their “ideal” level from a cost-benefit perspective, because businesses would play jurisdictions off one another, threatening to relocate to friendlier states if their deregulatory demands were not met.³ State-level-policy advocates argued that state environmental protection levels should, by and large, be seen to reflect rational regulatory choices on the part of states; that is, even as independent regulatory actors, states were capable of making rational decisions and choosing a suitable mix of industrial development and environmental amenities.⁴ These scholars predicted, leaving the problem of interstate externalities to the side for the moment, that competition among states would, in the end, result in a competitive equilibrium, where each jurisdiction would end up with a mix of industry and environmental amenities determined by a combination of that jurisdiction’s economic advantages and the preferences of its populace.⁵ Accordingly, they noted that federal regulation creating a baseline minimum of environmental protection risked depriving poorer states of the opportunity to exchange unwanted environmental amenities for industrial development, while federal regulation capping environmental protections risked preventing states that desired to go beyond the federal requirements from reaching their desired level of environmental protection.⁶

Federal Environmental Regulation, 67 N.Y.U. L. REV. 1210 (1992) [hereinafter Revesz, *Rehabilitating Interstate Competition*]. See also INDUR R. GOKLANY, *CLEARING THE AIR: THE REAL STORY OF THE WAR ON AIR POLLUTION* 149–56 (1999) (arguing that most progress on air quality is due to private and subnational innovation, not federal statutes, such as the Clean Air Act).

³ See, e.g., Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196, 1212 (1977); Richard B. Stewart, *The Development of Administrative and Quasi-Constitutional Law in Judicial Review of Environmental Decisionmaking: Lessons from the Clean Air Act*, 62 IOWA L. REV. 713, 747 (1977).

⁴ See Revesz, *Rehabilitating Interstate Competition*, *supra* note 2, at 1242–43; see also Wallace E. Oates & Robert M. Schwab, *Economic Competition Among Jurisdictions: Efficiency Enhancing or Distortion Inducing?*, 35 J. PUB. ECON. 333–35 (1988).

⁵ See Revesz, *Rehabilitating Interstate Competition*, *supra* note 2, at 1242–43; Oates & Schwab, *supra* note 4, at 333–35.

⁶ See Revesz, *Rehabilitating Interstate Competition*, *supra* note 2, at 1242–43.

Countering this argument, federal-regulation advocates responded that the equilibrium prediction would be correct given the baseline assumption of state rationality, but that (1) the economics of regulatory decisionmaking was plagued by game-theoretic problems, in particular, a prisoner's dilemma wherein regulators would bargain away regulations worth more than the industrial benefits they would gain;⁷ (2) some of the benefits being traded could be seen as fundamental rights of individuals that they should not be allowed to give up;⁸ (3) "public choice" problems, such as a failure of majoritarian politics to protect the rights of the few⁹ and the difficulty in weighing environmental benefits,¹⁰ might prevent state governments from aggregating public preferences in a meaningful way;¹¹ and (4) the costs of policy formation might discourage efficient regulation at the state level.¹²

The productive result of this debate was to debunk the notion, absent economic externalities, of a general race to the bottom in state environmental regulation, and replace it with an empirical dispute about the rationality of states as environmental regulators—compared, of course, to the federal government. In this dispute, it has been easy for federal policy advocates to show that state policy is often ineffective and/or ill-advised,¹³ but more difficult to show that its irrationality would skew state policy in one direction (toward deregulation),¹⁴ and harder still to show that federal regulation provides a more rational set of policies, especially with the recent relaxation of federal environmental enforcement, which has further weakened the stature of federal policy among environmental policy experts. However, the notion

⁷ See Engel, *supra* note 2, at 304–05. Ultimately the argument for such a dilemma can only be based on either state regulatory irrationality or domination of the state by private industry. Engel argues both: first, she argues that states are, in fact, irrational in this way. *Id.* at 351–53. Second, she argues that such domination may occur in some cases, although powerful states may also dominate the process. *Id.* at 354–56. It should be noted that irrationality on the part of weaker states will have negative externalities on states that act rationally as well, under the "Theory of the Second Best." See Esty, *supra* note 2, at 634.

⁸ See Engel, *supra* note 2, at 288–92.

⁹ See *id.* at 589.

¹⁰ See Esty, *supra* note 2, at 597–99.

¹¹ See *id.* at 648–52.

¹² See *id.* at 585–87.

¹³ See Engel, *supra* note 2, at 315–52 (providing an empirical analysis of state policy).

¹⁴ See Revesz, *The Race to the Bottom*, *supra* note 2, at 553.

of federal policy as a “floor” protecting certain “fundamental rights” still has vitality. This somewhat paternalistic notion could be reframed by looking at federal policies as a way of protecting vulnerable states from decision-making that is constrained by their powerlessness. State preferences can be seen as shaped by power relationships.¹⁵ States that are less financially or otherwise powerful are less able to control their preferences and thus may require this policy “floor” in order to avoid making rash concessions to powerful and persuasive private actors.¹⁶

Going forward, we will observe what we believe to be a great deal of rationality in state environmental policy formation. But regardless of how much credulity one gives to the notion of state government rationality in regulating local environmental quality, opposing camps would agree that a genuine economic “race to the bottom” will occur where states are not forced to bear the full force of their environmental actions, that is, where states are allowed unilaterally to regulate activity that has significant interstate externalities. Climate change is such an area because greenhouse gas emissions from one jurisdiction will incrementally increase the risk of climate change affecting the whole world. Likewise, efforts of one jurisdiction to limit or even eliminate greenhouse gas emissions, or even to sequester carbon, will be shared by the entire world, and, in the absence of a superjurisdictional regulatory regime, the jurisdiction will have no way to internalize the benefits of its actions. Thus one would expect that subnational and even national governments, acting alone, would consistently under-regulate with regard to climate change. Federal regulation and international treaties, in particular the Kyoto Protocol, have been justified on this basis.¹⁷

This economic prediction fails to explain the unexpected flurry of state-level action on climate change policy, which involves a large and diverse set of states and policy initiatives. In order to understand this activity, one must add several nuances to

¹⁵ See, e.g., Amy Sinden, *In Defense of Absolutes: Combating the Politics of Power in Environmental Law*, 90 IOWA L. REV. 1405, 1458–60 (2005). See also Cass Sunstein, *Two Faces of Liberalism*, 41 U. MIAMI L. REV. 245 (1986).

¹⁶ See PAUL E. PETERSON ET AL., *WHEN FEDERALISM WORKS* 1–31 (1986); FRANK R. BAUMGARTNER & BRYAN D. JONES, *AGENDAS AND INSTABILITY IN AMERICAN POLITICS* 216–34 (1993).

¹⁷ See MICHAEL GRUBB ET AL., *ROYAL INST. OF INT’L AFFAIRS, THE KYOTO PROTOCOL: A GUIDE AND ASSESSMENT* 155-59 (1999).

the economic model, accounting for goals, perceptions, and strategies that shape competitive behavior in a federal system. The notion of inter-state competition¹⁸ will provide our framework for understanding policy development in the climate change area. By observing the policy behavior of states in this context, one may gain insights into the virtues and problems of a federal system of government, and of the U.S. system in particular. One also comes to understand the bases for different state perceptions of the potential gains from unilateral action. Finally, one may also learn what kinds of opportunities are likely to lead states to take action. This knowledge may be beneficial to those seeking to instigate policy changes that have global benefits by political action on the state level.

II. STATE CLIMATE POLICY INITIATIVES

The emergence of proactive climate change policies at the state level in the U.S. is currently generating increasing interest among both policymakers and scholars. Many state initiatives show a high degree of technological and, perhaps more importantly, political and institutional ingenuity.

One can discern three distinct ways in which states have approached the climate change issue, although the details of individual state approaches differ markedly. First, in approximately fifteen states, concentrated heavily on the West Coast and in the Northeast, greenhouse gas mitigation has emerged as a major and explicit policy objective. California has a reputation as the country's principal environmental mover, but it has reached new levels through engagement on climate change: after decades of effort to promote renewable energy and energy efficiency, in 2002 the state became the first Western government to establish caps on carbon dioxide emissions from vehicles.¹⁹ The interpretation and implementation of this policy by the California Air Resources Board has proceeded despite the well-publicized

¹⁸ In this paper, we use the term "inter-state" to mean "among the states as governments." In particular, "inter-state competition" is used to indicate competition among states, whereas "interstate competition" is used to indicate competition among private actors across state lines.

¹⁹ See *California Bill Caps Carbon Release*, INSIDE ENERGY, Jul. 8, 2002, at 14 (stating that California's program of caps is "the first of its kind anywhere in the world"); CAL. HEALTH & SAFETY CODE ANN. § 42823, § 43018.5 (2005).

change in the California governorship.²⁰ In fact, Governor Arnold Schwarzenegger announced in June 2005 that the state would reduce its greenhouse gas emissions to 2000 levels by 2010 and to 1990 levels by 2020.²¹ The state further pledged to reduce its emissions 80 percent below 1990 levels by 2050.²² California already has one of the lowest rates of greenhouse gas emissions per capita among the American states,²³ which is partially a reflection of previous policies. Yet California has intensified its engagement on this issue, and has consistently linked concern about climate protection with economic development opportunities.²⁴ California is the most visible of the U.S. states addressing climate change, given its ambitious policy agenda and its production of approximately two percent of global greenhouse gas emissions.²⁵ But it is not alone, joined by an expanding and increasingly diverse set of states that are also pursuing visible and aggressive policies.²⁶ Moreover, there have in recent years been some signs that multiple states with common policies and goals may join forces and establish regional initiatives at the subnational

²⁰ See, e.g., John Pendergrass, *California Takes On Detroit Once Again*, 21 ENVTL. F., July–Aug. 2004, at 6.

²¹ See Jeffrey Ball, *California Sets Emissions Goals That Are Stiffer Than U.S. Plan*, WALL ST. J., June 3, 2005, at A4.

²² *Id.*; Miguel Bustillo, *Gov. Vows Attack on Global Warming; Schwarzenegger Says the State Will Take the Lead in Slashing Greenhouse Gas Emissions, but Offers Few Specifics on How Goals Would Be Reached*, L.A. TIMES, June 2, 2005, at B1.

²³ California's rate of per capita emissions of greenhouse gases was lower in 1999 than any state other than Iowa and Massachusetts. RABE, *supra* note 1, at 2.

²⁴ See, e.g., Press Release, Office of the Governor of Cal., Governor Schwarzenegger Establishes Green House Gas Emission Reduction Targets (Jun. 1, 2005) (on file with N.Y.U. Environmental Law Journal) (“‘Technologies that reduce [greenhouse gas] emissions are increasingly in demand in the worldwide marketplace,’ said California Environmental Protection Agency Secretary Alan Lloyd. ‘California companies investing in these technologies are well placed to benefit from this demand. This will boost California’s economy and protect public health and the environment.’”).

²⁵ See RABE, *supra* note 1, at 2; see also Ball, *supra* note 21.

²⁶ See RABE, *supra* note 1, at 29–37; see also Pew Ctr. on Global Climate Change, State and Local Net Greenhouse Gas Emissions Reduction Programs, <http://www.pewclimate.org/states.cfm?view=all> (last visited Dec. 10, 2005) (case studies of forty-eight state and local climate change initiatives); PEW CTR. ON GLOBAL CLIMATE CHANGE, IN BRIEF NO. 8, LEARNING FROM STATE ACTION ON CLIMATE CHANGE, (2004), available at <http://www.pewclimate.org/docUploads/States%5FInBrief%2Epdf> (describing a range of state and regional climate change mitigation efforts).

level.²⁷

Second, another cluster of states has pursued some degree of greenhouse gas reduction, without making it an explicit policy objective, but instead emphasizing economic development advantages. In 1999, for instance, Texas imposed the legislative requirement that utilities derive approximately three percent of their total production of electricity from renewable sources by 2009.²⁸ The Texas “renewable portfolio standard” (“RPS”), signed into law by then-governor George W. Bush, was an attempt to address the state’s problems related to energy importation.²⁹ This legislative effort, combined with the contemporaneous introduction of a trading system for renewable energy credits,³⁰ was intended to give energy companies an incentive to use more renewable energy, primarily wind energy.³¹ The state was cognizant of potential greenhouse gas reductions and has kept track of them as its renewable energy consumption has grown at an exponential rate in the first half of this decade.³² But Texas has continued to accentuate the non-climate benefits, including opportunities to secure a more diverse and reliable electricity supply, to create entrepreneurial opportunities for renewable energy developers, and to reduce conventional air contaminants.³³ In addition to Texas, nineteen other states and the District of Columbia have also enacted comparable RPS programs, and the vast majority of these have also tended to emphasize the non-climate benefits.³⁴ Ironically, in the European Union, virtually

²⁷ Given that the next generation of state regulation is projected to include inter-state agreements, this is an important issue. For a detailed discussion of regional initiatives on climate change including the RGGI, and others, see Kirsten H. Engel, *Mitigating Global Climate Change in the United States: A Regional Approach*, 14 N.Y.U. ENVTL. L.J. 54 (2005).

²⁸ TEX. UTIL CODE ANN. § 39.904 (Vernon 2004).

²⁹ See RABE, *supra* note 1, at 51–60.

³⁰ See TEX. UTIL CODE ANN. § 39.904(b).

³¹ See RABE, *supra* note 1, at 60–62; see also BARRY G. RABE, PEW CTR. ON GLOBAL CLIMATE CHANGE, RENEWABLE ENERGY: THE EVOLUTION OF STATE RENEWABLE PORTFOLIO STANDARDS AS A CLIMATE POLICY TOOL (forthcoming 2006).

³² See RABE, *supra* note 1, at 51–62.

³³ See RABE, *supra* note 31. For further discussion of Texas’s actions on climate change, see RABE, *supra* note 1, at 49–62.

