

STATES AND CITIES AS ACTORS IN GLOBAL CLIMATE REGULATION: UNITARY VS. PLURAL ARCHITECTURES

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This Essay concludes, based on a political economy analysis, that many states, cities, and other sub-national authorities (SNAs) will continue to take strong independent climate regulatory initiatives even after the federal government adopts a broad cap-and-trade system. Should federal law allow SNAs to do so? In order to answer this question, this Essay examines unitary and plural models of climate regulation. It concludes that, notwithstanding the advantages in principle of a unitary approach, a plural model that allows for multiple regulatory systems is preferable because in practice it is more likely than a unitary model to advance climate protection. Because independent SNA regulation furthers with the plural approach, federal law should presumptively allow it, subject to congressional legislation to prevent serious conflicts with the federal regulatory scheme that it adopts.

INTRODUCTION

This Essay argues that U.S. states, cities, and other sub-national actors (SNAs) in the U.S., as well as abroad, can and should play important long-term roles in climate regulation at both the domestic and global levels, even after strong national and international climate regulatory regimes have been adopted. Part I briefly summarizes the current activities of U.S. SNAs, and shows how they have thereby become global climate regulatory players.¹ Part II poses the question

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1. This Essay addresses the roles of governmental authorities, non-governmental bodies, and hybrid bodies that include both governmental and non-governmental participants, play a significant role in climate regulation but are beyond the scope of this essay.

whether SNAs can and should play a significant long-term climate regulatory role or whether current SNA initiatives are or should be of an interim nature. Based on analysis of the positive political economy of independent SNA regulation, Part II.A concludes that while some of the incentives for current U.S. SNA regulatory measures may dissipate with the adoption of federal regulation, other incentives favor a significant continuing independent SNA role. Part II.B argues for adopting institutional arrangements that presumptively favor an independent role for SNA climate regulation at both the domestic and global levels.

Part III of this Essay examines two basic models for global and domestic climate regulatory architecture and the scope that they provide for independent SNA measures. A unitary global architecture would involve a single overarching international emissions trading system built on commitments by nations to limit domestic emissions in accordance with an international agreement, and international trading of emissions allowances or credits.² This system is an international version of a cap-and-trade design, in which total emissions are capped, nations and their sources are assigned allowances to emit consistent with the cap, and allowances can be bought and sold. This design is justified by the common pool character of the atmospheric resource and the powerful economic, environmental, and political advantages of a cap-and-trade system relative to other international regulatory instruments, such as emissions taxes or command and control measures.³ The corresponding unitary domestic system would involve a single federal cap-and-trade system to implement the United States' international commitments. Under the unitary design, there would be no international role for the states or other SNAs, and only a very subsidiary domestic regulatory role. The plural model domestically would provide ample space for SNA measures that exceed federal regulation in scope or stringency. The plural model at the global level would recognize a variety of multilateral, plurilateral, regional, and bilateral climate regulatory arrangements. The most expansive version of the plural international model would accommodate initiatives by SNAs as well as nations.

Part IV applies the Part II.B normative criteria to examine whether or not significant independent SNA climate regulatory initiatives are desirable, and accordingly, whether a unitary or plural regulatory architecture should be adopted, concluding in favor of a presumptive plural model at both the international and domestic levels. It examines the advantages and potential drawbacks of independent SNA regulation, finding that it would promote innovation and create

2. See, e.g., PEW CTR. ON GLOBAL CLIMATE CHANGE, LINKING U.S. AND INTERNATIONAL CLIMATE CHANGE STRATEGIES 1 (Apr. 2002), available at http://www.pewclimate.org/docUploads/us_international_strategies.pdf (arguing that agreement among major emitting countries is essential to achieving a stable climate and that "economically, these reductions can be achieved most cost-effectively through an integrated, global greenhouse gas market").