³⁴ See Barry G. Rabe & Philip A. Mundo, Business Influence in State-Level Environmental Policy 12-13 (Sept. 1, 2005) (unpublished paper presented at the 101st Annual Meeting of the American Political Science Association, available at http://convention2.allacademic.com/getfile.php?file=apsa05_proceeding/2005-

identical RPS policies have been enacted in nations such as the United Kingdom and Denmark,³⁵ and are seen as central elements in their efforts to meet their obligations under the Kyoto Protocol.

Finally, there are also states, particularly in the Southeast, that have demonstrated little involvement in the climate change issue or have taken steps to restrict agency officials from pursuing climate policy innovation.³⁶ In most of these cases, the rationale is that proactive climate change policies constitute a threat to the local economy and should be avoided at all costs.³⁷ As one might expect, this view is particularly strong in regions dominated by heavy manufacturing and dependent on coal power for electricity or coal mining for employment.³⁸

These examples show that there is a great variation in states' responses to the threat of global warming. In fact, there may be greater diversity *within* the United States than between most countries bound by Kyoto, such as those of the European Union. A similar diversity can also be noted in the ways in which states frame and subsequently implement their climate efforts. Some states choose to enact new state laws and rules,³⁹ while others utilize existing legal authorities and programs.⁴⁰ Some states

08-03/41197/apsa05_proceeding_41197.pdf).

³⁵ See N.H. VAN DER LINDEN ET AL., REVIEW OF INTERNATIONAL EXPERIENCE WITH RENEWABLE ENERGY OBLIGATION SUPPORT MECHANISMS 22–34 (2005), available at <http://www.ecn.nl/docs/library/report/2005/c05025.pdf>.

³⁶ See RABE, *supra* note 1, at 40–47.

³⁷ See *id.*

³⁸ See RABE, *supra* note 31. At the same time, some states that appear initially to have very great disincentives to consider any form of climate mitigation have in fact made steps toward mitigation. Coal-dependent states such as Colorado and Pennsylvania, for example, have enacted RPS policies in recent years. However, the former came through a ballot proposition. See Rebecca Smith, *Voters Force Colorado Utilities to Use Renewable Resources*, WALL ST. J., Nov. 4, 2004, at A4. And the latter has a number of loopholes that favor burning of so-called “waste-coal” as well as incinerated animal wastes as renewable energy sources. See Alternative Energy Portfolio Standards Act, PA. CONS. STATE § 1648.2 (2005) (explicitly defining alternative energy sources, such as renewable energy).

³⁹ Prominent examples include the New Hampshire carbon dioxide emissions legislation and the New Jersey executive order by New Jersey Department of Environmental Protection Commissioner Shinn. See RABE, *supra* note 1, at 77–78, 116.

⁴⁰ Most state RPS programs do involve new legislation but many defer much of the decision making to existing agencies through conventional rule-making processes. In many cases, the legislation is fairly vague, delegating much to established agencies or commission. A good example is the RPS in

prefer to administer their efforts through their environmental agencies, while others work mainly through other state agencies, such as agriculture and energy.⁴¹ Finally, states also differ in how much emphasis they put on voluntary measures and market incentives, like cap-and-trade systems.⁴²

III. EXPLAINING DIFFERENTIAL STATE RESPONSES

Collectively, these actions constitute a highly varied set of state policies related to climate change regulation. In them, we also find a diverse set of motivations on the part of states and state actors, ranging from short-term to very long-term outlooks, and reflecting concerns ranging from economic development to quality of life to considerations of intergenerational ethics. Any attempt to analyze these policy decisions has to address inter-state competition, because states and state actors must themselves consider the zero-sum element in their competition against other states for resources, revenues, and people. But on further inspection, competition also provides a useful framework for understanding all of this state policy activity.

A. *The Value and Problems of the Competition Framework*

Assuming a functioning political system, political scientists ordinarily hypothesize that representative government operates by making government actors accountable in some way to the public. In state government, actors may be elected and thus face getting fired by the voters; they may be political appointees, and face getting fired by their bosses; or, they may be bureaucrats, and face getting fired when government budgets are slashed by the legislature. Direct electoral accountability motivates only a subset

Pennsylvania, now being interpreted and implemented by the Pennsylvania Public Utility Commission. See S. 1030 § 7, Sess. of 2004 (Pa. 2004).

⁴¹ Most state programs that address greenhouse gas emissions as an air pollution problem delegate authority to a lead environmental protection agency. For example, in the case of California, the California Air Resources Board is the central player in implementing the 2002 vehicle emissions legislation. For programs that emphasize renewable energy, such as RPSs, authority is usually lodged in the state's lead energy agency, whether this means a public utility commission (as in the case of Texas and Pennsylvania) or a state Division or Department (as in the Mass. Division of Energy Resources).

⁴² See ANDREW AULISI ET. AL., WORLD RES. INST., GREENHOUSE GAS EMISSIONS TRADING IN U.S. STATES: OBSERVATIONS AND LESSONS FROM THE OTC NOx BUDGET PROGRAM (Margaret Yamashita ed., 2005).

of state actors, but some kind of political accountability motivates all. In addition, for each class of actors, power and prestige are linked to the strength of the state: a weak state, losing money and people to other states, is, all other things being equal, a less desirable state in which to have power and responsibility. Economic competition is a powerful tool for explaining state government action, not only because states are accountable to constituents who favor a strong state economy, but also because state actors have a great deal at stake in the economic strength of their states independent of what their constituents prefer. This subsection will serve to explain the theoretical virtues of the competition framework, and to respond to some common attacks leveled against it.

1. *The Firm-State Analogy*

In the attempt to understand and improve state policymaking behavior using the competition framework, a useful analogy can be found in firms, whose competitive behavior has long been a subject of academic inquiry. Although the analogy is imperfect, it is perhaps not as imperfect as one might think. For example, one putative contrast is that many state government actors are formally independent of one another, serving distinct geographic constituencies within the state and representing different, often contradictory, policy interests, whereas firms, as purported “profit maximizers,” seem relatively simple or monolithic by comparison. The difference, however, is really one of degree: today’s large, decentralized corporations are often beholden to diverse constituents such as different classes of stockholders, employees and managers of different divisions, creditors, and long-term customers, and may certainly face deep disputes among these constituents concerning fundamental questions.

As economic actors, states and firms have a great deal in common. Both compete for resources and external support, and actively mitigate various categories of risks. Like firms, states are concerned about their reputation and image among their respective “customers,” be they voters, relocating businesses, or others. What is more, as complex global issues such as climate change grow in prominence, one notices increasingly “state-like,” policy-oriented behavior among firms. For example, in the oil and gas industry, the very different stances of the corporate titans BP and ExxonMobil bear some resemblance to the range of state

government stances.⁴³

The analogy to firms aids in understanding the competition tool, and also helps to answer potential criticisms of using competition as a means to explain state action. In particular, one criticism is that government actors, because they are often independent, are likely to act self-interestedly, and it is therefore improper to view state action as the result of competition, as it in fact arises from individuals acting in their own self-interests. But, just as firms can compete vigorously despite ample opportunity for their managers and directors to extract “private benefits” from their privileged positions, states can also compete despite suffering from parallel problems, such as patronage and corruption. These problems are limited and controlled by constituents’ oversight of the activities of political actors, and also by political actors’ fundamental interest in the health of the state. A state may actually have *fewer* “agency problems” than a firm, in that career growth for state political actors and bureaucrats is often highly state-specific, so that the prosperity of the actor in question is *more* tightly bound to that of the state than an employee’s is to that of his company.

In the business and economics literature on the competitive behavior of firms, firms are taken as rational profit-maximizers. While states have no “profits” to maximize, they do have something analogous, which is economic development and the prosperity of their constituents. While the traditional view of political economy might treat the interests of individual politicians as primary and their shared interest in state economic development as merely incidental, the decision to view states as firm-like is merely a change in emphasis and is a viable alternative model for the reasons stated above. Just as, in reality, firms are not simply “profit maximizers,” and may be studied, for example, as battlegrounds for competition among would-be corporate controllers equally as well as they may be studied as competitors in their own right, so, too, states have an analogous dual nature.

⁴³ BP CEO John Browne has pushed his company toward climate change mitigation policies and has publicly advocated for such policies. *See, e.g.*, John Browne, *Beyond Kyoto*, FOREIGN AFF., Jul./Aug. 2004, at 20. Outgoing ExxonMobil CEO Lee Raymond has actively avoided such programs and has publicly denied the global warming phenomenon. *See* Jeffrey Ball, *Digging In: Exxon Chief Makes a Cold Calculation on Global Warming*, WALL ST. J., June 14, 2005, at A1.

Thus, the competition thesis applies to states despite the unarguable divergence between the model of “economic development-maximizer” and the behavior of any state.

2. *Analytical Benefits of the Competition Framework*

There are a number of reasons why it could be instructive to apply the notion of state competition to the analysis of climate change policies. First, it allows us to think about policy options in a more open-ended way. Political outcomes related to climate change mitigation must necessarily depend on the way that mitigation policy interacts with and affects other policy priorities, and the competition framework allows us to identify, in a generic way, the forces driving this process. Accordingly, the competition framework could potentially serve as a tool for more effective policymaking. By thinking creatively about state competition one could, at least in theory, create the conditions in which actors that are indifferent to environmental concerns also take actions, though they may do so for non-environmental reasons.

Second, the competition framework has the advantage of broad and flexible application: observations and conclusions from one competitive setting can be tested and potentially applied, with the necessary modifications, to other settings. In this vein, it is also worth mentioning that the states and provinces of Australia⁴⁴ and Canada,⁴⁵ formal federal governments that have ratified Kyoto, are contending with issues very similar to those facing the U.S. states.

Finally, the competition framework allows public policy research to build upon well-developed theories from the business literature. As is discussed above, economists have studied in depth the theory and methods of private firm competition, under the headings of “strategic management” and “corporate competitive advantage.” Private firms compete by performing a set of activities that together constitute their so-called value chains.⁴⁶

⁴⁴ See THE CLIMATE GROUP, CARBON DOWN PROFITS UP 23–24 (2005), available at http://www.theclimategroup.org/assets/Carbon_Down_Profit_Up.pdf.

⁴⁵ See Barry G. Rabe, Moral Super-Power or Policy Laggard? Translating Kyoto Protocol Ratification into Federal and Provincial Climate Policy in Canada 1 (June 2, 2005) (unpublished paper presented to the Annual Meeting of the Canadian Political Science Association, London Ontario), available at <http://www.cpsa-acsp.ca/papers-2005/Rabe.pdf>.

⁴⁶ Michael E. Porter & Victor E. Millar, *How Information Gives You*

Managers make strategic choices where the key questions are how to perform individual activities and organize the entire value chain. Firms can outdo their competitors by performing similar activities better than their rivals (operational effectiveness), performing activities different than their rivals', or performing similar activities in different ways (strategic positioning).⁴⁷ The public policy literature is less developed on the theory of interjurisdictional competition, but the notion of strategic positioning applies to states by analogy in the environmental and natural resources policy area.

In the theory of strategic positioning, firms have a set of competitive options (a "competitive strategy portfolio") from which they make their choices; the ultimate goal is to find an activity that others cannot perform as well, so as to extract monopoly profits until competitors catch up. This notion of a competitive strategy portfolio also applies to public policymaking. Scholarship in political science has shown that subnational jurisdictions attempt to assemble a basket of public services and fiscal strategies that maximize their own competitive well-being economically.⁴⁸ Likewise, policy innovation can, in theory, give one jurisdiction a temporary edge over its competitors, which may potentially attract capital investment, enhance business revenues, and attract or retain valuable workers.

3. "Competitiveness" and Federal Government

The concept of the economic "competitiveness" of governmental jurisdictions has received increasing attention in the public debate, and with it, some criticism. Early in his presidency, for example, Bill Clinton declared that he regarded nations as "big corporations competing in the global marketplace." Competitiveness has gradually become an explicit policy objective in many capitals, as evidenced by the European Union's ambition to become "the most competitive and dynamic knowledge-based economy in the world."⁴⁹

Competitive Advantage, in ON COMPETITION 75, 77–78 (Michael E. Porter ed., 1998).

⁴⁷ See, e.g., MICHAEL E. PORTER, *What Is Strategy?*, in ON COMPETITION, *supra* note 46, at 39–73.

⁴⁸ See PAUL E. PETERSON, *THE PRICE OF FEDERALISM* 85–106 (1995).

⁴⁹ Presidency Conclusions, Lisbon European Council 2 (Mar. 23–24, 2000), available at <http://www.uniovi.es/EEES/attachs/1080547066-1->

In these pronouncements, however, political actors have assumed an economic competition between nations that is based on trade. State competition in a federal system can be broader than international trade competition, because individual mobility allows individuals, and not just companies, production, and resources, to cross jurisdictional borders. Thus, in a federal system, states compete to provide optimal conditions for economic productivity, extending to traditional economic areas such as labor policy, technology innovation, education, and trade, but also to the provision of health care, education, and other services that relate to quality of life.⁵⁰ So while the notion of international trade competition has been contested as insufficient as a proxy for policymaking,⁵¹ the competition we describe, although predominantly economic in scope, extends to and has implications for all policy areas.

Besides the free migration of people and capital, the other major difference between the U.S. federal context and the international context is the presence of federal policy, both as a backdrop to competition and as a strategic tool to be used by competing states. In the U.S. federal system, a state may attempt to achieve its own goals, impose costs on its competitors, or “lock in” certain advantages by seeking new regulation at the federal or international level.⁵² An international actor may analogously respond to or seek to make policy at the superjurisdictional level, via international bodies such as the U.N. or the WTO, but the power of the federal government over the states is much greater than that of the multilateral treaty organizations over their members. As a result, situations giving rise to coercive new regulations are much more common in the United States.⁵³

PRESIDENCY_CONCLUSIONS_Lissabon.pdf.

⁵⁰ See, e.g., Michael E. Porter, *Location, Competition, and Economic Development: Local Clusters in a Global Economy*, 14 *ECON. DEV. Q.* 1, 15–34 (2000). For a discussion about the complexity of these policy areas, see Mark Carl Rom et al., *Interstate Competition and Welfare Policy*, *PUBLIUS*, Summer 1998, at 17–21; Thorsten Bayindir-Upmann, *Two Games of Interjurisdictional Competition When Local Governments Provide Industrial Public Goods*, 5 *INT’L TAX & PUB. FIN.* 471, 471–87 (1998).

⁵¹ See Paul Krugman, *Competitiveness: A Dangerous Obsession*, *FOREIGN AFF.*, Mar./Apr. 1994, at 28, 41–44.

⁵² We can refer to this higher level of regulation generically as “superjurisdictional.”

⁵³ We shall see that state policy strategy related to climate change interacts heavily with the superjurisdictional regulatory environment: states must of

Furthermore, states are likely to be more cognizant of the federal regulatory climate and to invent policies that will be beneficial under federal regulatory changes that are either predicted or pursued by the state.

B. *Parameters of Inter-state Competition*

Going forward, this paper will show states competing for, among other things, businesses, investment, trade, federal funding, and finally, human resources. Though competition among states can and does embrace every aspect of how states govern, in looking at inter-state competition in climate change-related initiatives, it is helpful to identify four broad groups of factors that shape state policy both in the first instance and as a matter of inter-state competition.⁵⁴

1. *Category 1: "Locally Controllable Effects"—Environmental Advantages and Harms the State Can Control Locally*

State action to mitigate climate change is often linked with other harms that the state can control locally. For example, California has led the way in reducing greenhouse gases in part because of a convergence with the distinctly local problem of smog. Likewise, many states have enacted RPS legislation in part in reaction to concerns about rising global energy prices under the assumption that local renewable sources would protect them from future energy price fluctuations.

In a policy area thought to be dominated by a regulatory "race to the bottom," it is not surprising that much of the policy action on the state level is found to have roots in other, locally-oriented regulatory goals. But although the connection between climate change and these locally-oriented regulations may be seen as fortuitous, the result has been that these states have become

course consider the current environment in crafting policy; they may also consider predictions on how that environment will change; and of course, certain states have proactively sought out federal regulatory changes for obvious strategic reasons. For example, New York (along with other states) sued to strengthen the New Source Review Standards of the Clean Air Act so that Midwest states would pay (by upgrading their power plants) to improve New York's air quality. *See New York v. U.S. EPA*, 413 F.3d 3 (D.C. Cir. 2005).

⁵⁴ We use the abstract term "parameter" because the factors in question are a diverse mix of perceptions (such as fears of future events or hope of other events), goals (i.e. hopes of future results from current behavior), and facts (perceptions that have the added feature of being true).

climate change “players.” In some cases, this outcome leads to a self-reinforcing cycle. These players can choose to publicize themselves as environmentally virtuous and thus improve their reputations with some potentially important audiences. Moreover, these states have an incentive to support superjurisdictional regulations that force “nonplayers” to contribute and incidentally defray the player’s costs.

2. *Category 2: “Regulatory Predictions”—Predictions and Goals Concerning Future Superjurisdictional or Extrajurisdictional (Spontaneous State) Regulation*

If a state is not already a climate change “player” for local reasons, it may still wish to enact regulations now because of the fear that in the future it will be forced, by superjurisdictional regulation, to meet higher standards that will be more costly to comply with. A state, whether or not it is already a climate change player, may also seek to change superjurisdictional regulations either through lobbying initiatives or, more commonly, through lawsuits. Lawsuits against the federal government under the Administrative Procedure Act or the citizen suit provisions of some statutes can force the federal government to act administratively, thus altering federal regulation via the executive branch.⁵⁵ Suing interstate private actors can also be a mechanism of federal regulatory change, especially when the lawsuits are based on novel legal theories.⁵⁶

⁵⁵ In January 2003, New York and eight other states sued the EPA to enjoin a new regulation implementing the Clean Air Act’s New Source Performance Standards that had the effect of relaxing the regulatory requirements. See Katherine Q. Seelye, *9 Northeast States File Suit over New Rules on Pollution*, N.Y. TIMES, Jan. 1, 2003, at A1. Other states later joined this lawsuit and by the time it reached the D.C. Circuit, plaintiff states included California, Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Vermont, Wisconsin, and the District of Columbia. The D.C. Circuit invalidated some sections of the new rule. See *New York v. U.S. EPA*, 413 F.3d at 3. Some of these states also sued the EPA to list CO₂ as a criteria pollutant. See Jennifer 8. Lee, *7 States to Sue E.P.A. Over Standards on Air Pollution*, N.Y. TIMES, Feb. 21, 2003, at A25.

⁵⁶ Eight states (Connecticut, New York, New Jersey, Rhode Island, Vermont, Wisconsin, Iowa, and California) and the City of New York sued five power companies to curb carbon dioxide emissions and avert climate change. See Julia Preston & Andrew C. Revkin, *City Joins Suit Against 5 Power Companies*, N.Y. TIMES, July 22, 2004, at B2. The suit was dismissed by the District Court on political question grounds. See *Connecticut v. Am. Elec. Power Co., Inc.*, No. 04 Civ. 5669 (LAP), 2005 WL 2347900 at *7 (S.D.N.Y. Sept. 22, 2005).

Finally, a state may base its action on predictions or hopes that its sister jurisdictions will regulate in certain ways irrespective of how a “superior” jurisdiction regulates. Thus, for example, a state may fund university research on zero-emission vehicles even though it has no hope of recouping those moneys through in-state sales of the resulting technology, because it predicts that other jurisdictions will also regulate and will therefore be willing to pay for this technology.

3. *Category 3: “Popular Preferences”—Goals Driven by Constituent Preferences and Reputational Considerations*

As is noted above, states compete in large part for people. Even when a state is wooing an industrial giant, it must show not only that it is friendly to the business interests of the company but also that it is a good place for executives, managers, skilled laborers, and other employees to live. For non-industrial companies, professional firms, and professionals themselves, quality of life is even more important. Many of these companies and individuals have a wide choice of places to locate, and may therefore be swayed by relatively minor differences in amenities, services, and quality of life.

What goes into being a “good place to live” is a fairly subjective and complex mix of elements, but environmental regulations can affect several parts of the calculus. First, there are environmental detriments such as dirty air and dirty water, which can negatively affect everyday life; all other things being equal, states will act to avoid these problems. Second, there are amenities, such as parks and recreational spaces, which can be attractive for new entrants. Third, there may be positive reputational effects associated with legislation and regulation itself; the jurisdiction benefits from being known as a responsible actor with responsive and well-meaning government.⁵⁷ The benefits of climate change-related regulations accrue across this

⁵⁷ Reputational effects can be measured in a number of ways and used to give leading-edge states credit-claiming opportunities that accentuate their roles. See generally James P. Lester, *A New Federalism? Environmental Policy in the States*, in ENVIRONMENTAL POLICY IN THE 1990S, at 59 (Norman J. Vig & Michael E. Kraft eds., 1990) (discussing past efforts to compare and rank state capacity and commitment to environmental protection); ERIC SIY ET AL., RES. RENEWAL INST., THE STATE OF THE STATES (2001) (developing a “Green Plan Capacity Index” to rank and evaluate states in terms of sustainable development).

spectrum, and thus these regulations can be a valuable tool for states competing for the most sought-after businesses.

4. *Category 4: “Non-locally Controllable Effects”—Predictions Concerning Future Occurrences Outside of the Jurisdiction’s Control*

Climate change is a global problem that states individually have only a limited ability to control. However, most states will be affected by global warming in some way, from coastal states facing threats of rising tides, to agricultural states facing the danger of desertification, to vacation states facing the loss of environmental amenities. Accordingly, although no state has the ability to affect these outcomes unilaterally, many still have adopted programs purporting to fight global warming. This is perhaps mainly seen as “ethical” activity; but it also qualifies as competitive activity in two ways. First, it may be an irrational attempt to “do something” to mitigate climate change and preserve the future of the state. This type of wishful thinking still qualifies as competitive activity because competition need not be based on facts, only on perceptions. Furthermore, a competitive equilibrium based on irrational perceptions may be optimal if the irrational perception serves to overcome a collective action problem or other inefficiency, as in the case of climate change. Second, a state may use its status as a climate change “player” to influence other states to join it, and thus form a trend; more formally, states may enter into an inter-state pact, such as the Regional Greenhouse Gas Initiative (“RGGI”).⁵⁸ While a group of states acting together, like the RGGI, may still have only a limited ability to prevent climate change, this ability might be enhanced by the group’s growth or its influence on nonmember states.

⁵⁸ Nine Northeastern states reached agreement in August 2005 on a plan to establish a regional cap-and-trade program to reduce carbon dioxide releases from electric utilities, involving more than 600 power plants. Anthony DePalma, *9 States in Plan to Cut Emissions by Power Plants*, N.Y. TIMES, Aug. 24, 2005, at A1. RGGI followed two years of inter-state negotiation after an initial proposal from the State of New York. *See id.*; Reg’l Greenhouse Gas Initiative, About RGGI, <http://www.rggi.org/about.htm> (last visited Jan. 3, 2006); *see also* Engel, *supra* note 27, at 66–67. In some instances, such as for New Hampshire, RGGI would be interwoven with existing program that now operate intrastate. For other states, such as Connecticut and Maine, RGGI represents a new dimension of their climate policy commitment. RGGI proponents see this agreement as an initial step, with possible expansion to other jurisdictions and other greenhouse gas sources. *See* DePalma, *supra*.

C. *The Pursuit of Competitive Advantage*

In this section, we will work through a number of cases in which different competitive concerns have affected state governments' positions on climate change mitigation policies. We seek to identify the particular circumstances that either impede or drive proactive climate change policies. A first step is to tease out states' various sources of competitive advantages. Looking at examples of climate change legislation, we see that states tend to engage in climate change mitigation where they have competitive assets that may gain additional value when combined with climate change initiatives. Through a largely inductive effort, we have identified five policy areas that seem particularly relevant to climate-related issues: natural resource base protection, energy security and reliability, local industry protection, innovation and technology development, and operational efficiencies for state government. In each case, strategic factors in the four categories listed above interact to create an opportunity, or perceived opportunity, for a state to gain a competitive advantage.

1. *Natural Resource Base Protection*

One area of concern for any state government competing for economic development and sustainable livelihood is to secure its natural resource base. Natural resources set the basic conditions for a state's economic activity. Their management also influences larger questions like regional development and human health, domains that are at the core of state governments' responsibility. In this context, climate change adaptation and mitigation may alternatively appear as a threat, a necessity, or a possible opportunity.

In addition to any intrinsic or ethical value they may have, all ecosystems provide a variety of goods and services. Some products of ecosystems enter the market and contribute directly to the economy; one example is a forest product such as timber or pulpwood. For these products, the economic component of the natural resource is obvious, and private actors are often directly involved in the management of the resource. Other parts of the ecosystem, however, provide services that are typically not traded in the marketplace and are thus usually managed by state authorities. Forests and wetlands, for example, improve water quality and regulate stream flow, thereby providing protection from floods. Fresh, unpolluted air improves perceived "quality of

life” and also prevents problems associated with poor air quality, including health problems that cost society millions of dollars each year.⁵⁹ Finally, ecosystems also provide recreational and aesthetic amenities. All of these services are strategically valuable; they contribute to a region’s ability to attract investments, industry, residents, and visitors. A state’s management strategy will thus depend on the bundle of these ecosystem services that it relies on.

States have tended to take proactive measures on climate change when the consequences of global warming threaten to degrade their natural resource bases in ways that have a direct impact on economic activity. The threat of global warming is beyond states’ control, because no amount of mitigation activity will allow a state to stop global warming on its own. State action on climate change to meet this threat would thus be economically irrational, taken on its own. However, most states that have taken such action out of perceived economic self-interest have done so in conjunction with efforts either to influence sister states directly or to affect policy on the national level.

For example, Maine is beginning to perceive a threat to a major source of income in the rapid decline of certain forest species due to changing climate.⁶⁰ Another potential threat for Maine comes from its heavy reliance on hydropower,⁶¹ a resource that is threatened by the impact of climate change on precipitation patterns and surface water levels.⁶² In view of these concerns,

⁵⁹ See Paul R. Portney, *Air Pollution Policy*, in PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 77, 100–05 (Paul R. Portney & Robert N. Stavins eds., 2000).

⁶⁰ There is high uncertainty about the actual impacts of climate change, particularly on a regional basis, such as for the forest sector. Some research seems to indicate that the logging sector in the Northeast actually could benefit from climate change as their competitors in the South go out of business. See, e.g., Roger A. Sedjo & Brent Sohngen, *What Are the Impacts of Global Warming on the U.S. Forests, Regions, and the U.S. Timber Industry?*, 12 PENN ST. ENVTL. L. REV. 95, 101 (2004).

⁶¹ Maine has an energy profile that is considerably different from most other states, with renewables, in the form of hydroelectric and biomass, supplying forty percent of the energy consumed, which is considerably higher than the national average of six percent (as of year 2000). See ENERGY ADVISORS, LLC, MAINE ENERGY POLICY: OVERVIEW AND OPPORTUNITIES FOR IMPROVEMENT 64 (2003), available at <http://mainegov-images.informe.org/spo/energy/energycouncil/docs/EnergyReportText.pdf>.