3. See generally RICHARD B. STEWART & JONATHAN B. WIENER, RECONSTRUCTING CLIMATE POLICY: BEYOND KYOTO (2003); see also Richard B. Stewart, *Instrument Choice*, in OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW (Daniel Bodansky & Junetta Brunee eds., 2007) (discussing alternative regulatory instruments for international environmental protection and their relation to domestic instruments).

ongoing political pressure for stronger measures. On the other hand, some forms of independent SNA regulation might impair the effectiveness and efficiency of a federal cap-and-trade program and unduly complicate international regulatory efforts. Congress can appropriately regulate or limit the regulatory role of states or local authorities in order to address these problems, but should be cautious in doing so. Courts should be extremely reluctant to find that SNA climate measures are impliedly preempted by federal law or that they violate the negative Commerce Clause. Established legal and institutional principles, including harmonization of regulation of national and international product markets and judicial doctrines of implied preemption of an independent SNA role in foreign affairs, should give way if SNA regulatory initiatives will, on balance, advance climate protection, including by breaking the federal climate policy logjam in the United States.

I. GLOBALLY SIGNIFICANT U.S. STATE AND CITY CLIMATE REGULATORY INITIATIVES

U.S. cities, states, and other sub-national actors in the U.S. as well as elsewhere are undertaking a variety of steps to limit greenhouse gas (GHG) emissions.⁴ While these activities vary widely in coverage and ambition, collectively they represent significant initiatives, especially when considered against the background of the failure thus far of the federal government to undertake any climate regulation. By virtue of these initiatives, U.S. SNAs have become significant global climate regulatory actors.

First, a substantial number of states or groups of states are globally significant GHG emitters and are taking regulatory steps to limit their emissions. They have also brought litigation against major emitters in other states and against the federal government to force additional limitations. State regulation may also have technology development and demonstration effects that will facilitate further reductions and create public and political support, including in other jurisdictions, for such reductions. All of these initiatives promise global climate benefits, both directly by reducing emissions and indirectly by stimulating adoption of additional regulatory measures, including by other jurisdictions.

California, which is responsible for roughly 7% of total U.S. emissions and 1.1% of global emissions,⁵ has adopted legislation to restrict CO₂ emissions

4. For an extensive listing of such initiatives, see Robert B. McKinstry Jr. & Thomas D. Peterson, *The Implications of the New "Old" Federalism in Climate Change Legislation: How to Function in a Global Marketplace When States Take the Lead*, PAC. MCGEORGE GLOBAL BUS. L. & DEV. L.J. 61 (2007). See also J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499 (2007); Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 2–8 (U.C. Berkeley Public Law Research, Paper No. 1081664, 2008), available at <http://ssrn.com/abstract=1081664> (discussing state and regional climate initiatives and their potential intersection with preemption doctrine and federalism concerns); Pew Ctr. on Global Climate Change, *What's Being Done in the States*, http://www.pewclimate.org/what_s_being_done/in_the_states (providing information and links on local and regional climate efforts) (last visited May 31, 2008).

5. See CAL. ENERGY COMM'N, TABLE 6 - CAL. GREENHOUSE GAS EMISSIONS AND SINK SUMMARY: 1990 TO 2004, INVENTORY OF CAL. GREENHOUSE GAS EMISSIONS AND

from new motor vehicles and to limit stationary source emissions with the goal of reducing GHG emissions to 1990 levels by 2020.⁶ California's motor vehicle regulations are especially significant because its regulation of conventional pollutants has historically been at the leading edge of vehicle emissions technology forcing and regulation globally.⁷ Thus far seventeen "piggyback" states have adopted or plan to adopt California's proposed motor vehicle regulations.⁸

To the extent that reductions in GHG emissions depend on advances in fuel economy, California is unlikely to play its traditional role as world leader, as several jurisdictions outside the United States, including Europe, Japan, China, and Australia, have imposed and are projected to maintain far stricter fuel economy measures than those recently adopted by the federal government or those entailed by California's CO₂ standards.⁹ The California standards may, however, stimulate innovation in the development of alternative fuels or alternatives to the internal combustion engine. If so, the "California effect" established by the state's global leadership on auto emissions standards for conventional pollutants may play an important role in the climate context. Furthermore, because the California CO₂ standards will drive very significant reductions in emissions from the state's own fleet and from the rest of the U.S. fleet, they are expected to achieve "the greatest absolute emission reductions from any policy in the world."¹⁰

At the regional level in the United States, the Regional Greenhouse Gas Initiative (RGGI), a group of ten northeastern and mid-Atlantic states (possibly to