⁶² These impacts are also pressing for states on the West Coast that depend heavily on hydroelectric power. Consequently, global warming is often mentioned in state environmental action plans for those states and is also

Maine has taken several steps in the direction of climate change mitigation, including unilaterally adopting California's vehicle emissions standard,⁶³ beginning to inventory greenhouse gas emissions via mandatory reporting programs,⁶⁴ and joining the New England Governors' and Canadian Premiers' climate change agreement⁶⁵ and RGGI.⁶⁶ More recently, Maine has also presented its own Climate Action Plan, which specifies various concrete measures to achieve emissions reductions.⁶⁷ Additionally, in order to influence national policy, Maine has joined both the state suit against the EPA over NSR and the interstate nuisance suit.⁶⁸ Thus, Maine's strategy includes both an apparently wishful individual effort in the face of a problem it has little hope of controlling on its own and some rather shrewd strategic behavior directed at forming alliances and influencing federal-level policy.

States at risk from rising sea levels along the U.S. coastline

beginning to show up in the public debate. *See, e.g.*, Wash. State Dept. of Ecology, Global Warming/Climate Change, http://www.ecy.wa.gov/programs/air/globalwarming/Global_Warming_site.html (last visited Nov. 11, 2005) (noting that global warming may lead to "[l]ess snow-pack in the Cascades and elsewhere, which . . . would lead to reduced hydropower, less water for irrigation, endangered salmon stocks, and less wetland habitat"); Erik Robinson, *Global Warming Threatens Northwest, Warns State Climatologist; Hydroelectric Power could Suffer in Next 50 Years*, THE COLUMBIAN (Vancouver, Wash.), Nov. 6, 2004, at C1; Don Thompson, *Global Warming Danger to State*, VENTURA COUNTY STAR (Cal.), June 10, 2004, at 4.

⁶³ On July 5, 2005, the Maine Environmental Protection Agency adopted The New Motor Vehicle Emission Standards (Zero Emission Vehicle Sales Requirement) which mirrors the Californian legislation. *See* Approval and Promulgation of Air Quality Implementation Plans; Maine; Low Emission Vehicle Program, 70 Fed. Reg. 21,959 (Apr. 28, 2005).

⁶⁴ As part of legislation LD 845, "An Act to Provide Leadership in Addressing the Threat of Climate Change" was signed by Governor John Baldacci in 2003. 2003 Me. Laws 516-17. This made Maine the first state in the Union to have a law requiring climate action. *See* Joshua L. Weinstein, *Climate Change Law to be First in Nation; Maine Will Become the Only State with Legislated Goals to Reduce Carbon Dioxide Pollution*, PORTLAND PRESS HERALD, June 25, 2003, at 1A.

⁶⁵ Comm. on the Env't. & Ne. Int'l Comm. on Energy, Conference of New England Governors and Eastern Canadian Premiers, Climate Change Action Plan 2001 (2001), available at <http://www.negc.org/documents/NEG-ECP%20CCAP.PDF>. *See also* Engel, *supra* note 27, at 65.

⁶⁶ *See supra* note 58.

⁶⁷ *See generally* ME DEP'T OF ENVTL. PROT., MAINE CLIMATE ACTION PLAN 2004 (2004), available at <http://maineghg.raabassociates.org/Articles/MaineClimateActionPlan2004Volume%201.pdf>.

⁶⁸ *See supra* notes 53 and 55.

have also taken steps to mitigate climate change. Here the prime driver of preventive action is the goal of saving the states the catastrophic economic and social costs of displacement.⁶⁹ For the U.S. as a whole, rising sea levels are an enormous threat both in impact and in scope. Approximately 53 percent of the U.S. population lives in the 17 percent of the country adjacent to or relatively near the coast, and populations in these areas are growing more rapidly than anywhere else in the country.⁷⁰ Already today, in many coastal communities, the ordinary challenges of increasing development are complicated by the natural problems of erosion and storms, perhaps best reflected in the horrific impact of Hurricane Katrina on New Orleans and the Gulf Coast region in September 2005.⁷¹ The added threat of potential rising sea levels has spurred New Jersey, among other states, to work aggressively to pursue climate change mitigation efforts.⁷² New Jersey's unilateral action, which might otherwise be futile, was combined with strategies to influence sister jurisdictions.⁷³ New Jersey has adopted initiatives that serve the additional purpose of enhancing local air quality, and thus their

⁶⁹ For a description of some of the measures that have been taken, see U.S. DEP'T OF STATE, U.S. CLIMATE ACTION REPORT 2002, at 153 (2002), available at [http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWHU6/\\$File/uscar.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWHU6/$File/uscar.pdf). For a more elaborate discussion on the costs involved, see James G. Titus et al., *Greenhouse Effect and Sea Level Rise: The Cost of Holding Back the Sea*, 19 COASTAL MGMT. 171, 189–201 (1991).

⁷⁰ U.S. DEP'T OF STATE, *supra* note 69, at 103.

⁷¹ See, e.g., Eduardo Porter, *Damage to Economy is Deep and Wide: Hurricane's Disruption of Key Energy Systems Hits Variety of Industries*, N.Y. TIMES, Aug. 31, 2005, at C1.

⁷² Indeed, concern about rising sea level and more immediate issues of possible abandonment of barrier islands off the New Jersey coast was a major factor that prompted that state to develop a diverse and robust action plan to reduce greenhouse gas emissions. See RABE, *supra* note 1, at 112–16. A report for the New Jersey Geological Survey instigated much of this concern. See PETER SUGARMAN, N.J. GEOLOGICAL SURVEY, SEA LEVEL RISE IN NEW JERSEY (1998), available at <http://www.state.nj.us/dep/njgs/enviroed/infocirc/sealevel.pdf>.

⁷³ New Jersey signed a letter of intent to join a greenhouse gas emissions trading agreement with the Netherlands, but subsequently closed this agreement. RABE, *supra* note 1, at 133–34. It has also agreed to promote the exchange of environmental information with Canada, *id.* at 139, and looked into various deals with the federal government. See *id.* at 129–33. In addition, New Jersey entered into the multistate RGGI agreement on December 20, 2005 through a Memorandum of Understanding. See Reg'l Greenhouse Gas Initiative, Multi-State RGGI Agreement, <http://www.rggi.org/agreement.htm> (last visited Jan. 17, 2005).

cost may be justified both by concrete and certain benefits and by more contingent or aspirational benefits.⁷⁴

The examples outlined above are primarily “defensive” competitive strategies by which states seek to protect their resources from the dangers of climate change. But there are also circumstances in which the management of the natural resource base through climate change mitigation efforts can be a source of offensive strategic competitive advantage, turning a threat into a source of profit. For example, in agricultural states, global warming poses a dire threat to agricultural production, as extreme weather events, outbreaks of plant disease, and pest infestations may cause crops to fail and sector productivity to decline.⁷⁵ Agricultural states have the opportunity to mitigate climate change by taking steps such as setting up wind farms, engaging in the production of “bio-diesel” and ethanol fuels, and participating in carbon sequestration programs. On their own, these initiatives must be seen as having only category 4 benefits in a state’s quest to protect its agricultural resource base—that is, their effects will be entirely contingent on the actions of innumerable other jurisdictions. However, combined with category 2 “regulatory predictions” that there will be new programs at the federal level or new policies on the part of sister states, these initiatives can be seen as a rational unilateral bid for economic opportunity. To meet their own (or future federal) emissions or “renewable portfolio” targets, other, sister states may create new demand for agricultural fuels and wind-powered electricity, thus generating profits for the states that develop these products.⁷⁶ Furthermore, with the new possibility of measuring carbon that is sequestered in the soil or plant material, agricultural producers may one day look forward to receiving incentive payments from the federal government or other extrajurisdictional sources as compensation for the carbon-trapping

⁷⁴ *Id.* at 109–45.

⁷⁵ See Richard H. Adams et al., *Impacts on the U.S. Agricultural Sector*, in CLIMATE CHANGE: SCIENCE, STRATEGIES, AND SOLUTIONS 25, 25–42 (Eileen Claussen, Pew Ctr. on Global Climate Change, ed., 2001).

⁷⁶ All existing RPS programs do allow for the possibility of out-state provision of renewables. See Rabe & Mundo, *supra* note 33, at 12. Two, namely Nevada and Texas, require that any such electricity come from a dedicated transmission line, which makes out of state provision much more difficult. See *id.* at 13. But none formally prohibit imports, sensitive in part to potential negative Commerce Clause challenges. As of yet, no suits have been filed against restrictive state policies, à la Nevada and Texas.

service they provide.⁷⁷

Thus active climate change policies, with the help of the right extrajurisdictional regulatory programs, may allow states to secure their resource bases and protect local industries while at the same time gaining new sources of revenue.⁷⁸ Despite only inklings of change at the federal level, such initiatives are already underway. States such as North and South Dakota, where high winds provide ideal wind farming conditions, have pursued policy initiatives to cultivate this industry and, in parallel, to encourage extrajurisdictional action that would enable compensation payments.⁷⁹ Additionally, states including Nebraska and Illinois have begun to pursue reforms in agricultural practices that would include increased carbon sequestration.⁸⁰

In this area, state self-interest has the potential to create a self-enforcing cycle of climate change regulation at both the state and the federal level. The prospect of federal credits for carbon trapping encourages a parallel action, where state interests pursue both local carbon trapping initiatives and federal regulation that will provide credits. Once these credits are a reality, they will grow a carbon trapping “industry” with a vested interest in more extensive regulation. One already begins to see unusual political bedfellows emerging in some agricultural states, with the agricultural community actively negotiating with the electricity

⁷⁷ See, e.g., Neb. Dep’t of Natural Res., CARBON SEQUESTRATION, GREENHOUSE GAS EMISSIONS, AND NEBRASKA AGRICULTURE 2, 23–28 (2001). As one observer has noted: “This is an enormous opportunity for farmers They can now grow two crops: one above the ground—food; and one below ground—carbon.” David Barbosa, *Plan Gives Farmers a Role in Fighting Global Warming*, N.Y. TIMES, Nov. 25, 2003, at F2 (quoting Richard Sandor, Chairman and Chief Officer of the Chicago Climate Exchange).

⁷⁸ See Press Release, Results for America, Experts: U.S. Agriculture, Food Supply Face Major Dangers and Some Opportunities from Global Warming (Sept. 29 2003), available at http://www.resultsforamerica.org/media/press_030929.php.

⁷⁹ Leaders in the Dakotas have teamed with counterparts in Iowa, Minnesota, and Manitoba to place strong emphasis on renewable energy development through a collaborative entity known as “Powering the Plains,” which builds on a long history of collaboration between these governments. Great Plains Inst., Powering the Plains, <http://www.gpisd.net/resource.html?Id=61> (last visited Oct. 8, 2005). From this collaboration has emerged general resolutions, but not a binding agreement. See Barry Rabe, *Beyond Kyoto: The Divergent Paths of Canadian Provinces and American States in Greenhouse Gas Reduction*, 20 GOVERNANCE (forthcoming July 2007).

⁸⁰ RABE, *supra* note 1, at 67–73.

sector, offering renewable energy supplied on farmlands and possible “carbon credits” from sequestration as a hedge against costs that might result from future climate policy at the federal level.⁸¹ In economics, such a complex combination of objectives and strategies is called a “nested game.”⁸² Such games present a serious managerial challenge, and the skill in which they have been played by these public and private actors in the climate change policy area is worthy of note and commendation.

2. *Electricity Security and Reliability*

American states have long retained substantial regulatory authority over the generation and allocation of electricity, primarily through state-based commissions that oversee many key dimensions of intrastate electricity policy.⁸³ For many decades, states have been keen to maintain a reliable supply of electricity to industrial, commercial, and residential customers and to keep costs reasonably low and predictable. Unusually high electricity costs or lack of reliability in supply would cause considerable hardships for industry and residential communities alike, and might lead both companies and individuals to consider moving to another jurisdiction with more favorable electricity policies and supplies.

Given all of the shocks to the American electricity system in recent decades, it is perhaps not surprising that so many states would actively explore renewable energy sources that would draw on natural local capacities to generate energy. Renewable energy, as defined by most states, covers a range of sources from solar energy, which has received the greatest interest in the Southwest,⁸⁴ to wind, which has received the most attention in the central states.⁸⁵ These local sources of energy have many economic advantages besides their potential benefit of reducing greenhouse gas emissions. First, they are relatively stable sources, relying on predictable geological and meteorological patterns. Second, they

⁸¹ *See id.* at 73.

⁸² *See infra* Section V.C.

⁸³ *See generally* WILLIAM T. GORMLEY, JR., *THE POLITICS OF PUBLIC UTILITY REGULATION* (1983).

⁸⁴ *See also* RABE, *supra* note 31; COLO. REV. STAT. § 40-2-124 (1)(c)(II), (e); NEV. REV. STAT. § 704.7821(2), (3) (2003) (solar energy carve-outs in state RPS legislation).

⁸⁵ *See* RABE, *supra* note 31.

reduce reliance on the policies of foreign governments, which largely control the production of oil and gas. Finally, they reduce reliance on international market forces and foreign trade, which may be a boon given the sometimes precarious status of the international trading system.

In the last ten years, states have increasingly pursued renewable energy development, motivated in large part by economic development and security concerns.⁸⁶ As of January 2006, twenty-one states and the District of Columbia had enacted so-called “renewable portfolio standards.”⁸⁷ Particular details vary by state, but all such programs mandate a certain increase over time in the level of renewable energy that must be provided by all electricity providers in a state. For example, Nevada passed legislation in June 2005 that will require that the state’s two primary utilities, Nevada Power Corporation and Sierra Pacific Power Corporation, gradually increase their supply of renewable energy over the following decade, ultimately reaching a level of 20 percent by 2015.⁸⁸ This legislation passed with unanimous support in both legislative chambers in Nevada, and was signed into law by Republican Governor Kenny Guinn.⁸⁹ This legislation built on earlier laws enacted in 1997, 2001, and 2003, that each added dimensions to the state’s commitment to formally promote renewable energy.⁹⁰

For Nevada, like other states, there were numerous reasons for adoption of this RPS bill, as well as its predecessors; thus this project, like the one related to carbon credits, mentioned above, has the character of a “nested game.” But, because of Nevada’s rapidly growing population, concerns about the reliability and

⁸⁶ See *id.* at 3–4; Rabe & Mundo, *supra* note 33, at 2–16.

⁸⁷ The states with RPS statutes are Arizona, California, Colorado, Connecticut, DC, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, Pennsylvania, Rhode Island, Texas, Vermont, and Wisconsin. See Pew Ctr. on Global Climate Change, States With Renewable Portfolio Standards, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last visited Nov. 11, 2005).

⁸⁸ Assemb. B. 3, sec. 29, 22d Spec. Sess. (Nev. 2005) (to be codified at NEV. REV. STAT. § 704.7821).

⁸⁹ Assemb. B. 385, 73rd Sess. (Nev. 2005).

⁹⁰ Assemb. B. 366, 69th Sess. (Nev. 1997) (codified as amended at NEV. REV. STAT. § 704 (1997)); S.B. 372, 71st Sess. (Nev. 2001) (codified as amended at NEV. REV. STAT. § 703.147 (2001)); Assemb. B. 296, 72nd Sess. (Nev. 2003) (codified as amended at NEV. REV. STAT. § 704.7821 (2005)).

future viability of the state's electricity supply have remained paramount, especially after the debacle in electricity policy and provision in California in 2001.⁹¹ In public debates, electricity has been characterized as a natural resource, much like water, and the focus of the RPS has been on the state's ability to assure long-term supply to sustain economic growth.⁹²

Second, a diverse set of state policymakers and interest groups see real opportunity for economic growth through active promotion of renewable energy sources in Nevada. Each source of renewable energy—wind, solar, geothermal, landfill gas, and others—has been well represented in state deliberations by interests that stand to benefit from the renewable policy. The major cost of electricity generated from coal, natural gas, oil, or uranium is the fuel consumed by generators; this ongoing cost sends money and profits out to other states and other jurisdictions that mine and refine the fuels. In contrast, with wind, solar, and other renewables, once a state invests in the generation facilities, the major cost is management and maintenance of the generators, and money and profits spent this way are retained locally. For Nevada and other states, the possibility of avoiding the possible high future cost of imports while creating jobs for state residents is very attractive.⁹³

⁹¹ For a detailed overview on this experience, see TIMOTHY J. BRENNAN ET AL., *ALTERNATING CURRENTS: ELECTRICITY MARKETS AND PUBLIC POLICY* 46–58 (2002).

⁹² See, e.g., MINUTES OF THE NEV. S. COMM. ON COMMERCE AND LABOR, 71st Sess. (Mar. 29, 2001), available at <http://www.leg.state.nv.us/71st/Minutes/Senate/CL/Final/635.html>; MINUTES OF THE NEV. S. COMM. ON COMMERCE AND LABOR, 71st Sess. (Apr. 12, 2001), available at <http://www.leg.state.nv.us/71st/Minutes/Senate/CL/Final/957.html>; MINUTES OF THE NEV. S. COMM. ON COMMERCE AND LABOR, 71st Sess. (Apr. 13, 2001), available at <http://www.leg.state.nv.us/71st/Minutes/Senate/CL/Final/978.html>.

⁹³ This pattern is also evident in Hawaii, which has aggressively pursued an RPS program in order to displace its primary source of electricity: oil. Hawaii's original RPS statute was enacted in 2001 (Hawaii Act 272) and modified in 2004 (Hawaii Act 95). It is codified at Hawaii Revised Statutes § 269-92 (2004). Due to its island status and lack of fossil fuels, Hawaii continues to rely on imported oil for the majority of its electricity and faces extremely high electricity costs. See CTR. FOR ENERGY, ECON. & ENVTL. POLICY, RUTGERS UNIV., *ECONOMIC IMPACT ANALYSIS OF NEW JERSEY'S PROPOSED 20% RENEWABLE PORTFOLIO STANDARD* 9 (2004), available at <http://www.state.nj.us/bpu/reports/EIAREport.pdf>. The shift to renewables is regularly portrayed as a way to reduce costs and increase economic development for Hawaiians. See, e.g., *id.* at 9–10 (citing GDS ASSOCS., INC., *ANALYSIS OF RENEWABLE PORTFOLIO STANDARD OPTIONS FOR HAWAII* (2001), available at <http://www.state.hi.us/dbedt/ert/>).

Finally, Nevada and other RPS states envision significant environmental benefits for their citizens, which can be translated into direct claims of improved quality of life for existing or future residents and investors. Any replacement of fossil fuel burning with renewable energy will reduce local air pollution, a growing concern in Nevada.⁹⁴ This has also been a strong motivating factor in other states adopting RPS programs, such as California, Texas, and much of New England, where concerns about conventional air contamination remain high.

Nearly all states developing RPS programs have tried to soften the potential blow for regulated utilities. This has included giving utilities considerable flexibility in finding ways to meet renewable mandates through so-called “renewable energy credit” programs that function much like other market-based programs and promise to lower compliance costs markedly.⁹⁵ Many states also provide some degree of financial support or subsidy for development and purchase of renewable energy, through a mixture of tax incentives, grants and loan programs. In Massachusetts, for example, the creation in 1997 of an RPS coincided with creation of the Massachusetts Renewable Energy Trust Fund, which has actively supported renewable energy development in the state and eased RPS compliance costs for either generators or consumers of electricity.⁹⁶

The RPS experience has been replicated internationally, with similar programs serving as a plank in several European Union nation efforts to comply with Kyoto Protocol obligations.⁹⁷ In the U.S., some states have chosen to make greenhouse gas reduction a central and explicit part of the rationale for RPS enactment, in conjunction with anticipated economic development benefits.⁹⁸

rps01/rps01.pdf.

⁹⁴ See Rabe & Mundo, *supra* note 33, at 12. As one proponent of the Nevada RPS noted in the 2001 legislative hearings, anticipated benefits include “the reduction of pollution emissions and the need for nuclear energy.” MINUTES OF THE NEV. S. COMM. ON COMMERCE AND LABOR, 71st Sess., Mar. 29, 2001, available at <http://www.leg.state.nv.us/71st/Minutes/Senate/CL/Final/635.html>.

⁹⁵ Seventeen states use some version of a renewable energy credit program. See RABE, *supra* note 31.

⁹⁶ See John J. Fialka, *Energy Initiatives Gain Power in Some States*, WALL ST. J., June 8, 2005, at A4. See also RABE, *supra* note 31.

⁹⁷ See VAN DER LINDEN ET AL., *supra* note 35, at 22–34; Ian H. Rowlands, *The European Directive on Renewable Electricity: Conflicts and Compromises*, 35 ENERGY POL’Y 965, 966–74 (2005).

⁹⁸ States that have cited climate change as a rationale in enacting RPS

Others have said little about potential climate policy impacts, while quietly staying abreast of RPS impact on greenhouse gas reduction as implementation proceeds.⁹⁹ In either event, renewable energy policy is an area where policy goals that are subject in large part to local control (energy supply stabilization and local air pollution) interact positively with one another and with policy goals that are beyond local control (climate change mitigation). Competition for people and resources thus is seen to lead to positive climate change policy results in this area, whether the latter are acknowledged among the stated policy goals or not.

3. *Local Industry Protection*

Nowhere is the interplay between competition, climate policies, and regulatory context more apparent than in states' ambition to support local industry. The relative strength of local industry is in many ways the most obvious source of competitive advantage for states and also the focus of industrial policy. States have various means to support and protect their local industries, ranging from outright economic support to tax breaks, investments in surrounding infrastructure, and various regulatory efforts. Traditionally, climate change mitigation policies have been seen as a limitation on industry, mainly because mitigatory regulations impose extra costs on individual firms for technological upgrades. However, there are ways in which policies related to climate change mitigation can also provide a powerful tool for states in their ambition to protect and increase the competitiveness of local industry. In order to make it so, however, states must implement a parallel strategy to change superjurisdictional regulations, such that these regulations will benefit in-state entities by transferring costs to counterparts in other states.

One unfortunate example of this has been in the form of environmental regulations that protect state-based industry by raising the cost of entry into the local market for outside competitors. An example where this strategy has come into play is in state fuel standards. States, in effect, have discretionary powers to regulate fuel content.¹⁰⁰ As a result, many states and regions

statutes include California, Massachusetts, New York, Wisconsin, New Mexico, Pennsylvania and Connecticut. See RABE, *supra* note 31.

⁹⁹ See *id.*; see generally RABE, *supra* note 1, at 1–37 (explaining the strategic aspects of explicit and implicit references to greenhouse gas reductions).

¹⁰⁰ Briefly, the Clean Air Act allows the EPA to regulate fuel content and fuel

have unique fuel requirements, varying by season.¹⁰¹ These regulatory conditions enable states to set up specific local standards that *de facto* protect smaller, regional refineries from outside competition. With different fuel requirements it becomes very expensive for the larger producer operating in several states to maintain various production lines that satisfy different local standards; this eliminates its main competitive advantages, such as economies of scale and supply-chain integration.¹⁰² Without these advantages, interstate competitors may not be able to compete in the state in question, or will lose incentives to compete, preserving the market for exploitation by smaller local producers. The result of such regulation will be a patchwork of standards: the costs, in the form of price spikes, especially around the transition period between summer- and winter-grade fuel, are borne by consumers.¹⁰³ The tradeoff between additional cost and supposedly lower pollution from these finely tailored standards is not clearly worthwhile.

Another example where state protectionism has had questionable policy results, occurred where, under the 1977 Amendments to the Clean Air Act, eastern coal producing states pushed through regulations that forced the use of scrubbing technology to reduce sulfur emissions and did not allow the use of lower sulfur coal from western states to meet the same emissions

additives if the additive in question “causes or contributes to air pollution.” 42 U.S.C. § 7545(c)(1) (2000). At the same time, the Clean Air Act also provides that states may regulate fuel additives as part of a State Implementation Plan. 42 U.S.C. § 7545(c)(4)(C). This enables states to make a choice on how to meet the commitments on projected air emissions. In most cases states are likely to opt for the least costly way, which is, precisely, to make alterations in fuel standards.

¹⁰¹ These state requirements are tracked by the National Petroleum Refiners Association. See Nat’l Petroleum Refiners Ass’n, State Bulletin Board, http://www.npra.org/issues/fuels/state_bb/ (last visited Nov. 16, 2005).

¹⁰² For a review of the potential pros and cons of boutique fuels, see U.S. EPA, STUDY OF UNIQUE GASOLINE FUEL BLENDS (“BOUTIQUE FUELS”), EFFECTS ON FUEL SUPPLY AND DISTRIBUTION AND POTENTIAL IMPROVEMENTS 75–84 (2001), available at <http://www.epa.gov/otaq/regs/fuels/p01004.pdf>. For a statement from the industry itself, see Am. Petroleum Inst., Federal and State Legislative and Regulatory Fuels Issues (Aug. 29, 2001), <http://api-ep.api.org/environment/index.cfm?bitmask=002008007002000000> (follow “Federal and State Legislative and Regulatory Fuels Issues” hyperlink).

¹⁰³ Erich Muehlegger, The Role of Content Regulation on Pricing and Market Power in Regional Retail and Wholesale Gasoline Markets 17-24 (MIT Ctr. for Energy and Env’tl. Pol’y Research Working Paper No. 2002-008, 2002), available at <http://web.mit.edu/ceep/www.2002-008.pdf>.

goals.¹⁰⁴

Protectionist regulations of this sort encourage an inefficient allocation of resources, and, by some accounts, do not necessarily result in greater environmental protection.¹⁰⁵ This criticism necessarily raises a question of second-bests, and it is hard to say exactly whether the regulations that resulted were better than the status quo, or indeed what status quo they should be compared to. But we can at least say that the intent of the regulators in these cases has been questionable, and that the economics of the resulting regime is fraught with unjustified and partly externalized costs. It is hard to tout either the boutique fuel standards or the 1977 Amendments as models of competitive efficiency, though each shows states behaving competitively.

However, the competitive strategy of imposing costs on sister jurisdictions can, in some cases, be a powerful, productive instrument of policy change, as long as these costs either serve to internalize existing externalities, or serve to overcome collective action problems. Thus, for example, when the New England states bring legal and political challenges that seek stricter regulations on coal-fired power plants, their motivation may be seen first as a matter of environmental concern, but second as a way of imposing costs on other jurisdictions. It is important to break down the second goal of this policy further: in part, this cost-imposition is properly seen as cost internalization, because prevailing winds carry industrial pollution from the Midwest into the Northeast, where it causes serious air quality problems and acid rain, resulting in great human and economic costs. But there is another hidden motivation: most Northeast states have higher overall energy costs than states in the Midwest,¹⁰⁶ at least in the short term, because

¹⁰⁴ See BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL, DIRTY AIR 100 (1981); see also RICHARD E. COHEN, WASHINGTON AT WORK: BACK ROOMS AND CLEAN AIR (1995) (case account of 1990 Clean Air Act Amendments).

¹⁰⁵ See ACKERMAN & HASSLER, *supra* note 104, at 100, 114–18.