SINKS: 1990 TO 2004, CALIFORNIA GREENHOUSE GAS EMISSIONS AND SINK SUMMARY: 1990 TO 2004, at 25 (Dec. 2006), available at <http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF> (estimating total state emissions in 2004 at 484 MMTCO₂E; EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2005, estimating total U.S. GHG emissions in 2004 at 7,204). Total global non-CO₂ emissions in 2005 (2004 not available): 10,197 MMTCO₂E. See EPA, GLOBAL ANTHROPOGENIC NON-CO₂ GREENHOUSE GAS EMISSIONS: 1990–2020, at app. A-1, (June 2006), available at <http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf>. In 2000, CO₂ accounted for 77% of global GHG emissions. *Id.* at 1–3. Using the same percentage, total emissions in 2005 would be 44,335 MMTCO₂E (10,197/.23). California therefore emits roughly 1.1% of total global emissions.

6. See Global Warming Solutions Act of 2006, CAL. HEALTH & SAFETY CODE § 38550 (West 2006); Roderick M. Hills, Jr., *Against Preemption: How Federalism Can Improve the National Legislative Process*, 82 N.Y.U. L. REV. 1 (2007).

7. See, e.g., *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295, 344–49 (D. Vt. 2007) (providing historic overview of California's longstanding role as "proving ground for new technology"); Hari M. Osofsky, *Climate Change Litigation as Pluralist Legal Dialogue*, 26 STAN. ENVTL. L.J. 181 (2007) (noting international aspects and implications of California and other state climate change litigation, including section titled "California as International Lawmaker?"); William Sweet, Editorial, *Clean Air, Murky Precedent*, N.Y. TIMES, Sept. 29, 2006, at A23 (describing California as "world leader in green technologies").

8. See John M. Broder & Felicity Barringer, *E.P.A. Says 17 States Can't Set Greenhouse Gas Rules for Cars*, N.Y. TIMES, Dec. 20, 2007, at A1.

9. See Int'l Council on Clean Transportation, *Passenger Vehicle Greenhouse Gas and Fuel Economy Standards: A Global Update*, July, 2007, at 24, available at http://www.theicct.org/documents/ICCT_GlobalStandards_20071.pdf.

10. *Id.* at 7.

be joined by California¹¹) responsible for more emissions than all of Germany,¹² has agreed to reduce CO₂ emissions through a regional cap-and-trade program for power plants.¹³ In 2006, Arizona and New Mexico launched the Southwest Climate Change Initiative, an agreement to collaborate on emissions reductions, promote clean technology, and advocate for regional and national climate programs.¹⁴ In addition, more than two thirds of the states have completed or are working on Climate Action Plans and have signed the Climate Registry, a national plan to track emissions, and more than twenty-five have mandated that utility companies make use of renewable energy sources.¹⁵ The goal in California A.B. 32 of reducing emissions from stationary sources to 1990 levels by 2020 has been endorsed by a variety of states and by jurisdictions abroad, some of whom have set even stricter targets.¹⁶

Second, these state initiatives have made it appreciably more likely that Congress will enact climate regulation.¹⁷ Such legislation will in turn promote U.S.

11. See *California May Join Emission Alliance; Under the Plan to Cut Greenhouse Gases, Power Plants Can Trade Credits with Northeast Facilities*, L.A. TIMES, Oct. 17, 2006, at C3.

12. See Pew Ctr. on Global Climate Change, RGGI Index, http://www.pewclimate.org/what_s_being_done/in_the_states/rggi/ (last visited Sept. 6, 2008); Steven Mufson, *Warming Trend is Hatching a Business*, WASH. POST, Sept. 28, 2006, at D1.

13. See Reg'l Greenhouse Gas Initiative, About RGGI, <http://www.rggi.org/about.htm> (last visited Jan. 31, 2008).

14. Pew Ctr. on Global Climate Change, Regional Initiatives, available at http://www.pewclimate.org/what_s_being_done/in_the_states/regional_initiatives.cfm (last visited Sept. 6, 2008).

15. See PEW CTR. ON GLOBAL CLIMATE CHANGE, LEARNING FROM STATE ACTION ON CLIMATE CHANGE (Dec. 2007), http://www.pewclimate.org/docUploads/States%20Brief%20Template%20_November%202007_.pdf (providing a roundup of state actions through Dec. 2007).