¹⁰⁶ The New England states are ranked third, fourth, fifth, seventh and eighth in the Energy Information Administration's 2001 ranking of state energy prices in the U.S. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0376(01), STATE ENERGY PRICE AND EXPENDITURE REPORT 2001, at 17 (2001) available at http://tonto.eia.doe.gov/FTP/ROOT/state/pr_all.pdf. Massachusetts, which ranked third, then had a price of \$14.18 per million Btu. *Id.* This could be compared with \$10.72 per million Btu for the country as a whole and \$15.57 per million Btu for the District of Columbia, which was ranked in first place. *Id.*

(1) Northeast states, by and large, have a much more diversified energy portfolio than most Midwestern states¹⁰⁷ and (2) some Northeastern states have also chosen to modernize their own fossil fuel generation facilities in an attempt to improve the local air quality and environment.¹⁰⁸ Other states have also adopted California's higher standards for auto emissions,¹⁰⁹ or are pursuing cleaner air and lower long-term energy costs via in-state initiatives such as RPS.¹¹⁰ The results of these unilateral initiatives is that it is economically advantageous for these states to agitate for stricter federal emissions standards. By demanding more stringent regulation under federal law, they impose higher costs on their Midwestern counterparts, as utilities are forced to modernize and retrofit their facilities or perhaps even reconsider their energy profiles. The effect is to "level the playing field," in terms of both energy cost and clean air, thus enhancing the competitive position of Northeastern states. This strategy has been so important that it has proceeded despite political losses on the national level, via litigation both against the federal government¹¹¹ and against power plants in other states.¹¹²

For environmentalists, it is tempting to be as excited about the second element of this strategy as one is about the first: though

¹⁰⁷ This is especially true of those states that rely primarily on coal mined locally or nearby. See ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DOE/EIA-0214(01), STATE ENERGY DATA REPORT, 2001, at 3-10 (2001), available at http://www.eia.doe.gov/emeu/states/sep_use/total/pdof/use_all.pdf.

¹⁰⁸ Two examples of this are efforts in Massachusetts and New Hampshire to cap carbon dioxide emissions from coal-burning power plants. The Massachusetts Renewable Portfolio Standard Regulations were established as part of the 1997 Utility Restructuring Act, and came into force on April 26, 2002. 225 MASS. CODE REGS. 14.00 (2002). In May 2002, New Hampshire followed Massachusetts with legislation, the New Hampshire Clean Power Act, which also applies a multi-pollutant cap to carbon dioxide and other pollutants. N.H. REV. STAT. ANN. § 125-O (2004).

¹⁰⁹ Currently New York, Connecticut, New Jersey, Massachusetts, Vermont, Maine, Rhode Island and Washington implement auto emissions requirements equivalent to California's higher standards. FRED WELLINGTON & AMANDA SAUER, WORLD RES. INST., FRAMING CLIMATE RISK IN PORTFOLIO MANAGEMENT 7 (2005), available at http://incr.com/ceres_wri_report.pdf.

¹¹⁰ See, e.g., RABE, *supra* note 1, at 53. See also RABE, *supra* note 31 (providing a map and table of the states' initiatives for cleaner air).

¹¹¹ One example of such litigation is the multi-state suit attempting to enjoin the 2003 revisions to New Source Review under the Clean Air Act. See *supra* note 55.

¹¹² One such example is the multi-state suit against five power plants claiming interstate nuisance under federal common law. See *supra* note 56.

cost-imposition sounds bad, if the result is greater agitation for high environmental standards, is that not good? The answer to this is to look back at the environmental federalism debate from the mid-1990s, described in Section I above. The result is good here, to the extent that it serves to overcome the collective action problems related to climate change regulation. Its merits related to the purely local effects of air pollution are more questionable: resulting regulations in this area may be seen as unfair to jurisdictions that are forced to adopt unwanted, higher standards limiting local pollution. From a coldly analytical and strategic perspective, however, we note that this example again bears out the virtuous regulatory cycle that may be created by investment in environmental technology: investors in technology have a vested interest in encouraging the widespread adoption of these technologies.

A similar logic has also played out in the regional collaboration between the New England states and eastern Canadian territories, only in this case the roles are reversed: Northeast U.S. states cause a significant amount of pollution in the eastern Canadian provinces,¹¹³ while at the same time it is the Canadians who have signed on to more stringent emissions standards via the Kyoto protocol.¹¹⁴ The Northeastern states represent an important consumption market for these provinces, thus the added costs of Kyoto threaten this export business. It is therefore in Canada's best interest to encourage emissions controls that will in the first place, improve its air quality, and in the second, maintain the competitiveness of its export industries.

¹¹³ See generally KATHRYN HARRISON, *PASSING THE BUCK: FEDERALISM AND CANADIAN ENVIRONMENTAL POLICY* 109 (1996) (discussing how the U.S. affects pollution in Canada). See also COMM'N FOR ENVTL. COOPERATION OF N. AMERICA, *ENVIRONMENTAL CHALLENGES AND OPPORTUNITIES OF THE EVOLVING NORTH AMERICAN ELECTRICITY MARKET* 9–11 (2002), available at http://www.cec.org/files/PDF//CEC_Art13electricity_Eng.pdf (illustrating “the types of multi-jurisdictional air pollution transport systems” occurring between the U.S. and Canada).

¹¹⁴ See generally GOV'T OF CAN., *MOVING FORWARD ON CLIMATE CHANGE: A PLAN FOR HONOURING OUR KYOTO COMMITMENT* iii–iv (2005), available at http://www.climatechange.gc.ca/kyoto_commitments/report_e.pdf (“The Government of Canada is committed to the transformative, long-term change required to make reductions in GHG emissions while ensuring continued economic growth. In achieving that transformation, we believe we will meet our Kyoto target while maintaining a productive and growing economy.”); HARD CHOICES: *CLIMATE CHANGE IN CANADA* (Harold Coward & Andrew J. Weaver eds., 2004) (analyzing Canada's response to the Kyoto protocol).

Canada's efforts to bring about these emissions controls have taken the form of a collaborative process that has been in the works for several years.¹¹⁵ Again, the early-adopter of higher standards becomes an agitator for higher standards at the superjurisdictional level, with the goal of imposing costs on sister jurisdictions. And again, the result is efficient as long as (1) the regulations sought are rational in light of the environmental goal, and (2) the environmental goal is one such as interstate pollution or global warming, where interjurisdictional externalities abound.

4. *Innovation and Technology Development*

A traditional competitive strategy for governments is to foster and encourage technological advances and leadership in research. Regardless of the way in which a government benefits from fostering technological development, it acts similarly to the way private actors do, by investing in technological research and then seeking to benefit from this investment into the future. The technology-oriented economic activity can potentially serve as an important vehicle for regional development, as new industries create a demand for new services and for ancillary industries.¹¹⁶ The archetype of this pattern is Silicon Valley, which the computer industry transformed over a mere ten years from a sleepy region to one of the world's most important and dynamic economic centers.¹¹⁷

The climate change issue provides much potential for such technological opportunities. Major reductions in greenhouse gas emissions will likely result from the introduction of a wide variety of new technologies, ranging from small electrical appliances to research on alternative energy sources, like solar and wind power, and solutions for storage of carbon dioxide. Consequently, states are increasingly seeing climate policy development as a potential

¹¹⁵ See, e.g., GOV'T OF CAN, *supra* note 114, at 11.

¹¹⁶ See generally STUART A. ROSENFELD, INDUSTRIAL REGIONAL STRENGTH: REGIONAL BUSINESS CLUSTERS AND PUBLIC POLICY 11 (1995) ("Successful economies are based on more than infrastructure and capital—no matter how strong—and on more than labor, no matter how skilled. They are complex, dynamic production systems of innovative companies connected to each other by business transactions, and linked by a constant exchange of employees, information and ideas.").

¹¹⁷ There is an extensive literature on the importance and impact of such innovation clusters. See, e.g., P.B. Doeringer & D.G. Terkla, *Business Strategy and Cross-Industry Clusters*, 9 ECON. DEV. Q. 225 (1995); Porter, *supra* note 50.

basis for long-term economic development, bringing with it the possibility of patentable inventions that may provide revenue from domestic and international export, and technical and policy expertise that might be marketable beyond state borders. Much as American states have long pursued their own variants of industrial policy through various incentives, regulations and subsidies in other sectors, climate policy offers a bold new frontier for states to develop and assert economic leadership.

One prominent example that illustrates the potential state ambition to become an “innovation cluster” is Governor Arnold Schwarzenegger’s ambition to make California the center for development of hydrogen technology. During his election campaign in 2003, Schwarzenegger laid out a vision of a “hydrogen highway” stretching from Baja California to British Columbia.¹¹⁸ This promise has been reiterated since the Governor took office, and he has presented a plan to build hydrogen fuel stations every twenty miles along major highways, thereby allowing motorists to buy clean-burning hydrogen-fueled vehicles without fear they will run out of gas.¹¹⁹ The whole effort is scheduled to be completed by the year 2010 at an estimated cost of \$100 million.¹²⁰ It could be money well invested, even though many observers have expressed their skepticism.¹²¹ It is also a strategy that assures the Governor national political visibility, as the California commitment to hydrogen was very much on display at massive auto shows not only in Los Angeles in 2005 but also in Chicago and Detroit.¹²²

Governor Schwarzenegger is not the only politician who sees the possibility for profitable innovations surrounding hydrogen.

¹¹⁸ See Carla Marinucci, *Recall Spotlight on Appeals Court; Heckled: Actor Tries to Court Environmentalists Amid Protest*, S.F. CHRON., Sep. 22, 2003, at A1; Dennis Bueckert, *Arnold, Rock Pumped by Hydrogen Highway*, VANCOUVER SUN, Oct. 10, 2003, at G3 (describing the idea to link California to Canada).

¹¹⁹ See Press Release, Office of the Governor of Cal., Governor Schwarzenegger Announces the California Hydrogen Highways Network (Apr. 20, 2004) (on file with the N.Y.U. Environmental Law Journal).

¹²⁰ See *id.*

¹²¹ See, e.g., Tony Bizjak, *‘Hydrogen Highway’ to Nowhere?*, SACRAMENTO BEE, Aug. 29, 2005, at B1; Miguel Bustillo & Gary Polakovic, *Governor Pushes for ‘Hydrogen Highways’*, L.A. TIMES, Jan. 20, 2004, at B1.

¹²² See Dan Neil, *Somewhere Over the Rainbow; Carmakers Tout a Hydrogen Economy at the L.A. Auto Show. But Promises are Lighter than Air*, L.A. TIMES, Jan. 12, 2005, at G1.

Several other states are also making major investments in hydrogen research and technology development.¹²³ As the center of the huge U.S. auto industry, Michigan has moved cautiously into any engagement on greenhouse gas reduction, let alone policy development.¹²⁴ But hydrogen has been portrayed as a transitional source of economic development, with Michigan political leaders of both parties embracing it as a mechanism to secure the state's continued leadership in transportation policy amid the state's vehicle manufacturers' continued fiscal woes.¹²⁵ Thus Michigan has treated technology related to climate change purely as a matter of economic competition, while explicitly disavowing any support for the major underlying environmental policies that would drive the move to these technologies.

Other subnational jurisdictions have also seized upon different roles that they might be well-equipped to play if they take an early lead on climate policy development. Hawaii has aggressively pursued renewable energy issues to secure economic advantages, but also with the intent to position itself as a point of transmission between North America and Asia on the transfer of climate technologies and expertise.¹²⁶ In Canada, the province of Manitoba, inspired in part by its central location, has emerged as a very strong supporter of far-reaching efforts to reduce greenhouse gas: the province has stabilized its emissions over the last decade,¹²⁷ and has developed a far-reaching set of policies designed to expand and export its considerable base of renewable energy.¹²⁸ Moreover, the province has taken active steps to stockpile technical and economic expertise on all aspects of climate policy in Winnipeg, in part with the hope that the province might emerge as the "climate policy headquarters" of North

¹²³ These states include Indiana, Illinois, New York, Michigan, Florida, and Maine. For a more recent compilation of various regional and state hydrogen initiatives, see the Nat'l Hydrogen Assoc., *State and Regional Initiatives*, <http://www.hydrogenassociation.com/policy/initiatives.asp> (last visited Dec. 27, 2005).

¹²⁴ See RABE, *supra* note 1, at 42–45.

¹²⁵ See *id.* at 44.

¹²⁶ See *supra* note 98.

¹²⁷ See Michael Northrop, *Early Reducers*, ENVTL. F., Mar./Apr. 2004, at 16, 24; see also LLOYD AXWORTHY, *NAVIGATING A NEW WORLD: CANADA'S GLOBAL FUTURE* 114–15, 325 (2003).

¹²⁸ See Northrop, *supra* note 127, at 24–25.

America given its commitment, expertise, and central location.¹²⁹

There is a complex interaction of strategic elements at play in these state government bids to become “technology leaders” in climate change. Some states (such as California, New York, and Maine) have politically linked these technology programs with stronger regulation of emissions, showing that they envision a home market for the resulting technological products. These states can hope to benefit from the technology they develop, both by reducing the costs of meeting their existing emissions goals and by further strengthening their emissions standards, which will result in benefits both real (such as local pollution reduction) and imagined (such as unilateral climate change mitigation). They may also hope to influence national policy, and indeed Maine and New York have sought to do so formally through the legal system,¹³⁰ whereas California has historically exercised influence informally, by its role in setting an alternative auto emissions standard. Regardless of the methodology employed, all states aspiring to be “technological leaders” hope to create products and services that are sold beyond the home market, generating revenues into the state and not merely air quality improvements and cost reductions.

Other states, such as Illinois, Michigan, Indiana, and Florida, have not linked their technology initiatives to unilateral greenhouse gas regulation. Thus these states’ primary, and perhaps only, goal is to compete as future vendors of environmentally sound products; as they have failed to regulate in this area, it stands to reason that these states are depending, not on a “home market” for environmental products created by their own regulatory initiative, but on a “regulatory prediction”¹³¹ that the market for such products is bound to expand, either because of regulation within other countries, or within other states, or future U.S. Federal regulation. This last prediction seems the most likely because (1) the state’s constituents are part of the jurisdiction in question and may have a say in such regulation if it comes to pass, and (2) it would seem odd for the government of a state like

¹²⁹ See generally MAN. CLIMATE CHANGE TASK FORCE, MANITOBA AND CLIMATE CHANGE: INVESTING IN OUR FUTURE (2001), available at <http://www.cccmanitoba.ca/Reports/PDF/ACF44A3.pdf>. See also Rabe, *supra* note 45, at 6.

¹³⁰ See *supra* note 55.