16. See Cal. A.B. 32, 2006 Cal. Stat., § 38562. For a comprehensive roundup of state-by-state emissions targets, see Pew Ctr. on Global Climate Change, A Look at Emissions Targets, http://www.pewclimate.org/what_s_being_done/targets. Among the international jurisdictions that have endorsed reductions to well below 1990 levels by 2020 are Australia, Canada, the United Kingdom, and the European Community. *Id.* See also Jan Ellen Spiegel, *A Northeast Movement to Cut Emissions*, N.Y. TIMES, May 4, 2008, at L13 (describing 2020 emission reduction goals in New York, New Jersey, and Connecticut pegged to 1990 levels and referring to CA's legislation as "the grand-daddy of so-called carbon cap bills"); Broder & Barringer, *supra* note 8, at A1. *Cf.* Karen Breslau, *The Green Giant: Carbon Czar: California's Hummer-loving Governor Is Turning the Golden State into the Greenest in the Land, a Place Where Environmentalism and Hedonism Can Coexist. How a Star Turned Pol's Become the Muscle Behind Saving the Planet*, NEWSWEEK (Apr. 16, 2007) (detailing California leadership on climate change, passage of A.B. 32).

17. See, e.g., STAFF OF H. COMM. ON ENERGY AND COMMERCE, 110TH CONG., CLIMATE CHANGE LEGISLATION DESIGN WHITE PAPER: APPROPRIATE ROLES FOR DIFFERENT LEVELS OF GOVERNMENT, at 19 (Feb. 25, 2008), available at http://energycommerce.house.gov/Climate_Change/white%20paper%20stlcl%20roles%20final%202-22.pdf, [hereinafter WHITE PAPER] ("The level of activity on climate change at the state and local level is one of the key drivers for national legislation on climate change.").

reentry into serious international climate negotiations, which is prerequisite for developing an effective post-Kyoto system of global climate regulation.¹⁸ These initiatives have provided a catalyst for domestic public attention and support and enhanced the likelihood that Congress will at last act on climate regulation and adopt significant measures, including some form of national cap-and-trade system. They have also provoked claims by industry that state regulation of motor vehicle CO₂ emissions are preempted by federal law.¹⁹ Preemption claims may be asserted against other state initiatives as well. Especially given courts' rejection thus far of these preemption claims, it is likely that industry will seek some form of congressional action, further increasing the likelihood that Congress will address the underlying regulatory issues on the floor. Thus, state regulatory initiatives that trigger defensive preemption effects by industry can help overcome the roadblocks in Congress to major new legislative initiatives.²⁰ States have also successfully instituted litigation to force EPA CO₂ regulation of motor vehicles,²¹ have brought similar litigation against EPA to regulate CO₂ emissions from new stationary sources,²² and have also sued the auto industry and electric utilities on public nuisance claims, albeit with little success.²³ These actions also enhance the probability of federal climate regulation. These various state initiatives are globally significant, because they are political and legal engines pushing U.S. adoption of significant climate regulation, which is in turn indispensable for international agreement on additional climate regulatory commitments by the other

18. See, e.g., PEW CTR. ON GLOBAL CLIMATE CHANGE, RESPONSE OF THE PEW CENTER ON GLOBAL CLIMATE CHANGE TO CLIMATE CHANGE LEGISLATION DESIGN WHITE PAPER: COMPETITIVENESS CONCERNS/ENGAGING DEVELOPING COUNTRIES 11, available at <http://www.pewclimate.org/docUploads/Pew%20Center%20on%20Competitiveness-Developing%20Countries-FINAL.pdf> (last visited Aug. 7, 2008) (noting that “[f]ew if any countries” will join in reducing emissions without action from the United States and providing analysis of problems likely to arise in integrating U.S. system with international regime, particularly with respect to developing nations); Dean Scott, *Climate Change: European Parliament Panel Voices Concern Over Pace of U.S. Action on Emissions Caps*, INT'L ENV'T DAILY, May 1, 2008 (noting that EU leaders are looking to U.S. for fast action on climate change legislation in hopes of moving towards an international framework).

19. See, e.g., *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295 (D. Vt. 2007); *Cent. Valley Chrysler-Jeep, Inc. v. Goldstene*, 529 F. Supp. 2d 1151 (E.D. Cal. 2007).

20. For discussion of defensive preemption theory, see Hills, *supra* note 6. For discussion of its application to climate regulation, see DeShazo & Freeman, *supra* note 4; and Barry G. Rabe et al., *State Competition as a Source Driving Climate Change Mitigation*, 14 N.Y.U. ENVTL. L.J. 1 (2005).

21. See, e.g., *Massachusetts v. EPA*, 137 S. Ct. 1438, 1458 (2007) (holding that the Clean Air Act authorizes EPA to regulate emissions from new motor vehicles and that Massachusetts had standing to sue the EPA over its refusal to do so).

22. See *Coke Oven Envtl. Task Force v. EPA*, No. 06-1131 (D.C. Cir., filed Apr. 7, 2006) (challenging EPA New Source Performance Standards for utility plants).

23. See, e.g., *California v. Gen. Motors Corp.*, 2007 WL 2726871, at *16 (N.D. Cal. 2007) (auto manufacturers, case dismissed); *Connecticut v. Am. Elec. Power Co.*, 406 F. Supp. 2d 265, 274 (S.D.N.Y. 2005) (electric utilities, case dismissed). See also *Comer v. Murphy Oil*, 2006 WL 1066645, at *4-5 (S.D. Miss. 2006) (dismissing nuisance claim by Gulf Coast landowners against utilities, coal and oil companies, and others).

developed countries, all of whom are already parties to the Kyoto Protocol, and greater engagement of developing countries in emissions limitations.²⁴

Third, states have become direct global climate actors, not just by attending the Bali talks and through meetings between state governors and leaders of other countries but also by initiating agreements and cooperative arrangements with provinces in Canada and jurisdictions in Europe to limit emissions and/or engage in international carbon trading. Six midwestern states, including Illinois and Michigan, have signed a regional agreement with the Canadian province of Manitoba aimed at reducing emissions to 60 to 80% below 1990 levels by 2050.²⁵ The Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) has formed a regional, cross-border plan to reduce GHG emissions to 1990 levels by 2010 and to 10% below 1990 levels by 2020.²⁶ Six western states and two Canadian provinces formed the Western Climate Initiative, calling for reductions in CO₂ and other GHG emissions to 15% below 2005 levels in the next thirteen years and the creation of market-based mechanisms to drive reductions.²⁷ An international group including California and other members of the Western Climate Initiative, northeastern states from the RGGI, European Union member states, and the United Kingdom formed the International Carbon Action Partnership last year to work toward a global cap-and-trade carbon market.²⁸ The agreement came one year after California Governor Arnold Schwarzenegger issued an executive order urging California state officials to begin developing a market-based program that “permits trading with the European Union, the Regional Greenhouse Gas Initiative and other jurisdictions.”²⁹ California is also in active discussion with the EU on coordinating regulatory policies with respect to biofuels for motor vehicles.³⁰ As these and other examples show, SNAs abroad as well as in the United States and EU member states are becoming independent global regulatory players.

Further, U.S. cities and counterparts in other nations are also becoming important climate regulatory players. For example, a coalition of more than 850 U.S. mayors have pledged to cut greenhouse gas emissions 7% below 1990 levels by 2012, in keeping with the U.S. target in the Kyoto Protocol, as part of the U.S.

24. See sources cited *supra* note 18.

25. See Regional Initiatives, *supra* note 14; Debra Kahn, *Midwest Emissions Market Moves Toward 2013 Opening, Eyes Hill Debate*, GREENWIRE, (Feb. 20, 2008).

26. Regional Initiatives, *supra* note 14.

27. See Margot Roosevelt, *Regional Pact Caps Emissions: Leaders of Six States and Two Canadian Provinces Agree to Cut Output of Greenhouse Gases to 15% Below 2005 Levels*, L.A. TIMES, Aug. 23, 2007, at B1; Western Climate Initiative, <http://www.westernclimateinitiative.org/>. A seventh state (Montana) and third province (Quebec) recently joined the initiative. *Id.*

28. Patricia Ware, *International Coalition Formed in Lisbon to Establish Cap-and-Trade Carbon Market*, 30 INT'L ENVTL. REP. 874 (2007).