¹³¹ See *supra* Section III.B.2.

Indiana, with little history of technology leadership, to decide to fund technology that it firmly believed would never be used in Indiana. However, where the state government is doing nothing to regulate on its own, one may still note that technology initiatives may ultimately have a “supply side” benefit for climate change mitigation in two senses. First, if these technological initiatives succeed, there will be an increased supply of better, cheaper climate change mitigation technology. Second, to the extent that any of these states actually becomes a leader in mitigation technology, it will have incentives to encourage climate change regulation superjurisdictionally or among its sister states. Thus, the virtuous cycle noted in Section III.C.3 above applies equally to “technology investments” made in research, as opposed to in equipment, and applies whether the investments presently involve local use or not.

5. *Operational Efficiencies for State Government*

Yet another way in which states potentially can become more competitive is to increase their internal efficiency. One means of increasing efficiency pertains to the operation of the state apparatus itself and involves measures like changing administrative routines, restructuring organization, outsourcing and privatizing activities and services, and implementing new technologies to provide easy access to services for customers and clients. States have generally become keenly interested in these strategies in recent years, in part due to significant fluctuations in their fiscal well-being and related pressures to contain operational costs. In many instances, states have also proven responsive to the so-called “new public management,” which compels states to re-think much of their traditional approach to governance and become, among other things, more cost-competitive and entrepreneurial in nature.¹³² Taking such proactive steps on governmental efficiencies not only offers the possibility of saving scarce resources but also gives governments the capacity to

¹³² The new public management reflects a wide-reaching effort to transform public management through greater emphasis on agency accountability, performance measurement, and initiatives to anticipate and prevent problems before they occur. See JOEL D. ABERBACH & BERT A. ROCKMAN, *IN THE WEB OF POLITICS: THREE DECADES OF THE U.S. FEDERAL EXECUTIVE* 134–43 (2000); DONALD F. KETTL, *THE GLOBAL PUBLIC MANAGEMENT REVOLUTION: A REPORT ON THE TRANSFORMATION OF GOVERNANCE* 2–3 (2000).

contend that they are leading-by-example, thereby enhancing public confidence and, perhaps, gaining greater leverage as they encourage private and local government institutions to follow suit.

There are also many examples on how climate change programs have had the additional effect of revealing ways to improve both structural and administrative efficiency within governmental operations. One example is the Rhode Island Greenhouse Gas Action Plan that was initiated in the fall of 2001 as a response to the Climate Change Action Plan adopted by the New England Governors and Eastern Canadian Premiers with the stated goal of reducing greenhouse gases in the region to 1990 levels by 2010, 10 percent below those levels in 2020, and by as much as 75 percent over the longer-term.¹³³ In Rhode Island, the state government took a multi-stakeholder approach in which the Department of Environmental Management and the State Energy Office invited a group of over 30 diverse stakeholders from business, industry, citizen groups, environmental organizations, and other government agencies to jointly develop a Greenhouse Gas Action Plan for the state.¹³⁴ The various modeling efforts carried out in the process of developing the Plan indicate that carbon savings can be achieved while producing substantial cumulative net economic benefits for the state of over \$700 million over the year 2020. The state reported that these savings resulted “largely because many of the policy options identified in the Plan also save energy and those savings exceed capital, operation and maintenance costs for the energy-saving technologies and practices.”¹³⁵ Several participants also stressed the potential administrative efficiency gains that have come from working collaboratively on this plan.¹³⁶ In this sense, this particular climate

¹³³ See COMM. ON THE ENV'T & THE NE. INT'L COMM. ON ENERGY, CONFERENCE OF THE NEW ENGLAND GOVERNORS AND EASTERN CANADIAN PREMIERS, CLIMATE CHANGE ACTION PLAN 2001, at 7 (2001), available at <http://www.necg.org/documents/NEG-ECP%20CCAP.PDF>.

¹³⁴ See R.I. DEP'T OF ENVTL. MGMT. & R.I. STATE ENERGY OFFICE, THE R.I. GREENHOUSE GAS ACTION PLAN 3-7 (2002), available at <http://rihg.raabassociates.org/Articles/GHGPlanBody7-19-02FINAL.pdf>.

¹³⁵ *Id.* at 38.

¹³⁶ New England Climate Coal., Global Warming and New England: Progress, Opportunities and Challenges After Two Years of the Regional Climate Change Action Plan 29 (2003), available at <http://www.vpirg.org/downloads/globalwarmingandNewEngland.pdf>. For a general argument on the potential of greenhouse gas programs as a policy coordinating effort, see Nat'l Governors Ass'n Ctr. for Best Practices,

change initiative has served as an important tool for self-evaluation and assessment that potentially could pave the way for substantial efficiency gains to both the state and the other actors involved.

IV. ANALYTICAL CONCLUSIONS

In the above analysis, we explained state policy related to climate change as resulting from policies designed to maximize states' economic stability and welfare in a system where states compete for resources, revenues, businesses, and people. States adopted competitive strategies that took into account their own natural and human resources and benefits that would accrue locally. Just like private actors, states choose strategies that maximize the effectiveness of their assets and attempt to capture as much benefit as possible from their various activities. But in each area of policy innovation, interaction with the federal system also played an important role. In the following subsection we examine the implications of this interaction and attempt to assess the history of state climate change policy innovation and how far it can productively continue in the absence of federal action.

A. *Navigating the Federal-State Divide*

The examples outlined above show a dynamic relationship between state and federal (or generally, superjurisdictional) law, policy, and politics. Despite the interstate externalities that are inherent in climate change policy, climate change initiatives can succeed at the state level in the absence of superjurisdictional regulation. But in each case where state regulation has occurred, the promise or threat of action outside of the jurisdiction, whether via superjurisdictional or merely extrajurisdictional regulation, has been a factor. State and federal regulation, far from being an either-or proposition, interact in complex and varied patterns and combinations. Federal regulation provides the backdrop for state competition, as states base their policy decisions in part on the parameters and rules by which they must abide. But these complex interactions are brought to the foreground as states and local interests attempt to manipulate or change the federal regulatory system as a competitive strategy.

Climate change is truly a global policy issue that implicates almost every person and government on the planet; it is also subject to brutal collective action problems that thwart simple solutions at the subnational level. In the U.S., these same collective action problems have likewise thwarted a national consensus on the proper extent and methods of regulation, leaving a policy hole at the federal level. This has not stopped states from considering and taking action on this policy issue. Most importantly, it has not stopped states from predicting future federal or international regulation, and acting based on these predictions. Thus, for example, even states that are unwilling to regulate greenhouse gas emissions themselves are seen to fund technological industries that could turn a profit as a result of such regulations.

One ramification of this “predictive” policymaking is that it has entirely freed the hands of the states to generate competitive strategies that may truly serve as laboratories, if not of democracy, then at least of climate change regulation. Each state that has addressed the climate change problem has sought out ways to maximize its own particular assets in the regulated future. Thus, agricultural states have sought ways to maximize, and then also take political and economic advantage of, carbon sequestration. States with great potential for renewable energy generation have likewise sought ways to profit from these resources, well ahead of the market demand. If and when climate change mitigation is enacted at the federal level, it is likely that such regulation will take maximum advantage of these mitigation assets, because the states that own these assets will have explored their potential in advance of the legislation and will push for an embracive inclusion of these different mitigation strategies.

Another discovery is that state climate regulation has either resulted from or may result in self-reinforcing cycles supporting climate change mitigation. Thus state competitive strategies serve not only to take the place of absent federal regulation, but may also serve to hasten the ultimate adoption of either federal or more universal state regulations, and to deepen the commitment of certain states to climate change mitigation. This may ultimately lead to deeper, broader, and more meaningful regulation at the federal level.

A further possibility is that federal regulation might *never* occur, were sufficient to meet international standards or other

broadly accepted mitigation goals. Thus, in theory, the perpetual threat of regulation at the federal level could lead to perpetual innovation at the state level. States could settle upon group solutions including regional trading systems and standards based on informal pacts. This would preserve the flexibility of a competition-based system while avoiding the administrative difficulties of crafting a unified legislative solution and passing it through the federal legislative process. This result is probably an unlikely one, but the observation serves to point out that the limit of effective climate change policymaking at the state level is an open question, though we will offer our own opinion on it below.

A final lesson has been the demonstration of the benefits of having the judicial process available as an *ad hoc* system of federal regulation in which states may participate. Litigation has shown itself to be an extremely useful tool in turning inter-state competition into beneficial climate change policy. Litigation, both under federal regulatory laws and under common law tort law, allows states to participate directly in the federal regulatory process, as policymakers and enforcers of federal policy. It is a flexible tool for overcoming regulatory inertia at the federal level. It is politically counter-cyclical: when there is stagnation in politics, the judicial system provides a regulatory outlet in which all may participate. It has the added virtue, in the case of tort claims in particular, of being oriented towards economic efficiency by forcing cost internalization. In climate change, the availability of the litigation approach has allowed states to continue to pursue their policy goals despite the failure of agreement at the national political level.

The federal/state choice in environmental regulation is not an “either/or” proposition as it was sometimes cast in the environmental federalism debate of the mid-1990s.¹³⁷ Those studying environmental law and policy today must contemplate a fluid system of relationships, in which influence can pass from the federal to the state level, from the state to the federal level, or from state to state, via mechanisms ranging from the political process to the legal process. The inter-state competition framework developed here should be useful in this study, and also for those seeking to influence U.S. environmental law and policy. For both scholars and practitioners, dynamics such as those

¹³⁷ See *supra* Section I.

observed above may form helpful guideposts.

V. THE COMPARATIVE PERSPECTIVE AND MORE RESEARCH DIRECTIONS

A. *Inter-state Competition Under the Kyoto Protocol*

Once an effective superjurisdictional regulatory regime is in place, the incentive for governments to compete does not disappear. While certain forms of innovation may slow down or cease, depending on the rigidity of the regulatory regime, an output- or incentive-based (as opposed to technology-based or command and control) regulatory regime will encourage competition as states work to find innovative ways to lower emissions and either meet their output limits or surpass them and generate credits. Governments that have ratified the Kyoto Protocol will soon be under strong pressures to think about the competitive aspects of climate change, as they will be forced to devise policies that meet international obligations while at the same time maximizing economic well-being.

How will these competitive pressures play out within various federal or federated systems? Canada's ratification of Kyoto has not triggered nearly the level of provincial policy development as we see in the U.S., and Canadian emissions growth continues to outpace that of the United States. The road to compliance has also been rocky within the European Union, which as a whole is far from reaching its Kyoto commitments. Between 1990 and 2003 total greenhouse gas emissions in the EU-15 decreased by a mere 1.7 percent, and CO₂ emissions actually grew by 3.4 percent.¹³⁸ At this moment only four countries (Greece, Great Britain, France, and Sweden) are below their national targets negotiated within the so called "EU bubble."¹³⁹

The European Commission is struggling with the conceptual and practical issues surrounding competition and sustainable development. A case in point is the so-called Lisbon Strategy, first

¹³⁸ EUROPEAN ENV'T AGENCY, ANNUAL EUROPEAN COMMUNITY GREENHOUSE GAS INVENTORY 1990-2003 AND INVENTORY REPORT 2005, at 8-9 (2005), available at http://reports.eea.eu.int/technical_report_2005_4/en/EC_GHG_Inventory_report_2005.pdf.

¹³⁹ *Id.* at 72-78. For a description of the EU Bubble, and the targets for individual EU members, see RABE, *supra* note 1, at 154-55.

outlined by the European Commission in March 2000, in which the EU member states set out to make EU the most competitive region in the world by 2010.¹⁴⁰ Originally, these statements involved serious commitments to sustainable development. However, those commitments were soon watered down, and when the new President of the European Commission, José Manuel Barroso, presented his plan for economic reform in February 2005, the terms of the debate had significantly changed, and the competitiveness envisioned had become something more like traditional industrial policy with a heavy emphasis on jobs, research and growth.¹⁴¹ Barroso also took an explicit step away from the Lisbon Strategy with the assertion that “[w]e should avoid slogans that put at risk the credibility of the whole exercise.”¹⁴²

Whereas the Lisbon Strategy envisioned competition within the EU as a primary goal, the regulatory uniformity that would be necessary to allow this now apparently lacks support from the member states.¹⁴³ This is perhaps not surprising given that two of the founding premises of the EU appear to stand in the way of the achievement of robust competition. One of these premises is that each state has unique value as a cultural and economic center. Another is that the states joined the union for their mutual benefit as states.¹⁴⁴ Both premises imply that all member states should be economically strengthened by the union; the idea that one state would out-compete another and take away investments, resources, and people is therefore an uncomfortable notion. By comparison, the American model assumes that states are at all times competing,

¹⁴⁰ See Presidency Conclusions, Lisbon European Council 1–2 (Mar. 23–24 2000), available at http://www.uniovi.es/EEES/attachs/1080547066-1-PRESIDENCY_CONCLUSIONS_Lissabon.pdf; European Council, *2462nd Council Meeting: Competitiveness (Internal Market, Industry, Research)* No. 13839/02, at 10 (Nov. 14, 2002), available at http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/intm/73214.pdf. See also Andrew Gowers & George Parker, *Growth is at Top of Barroso’s Programme*, FIN. TIMES., Feb. 2, 2005, at 1.

¹⁴¹ See Bertrand Benoit et al., Comment & Analysis, *The European Commission President Tells George Parker and Andrew Gowers That He Detects a “New Sense of Urgency” About the Need to Deliver Economic Reforms*, FIN. TIMES., Feb. 2, 2005, at 15.

¹⁴² Gowers & Parker, *supra* note 140.

¹⁴³ See Benoit et al., *supra* note 141.

¹⁴⁴ See, e.g., KJELL M. TORBIÖN, *DESTINATION EUROPE: THE POLITICAL AND ECONOMIC GROWTH OF A CONTINENT* 125–68 (2003).

largely without restriction.