29. See Cal. Exec. Order No. S-20-06 (Oct. 18, 2006), available at <http://gov.ca.gov/executive-order/4484>.

30. For information on the California-EU Regulatory Cooperation Project, see Ctr. on Insts. and Governance, California-EU Regulatory Cooperation Project, available at <http://igov.berkeley.edu/#CaliforniaEU> (last visited Sept. 6, 2008) [hereinafter Cooperation Project].

Mayors Climate Protection Agreement.³¹ Internationally, the Large Cities Climate Leadership Group (renamed “C40”) comprises more than 35 of the world’s largest cities, including Chicago, Houston, Los Angeles, New York, and Philadelphia.³² This group has partnered with the Clinton Climate Initiative to find ways to reduce energy use and GHG emissions at the local level.³³ The group, spearheaded by then-London Mayor Ken Livingstone, has held two global climate summits. Similarly, the Cities for Climate Protection campaign, an international network of more than 800 local governments from across the globe, has pledged to reduce GHG emissions from local government operations.³⁴

Accordingly, SNAs in the United States have assumed a significant role in climate change regulation both domestically and globally by taking steps to reduce their emissions, drive technological development, stimulate adoption of climate regulation by Congress, and promote international climate regulatory cooperation, including by engaging SNAs and nations abroad. The following sections discuss whether or not these U.S. SNA initiatives are likely to persist following adoption of federal climate regulation, and, if so, whether they are desirable.

II. CAN AND SHOULD THERE BE A CONTINUING ROLE FOR INDEPENDENT STATE AND LOCAL CLIMATE REGULATION?

A. *The Positive Political Economy of Climate Regulation*

Are the U.S. SNA regulatory activities outlined in Part I largely transient phenomena that will inevitably be superseded by strong U.S. federal and international climate regulatory programs? Or, as this Essay concludes, can and should there be a continuing and even expanded role for independent state and local climate regulation? If such initiatives indeed prove transient, they would have served to bring to the political limelight important neglected problems and stimulate national political action to address them, thus fulfilling Madison’s vision of competitive federalism.³⁵ Federal initiatives will in turn facilitate stronger global

31. See U.S. Conference of Mayors, Climate Protection Center, List of Participating Mayors, <http://www.usmayors.org/climateprotection/list.asp> (last visited May 30, 2008); Anthony Faiola & Robin Shulman, *Cities Take Lead On Environment As Debate Drags At Federal Level; 522 Mayors Have Agreed To Meet Kyoto Standards*, WASH. POST, June 9, 2007, at A1.

32. See C40 Cities Climate Leadership Group, C40 Large Cities, <http://www.c40cities.org/cities/> (last visited Sept. 6, 2008).

33. See C40 Cities Climate Leadership Group, C40 Cities: An Introduction, <http://www.c40cities.org/> (last visited Sept. 6, 2008); Jennifer Steinhauer, *Clinton Foundation to Work to Reduce Greenhouse Gases*, N.Y. TIMES, Aug. 2, 2006, at A16.

34. See ICLEI—Local Governments for Sustainability, *Cities for Climate Protection*, <http://www.iclei.org/index.php?id=800> (last visited Sept. 6, 2008); see also Michele M. Betsill & Harriet Bulkeley, *Cities and the Multilevel Governance of Global Climate Change*, GLOBAL GOVERNANCE, Apr. 1, 2006, at 141 (analyzing Cities for Climate Protection—“which is simultaneously global and local, state and nonstate”—and its role in global governance in the context of international relations and regime theory).

35. See THE FEDERALIST NO. 51 (James Madison); see also Hills, *supra* note 6 (discussing defensive preemption theory). State litigation against the federal government,

regulatory measures. In this scenario, state and local climate regulation would cede any significant climate regulatory role to higher-level jurisdictions and assume honorable semi-retirement. But, positive political economy analysis indicates that the withering away of independent SNA regulation is not inevitable. There are significant incentives for SNAs to persist in independent regulation if the overall climate regulatory architecture is designed to accommodate and encourage them.

Given the character of the global atmospheric resource, the state and local initiatives taken to date seem paradoxical from the perspective of positive political economy. Currently, the earth's atmosphere is essentially a common pool sink for GHG emissions that is being massively overused by jurisdictions and emissions sources from around the world.³⁶ If a single jurisdiction undertakes unilaterally to reduce its emissions, it will bear all of the costs but enjoy only a fraction of the benefits. The resulting disparity in costs and benefits would be compounded by the shift of investment in emissions-generating activities from jurisdictions that regulate GHGs to those that do not and therefore offer reduced costs of doing business. The resulting increase in investment and emissions in the latter jurisdiction is known as leakage.³⁷ On this analysis, it would be irrational for a single jurisdiction to regulate unless its damages from atmospheric GHG concentrations are very large, its share of emissions is very large, and the costs of significant limitations on those emissions are suitably low.

The GHG emissions of SNAs are only a small fraction of the global total. Even California's GHG emissions represent only a little more than 1% of the global emissions. The reductions that it might be able to achieve in those emissions over the next several decades is an even smaller fraction of total global business-as-usual (BAU) emissions. If we disregard the spillover effect of California's initiatives in stimulating regulatory steps in other jurisdictions (discussed below), any climate benefits that California might obtain from the GHG reductions achieved by California's regulations alone would be so small as to be undetectable. Even when psychic benefits from climate protection measures are included, they are unlikely to be sufficiently strong and durable to outweigh the costs of unilateral action, including the reduction in net climate benefits and competitiveness costs associated with leakage to other jurisdictions. There may well be significant variations among states in the intensity of citizen preference for climate protection and in other factors affecting the balance of climate regulatory costs and benefits, resulting in higher benefits and lower costs in some jurisdictions relative to the national average.³⁸ But the net benefits for even the outlier states with the most

such as *Massachusetts v. EPA*, requiring it to take national regulatory action, appears, however, inconsistent with the competitive vision, at least where (as here) the state is claiming independent regulatory authority over the same subject. *Id.*

36. By contrast, the Vienna Convention, Montreal Protocol, and subsequent international agreements to curtail emissions of ozone-depleting chemicals have created a highly effective global regulatory system to protect the ozone layer. See Cass Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 31 HARV. ENVTL. L. REV. 1 (2007).

37. See generally Jonathan B. Wiener, *Think Globally, Act Globally: The Limits of Local Climate Policies*, 155 U. PA. L. REV. 1961 (2007) (discussing leakage).

38. See Alice Kaswan, *The Domestic Response to Global Climate Change: What Role for Federal, State and Litigation Initiatives?*, 42 U.S.F. L. REV. 39 (2007).

favorable cost-benefit balance would probably remain overwhelmingly negative. California and other SNAs are attempting to spread the costs, reduce leakage, and increase benefits by entering into cooperative climate regulatory agreements with other SNAs and foreign jurisdictions.³⁹ But these arrangements, even if they are implemented, do not fundamentally change the fact that the expected costs to those SNAs that adopt significant climate regulation will exceed any climate benefits.

What reasons—apart for Quixotic, useless altruism—might account for SNA climate regulatory measures in the face of such a seemingly unfavorable cost-benefit structure?⁴⁰ First, the measures may be largely symbolic initiatives, pushed by local political entrepreneurs for short-term political gain, that will simply not be implemented once their significant costs become apparent. Second, they may represent strategic moves to stimulate adoption of federal regulation by imposing significant costs on industry or other states, who under defensive preemption theory will seek relief in Congress, thereby placing the issues on the national political agenda. The ultimate result may well be stronger federal regulation than would occur in the absence of state initiatives.⁴¹ Federal regulation may in turn lead to stronger international measures. Triggering higher-level regulation will eventually provide significant benefits and distribute costs broadly.⁴² Third, the costs of ‘easy’ reductions are negative; for example, the costs of many energy efficiency investments are less than the reductions in energy expenditures achieved.⁴³ Fourth, reductions in GHG emissions may also result in reductions of conventional air pollutants and yield other local non-climate environmental benefits.