The limited competition among EU member states may be reducing their ability to integrate climate change mitigation into an competitive economic strategy. But further inquiry is needed in order to understand how weak intra-EU competition plays into the problems that have led to slow EU compliance.¹⁴⁵

B. *Comparative Collaboration and Trading Schemes*

Our analysis also raises the question of the extent to which various jurisdictions find strategic advantage in working together. The European Emissions Trading System that went into operation in February 2005 was guided by such a principal, allowing for emissions credit trading between various EU members in search of the lowest-cost emissions reductions available.¹⁴⁶ It presumes a high degree of transparency and cooperation among members of the EU,¹⁴⁷ which are of comparable scale to American states both in their populations and greenhouse gas emissions.¹⁴⁸

A possible next stage in American policy development may be to engage in similar multi-jurisdictional arrangements. One early example of such a partnership is RGGI.¹⁴⁹ A number of its member states have already developed robust climate policies;

¹⁴⁵ The notion of competition between sub-units in order to maximize the innovative strength for the system, or organization, as a whole, is often emphasized in the business and innovation literature. *See, e.g.*, CLAYTON M. CHRISTENSEN & MICHAEL E. RAYNOR, *THE INNOVATOR'S SOLUTION: CREATING AND SUSTAINING SUCCESSFUL GROWTH* (2003); INNOVATION: DRIVING PRODUCT, PROCESS, AND MARKET CHANGE, (Edward B. Roberts ed., 2002).

¹⁴⁶ *See* Vivian Thomsen, *Following not Leading: The Politics of Climate Change in the United States and the Policy Lessons to be Learned from the European Union's Greenhouse Gas Reduction Program* (June 2005) (unpublished paper presented at the 7th Nordic Environmental Social Science Research Conference, Gotenborg University, Sweden, on file with authors). *See also* Joseph A. Kruger & William A. Pizer, *Green House Gas Trading in Europe: The New Grand Policy Experiment*, ENVIRONMENT, Oct. 2004, at 8 (2004).

¹⁴⁷ *See* Thomsen, *supra* note 146.

¹⁴⁸ For example, annual United Kingdom emissions are comparable to those of Texas, and Greek emissions are comparable to those of Wisconsin. *See* Barry G. Rabe, *Beyond Kyoto: Designing Policies to Reduce Greenhouse Gas Emissions in Federated Governance Systems* 40 (June 15, 2004) (unpublished manuscript, presented at Smart Practices Toward Innovation in Public Management Conference), *available at* <http://faculty.arts.ubc.ca/campbell/sog-conf/papers/sog2004-rabe.pdf>; *see also* RABE, *supra* note 1, at 5.

¹⁴⁹ *See supra* note 58 and accompanying text.

RGGI proposes to learn from this collective experience in moving toward a cap-and-trade system for carbon emissions throughout this region.¹⁵⁰ The system could also expand to include other states and possibly even Canadian provinces. A driving rationale behind this regional initiative is to take advantage of the increased scale of the combined jurisdiction, minimizing costs of compliance and maximizing the benefits of collective action; it makes particularly good sense as the states in question are small, heavily populated, and intensively integrated economically.¹⁵¹

The RGGI trading system will, given recent developments, come into existence prior to any U.S. regulation on the federal level.¹⁵² It would on its own achieve at least one of the theoretical benefits of federal regulation, which is to increase the size of the committed group so as to allow greater internalization of the benefits of climate change mitigation. In other regards it is similar to other unilateral state initiatives to mitigate climate change: these initiatives raise short term costs with only partial recouping of benefits in the local jurisdiction, but may in the end increase competitiveness if federal regulation eventually comes to fruition. The RGGI will also increase the number of state governments that, because they have already taken steps to mitigate, would be in favor of some form of federal regulation, hastening the eventual rise of federal regulation.

C. *Nested Games*

Another theme emerging from this review of state policy developments is the tendency of competitive climate change mitigation policies to come out as combined strategies, or nested games.¹⁵³ Mitigation policy often requires parallel strategies where regulations within the state jurisdiction are pursued alongside changes to the federal regulatory context. In addition,

¹⁵⁰ See REG'L GREENHOUSE GAS INITIATIVE (RGGI), GOALS, PROPOSED TASKS, AND SHORT-TERM ACTION ITEMS 1 (2003), available at <http://www.rggi.org/docs/actionplanfinal.pdf>.

¹⁵¹ See AULISI ET AL., *supra* note 42, at 8, 24–28.

¹⁵² See Press Release, Office of the Governor of N.Y., Governor Announces Regional Agreement to Curb Greenhouse Gases (Dec. 20, 2005), available at <http://www.ny.gov/governor/press/05/1220052.htm>; see also Engel, *supra* note 27.

¹⁵³ See, e.g., GEORGE TSEBELIS, NESTED GAMES: RATIONAL CHOICE IN COMPARATIVE POLITICS (1990) (applying nested game theory to political science).

given the likelihood that the resulting enactment will serve multiple goals, the policy strategy must be accompanied by a political strategy that allows each objective to be emphasized or downplayed for the benefit of different audiences.

The need to combine various strategies highlights the managerial difficulty of state climate change mitigation projects. Their complexity is clearly a risk for such projects, which stand a considerable chance of failing if not managed properly, and is partly unavoidable because climate change policy implicates so many different political and economic concerns. On the other hand, this complexity is what has created an opportunity for the flourishing political ingenuity and institutional innovation that we are witnessing at the U.S. state level. We suggest that the managerial demands of climate change mitigation policy, both within federal systems and in the international context, is an important area for future study.

D. *Non-utilitarian Measures of Success*

In this article we have focused exclusively on the economic aspects of competition. This has been a deliberate choice since our main ambition was to show that climate change mitigation efforts, contrary to some generally accepted wisdom, could under some circumstances serve as a source of competitive advantage. However, given the multiple objectives of political entities such as states, one may doubt whether neoclassical economics tells the whole story: with states, unlike firms, success may be measured according to moral or political goals, such as reducing poverty and increasing the health and security of society's poorest members. These additional goals would then presumably affect and distinguish state activities from those of private entities.

The Brazilian government's decision to subsidize and promote the development of bio-diesel provides a useful example of a decision directed at noneconomic considerations, including poverty-alleviation and regional development. A law recently passed by the Brazilian Congress calls for an increase in the biodiesel content of commercial diesel fuel over the next eight years, until it reaches 5 percent in 2013.¹⁵⁴ This will increase the value of *mamona* (castor bean) produced in northeastern Brazil, and thereby rejuvenate that region's otherwise dying agricultural

¹⁵⁴ Lei No. 11.097, de 13 de janeiro de 2005, D.O. de 14.01.2005. (Brazil).

sector.¹⁵⁵ In both its political rhetoric and its economics, the project appears to be keyed to regional development and poverty alleviation.¹⁵⁶ The Brazilian government has explicitly stated its objective of becoming self-sufficient in oil and petrochemical products by 2006,¹⁵⁷ but biodiesel is currently not commercially competitive.¹⁵⁸ Furthermore, the new Brazilian federal biodiesel program involves nearly R\$100 million (U.S.\$42.5 million) in financial support to small farmers, assisting nearly 50,000 people.¹⁵⁹ The Brazilian government has also expressed the hope that biodiesel will help to enable the generation of electricity in isolated communities where there is at present no market for regular diesel.¹⁶⁰ A more complete understanding of the competitive aspects of government policymaking would provide an economic account of a policy such as Brazil's, and then, to the extent that this policy diverges from the utilitarian model of "rational" economic behavior, explain how its economic and noneconomic aspects interact.¹⁶¹

¹⁵⁵ *Biodiesel e a inclusão social*, DIÁRIO DE PERNAMBUCO, June 13, 2005; *Crise Política: Vou lá falar para Bush: Dá milho para as galinhas e vai comprar nosso biodiesel das mamonas*, O GLOBO (Braz.), Aug. 8, 2005, at 11.

¹⁵⁶ NÚCLEO DE ASSUNTOS ESTRATÉGICOS DA PRESIDÊNCIA DA REPÚBLICA, SUBSECRETARIA DE COMUNICAÇÃO INSTITUCIONAL, CADERNOS NAE No. 2, BIOCOMBUSTÍVEIS 13 (2005) [hereinafter BIOCOMBUSTÍVEIS].

¹⁵⁷ Carter Anderson, *Brazilian President Underscores Quest for Social Justice, Oil Self-sufficiency*, GLOBAL NEWS WIRE, Oct. 4, 2003. Currently, about 15 percent of diesel used for transportation is imported. BRAZ. MINISTRY OF MINES AND ENERGY, BRAZILIAN ENERGY BALANCE 2004, at 49 (2004). There are indications that self-sufficiency may be achieved, taking into account recent Brazilian discoveries of oil. See INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 276 (2004); *Huge New Oil Findings in Brazil*, BBC NEWS, <http://news.bbc.co.uk/go/pr/fr/-/2/hi/business/4563896.stm> (last visited Jan. 16, 2006).

¹⁵⁸ There is currently a need for more thorough and comprehensive analyses about the overall impact of the biodiesel program. However, at the present stage the technology can not compete. See BIOCOMBUSTÍVEIS, *supra* note 156, at 51; MINISTÉRIO DE CIÊNCIA E TECNOLOGIA, RELATÓRIO FINAL DO GRUPO DE TRABALHO INTERMINISTERIAL ENCARREGADO DE APRESENTAR ESTUDOS SOBRE A VIABILIDADE DE UTILIZAÇÃO DE ÓLEO VEGETAL—BIODIESEL COMO FONTE ALTERNATIVA DE ENERGIA 10 (2003), available at <http://www.biodiesel.gov.br/docs/relatoriofinal.pdf>.

¹⁵⁹ *Brazil: Biological Diesel Program to Expand*, GAZETA MERCANTIL, June 29, 2005.

¹⁶⁰ *Brazil Studies Use of Biodiesel to Meet Energy Need of Remote Communities*, BBC MONITORING AMERICAS (London), Mar. 30, 2005, at 1.

¹⁶¹ Most of Brazilian biodiesel is made from vegetable oils such as castor bean, soy and palm. It is an outspoken objective of the Brazilian government

E. *Difficult Questions of Who Should Pay, or Tenuous
“Pigouvianism” in Federal Policy*

In Section IV.A we identified a strength in the U.S. federal legal system in its ability to force cost-internalization on interstate polluters. This allows states that have strong standards but are subject to interstate pollution to force other states to bear the costs of mitigating this interstate pollution, and partly mitigates the competitive disadvantages (high cost) of their high environmental standards. But economists will point out that in the absence of a federal policy in favor of clean air, the choice to force a polluter to pay for his or her pollution is largely arbitrary.¹⁶² New York, as a proactive state, could equally achieve its goals by *paying* Ohio to modernize its plants as by *suing* Ohio to do so. Thus, viewing the interstate pollution problem as a value-neutral Coasian bargaining opportunity, it is not clear that “polluter pays” is always the most societally efficient solution, particularly if in some cases the polluter has a much lesser ability to pay.¹⁶³ In these cases, the federal government finds itself in the uncomfortable position of distributing benefits or losses among the member states. The “polluter pays” rule has the benefit of creating a pro-environmental bias because plaintiff (usually proactive) states will become richer relative to defendant (usually inactive) states. However, this rule also has the danger of impoverishing or even bankrupting polluter

that the inclusion of biodiesel in the domestic energy market will enable a reduction in diesel imports, the creation of jobs through small-scale agriculture and the development of the national research and equipment industry. For further reading on government policies under the National Program for Production and Use of Biodiesel (PNPB), see Ministério da Ciência e Tecnologia, Programa Nacional de Produção e Uso de Biodiesel, <http://www.biodiesel.gov.br> (last visited Dec. 30, 2005).

¹⁶² This problem presents a challenge not only in federal regulation, but also in collaborative bargaining for interjurisdictional regulatory agreements. See, e.g., Esty, *supra* note 2, at 590–91.

¹⁶³ A parallel situation has occurred in the EU with regard to power plant regulation. In particular, the situation has arisen concerning the Ignalina nuclear power plant in Lithuania. Ignalina has pledged to shut it down this plant as part of its agreement to join the EU. See *Lithuania to Seek International Help to Build New Nuclear Reactor*, EUBUSINESS.COM, Jan. 11, 2005, <http://www.eubusiness.com/Lithuania/050111165855.pt5coepj>. However, this plant provides a significant portion of the electricity consumed in Lithuania, and Lithuania can ill afford to build another one, suggesting that a “hardship” exception or federal funding may be appropriate. See NORDIC COUNCIL OF MINISTERS, CHALLENGES OF KYOTO COMMITMENTS FOR THE BALTIC STATES’ ENERGY SECTORS (2004).

states, leading to economic shocks in those jurisdictions. Further research is required to explore this and other problems related to the federal government's distributional role as it relates to state climate change policy specifically and inter-state competition generally.

VI. FINAL WORDS

Our intent in this article has been to launch a discussion about the factors that may be driving states to introduce new policy initiatives that will ultimately lead to a reduction of greenhouse gases. Our approach to the issue has been to frame it in terms of interjurisdictional competition, where states use different strategies to achieve certain beneficial objectives. The question, as it was posed, was how considerations of greenhouse gas reductions may have come into play as means to gain competitive advantage. Such an analytical effort has implications for policymaking and our understanding of how to promote further greenhouse gas reductions.

The foregoing discussion makes no claims of being comprehensive and the categories are by no means established or complete. However, we conclude that in this area, state policy activity is frequently best characterized as rational strategic behavior, and that the use of competition as a primary analytical focus has some potential. Looking forward, a logical next step would be to study further the interaction of private and state actors in this competitive light, in both American and other governmental systems. Understanding these synergies—whether between federal and state government or the state and a private company—and how and when they occur is the ultimate challenge in this area of law and public policy.