It is quite plausible that all four of these factors have explanatory power, and that they reinforce each other. Nonetheless, under this analysis, independent SNA initiatives will not be carried beyond the point, which may be reached before very long, where net economic costs become significant and outweigh local environmental benefits. Also, by establishing a new, higher regulatory floor, a strong federal program will reduce the benefits of existing SNA regulatory measures initiatives and raise the costs of additional measures because of rising marginal emissions limitations costs. States and cities may still appropriately play a substantial but subordinate role within a national climate regulatory program because they are best situated to implement national policies with respect to certain

39. See *supra* notes 25–30 and accompanying text.

40. See Kirsten H. Engel and Barak Y. Orbach, *Micro-Motives and State and Local Climate Change Initiatives*, 2 HARV. L. & POL’Y REV. 119, 123 (2008) (analyzing demand for and supply of local climate initiatives).

41. See sources cited *supra* note 20.

42. This result is most obvious in the case of litigation undertaken by states to force adoption of federal regulation or require power plants and vehicle manufacturers to reduce emissions. Compared to adoption of regulatory controls on in-state emissions, such litigation initiatives are cheap.

43. See MCKINSEY & CO., REDUCING U.S. GREENHOUSE GAS EMISSIONS: HOW MUCH AT WHAT COST, U.S. GREENHOUSE GAS ABATEMENT MAPPING INITIATIVE, at xii (Dec. 2007), available at http://www.mckinsey.com/client/service/ccsi/pdf/US_ghg_final_report.pdf (identifying abatement options that “would generate positive economic returns over their lifecycle”).

aspects of the energy, housing, land use, transportation, and other sectors. But the analysis above strongly indicates that any major independent SNA climate regulation, seeking to force the overall pace of GHG limitations, will be a largely transient phenomenon.⁴⁴

Nonetheless, there are other factors, not considered in the analysis thus far, that would explain and support a prediction of a continuing independent SNA role in climate regulatory initiatives.

First, outlier SNAs that will obtain relatively higher climate protection benefits and have relatively lower limitations costs may continue to take regulatory initiatives, even after federal and stronger international regimes are adopted, in an effort to continue to promote—through demonstration, technology-forcing, and other domino effects—more stringent regulation by higher level jurisdictions.

Second, states and localities may achieve collateral economic benefits as a consequence of climate regulatory measures through a “race to the top” dynamic.⁴⁵ Climate regulatory measures will stimulate investment in and market demand for emissions limitation technologies. Jurisdictions that are climate regulatory leaders can reap the “learning by doing” benefit of early development and application of such technologies so that, when (in part as a result of political domino effects triggered by the initiatives of climate regulatory leaders) other jurisdictions adopt GHG emissions limitations, the leader jurisdictions can grab a large share of the expanded market.⁴⁶ Thus, Governor Schwarzenegger has justified California’s climate regulatory initiatives in part on the ground that they will help California become a global leader in the future hydrogen economy.⁴⁷ Renewable energy requirements may similarly drive states’ development of comparative technological advantage in renewable energy sources. Other types of collateral local benefits can include enhanced energy security and lower energy prices by stimulating development of local energy sources. Cities may obtain other collateral economic and amenity benefits, including improved transportation infrastructure, green space, building efficiency, air quality, and traffic—all of

44. See, e.g., Kristen Engel, *State and Local Climate Change Initiatives: What Is Motivating States and Local Governments to Address a Global Problem and What Does it Say About Federalism and Environmental Law?*, 38 URB. LAW. 1015 (2006).

45. See generally DAVID VOGEL, *TRADING UP: CONSUMER AND ENVIRONMENTAL REGULATION IN A GLOBAL ECONOMY* (1995). This dynamic, of course, is directly contrary to the “race to the bottom” theories used to justify environmental regulation by higher-level jurisdictions.

46. See, e.g., David Roland-Holst, *Economic Growth and Greenhouse Gas Mitigation in California*, at 3 (Aug. 2006), available at http://calclimate.berkeley.edu/Growth_Strategies_Full_Report.pdf (finding that California emissions initiatives could create more than 17,000 new jobs and boost Gross State Product by more than \$60 billion, in part by drawing investment in energy innovation).

47. See, e.g., Cal. Exec. Order No. S-7-04 (April 20, 2004), available at http://www.hydrogenhighway.ca.gov/media/execorder_s704.pdf (touting California leadership on hydrogen technology and climate change and calling for construction of hydrogen fueling stations along CA freeways).

which can at the same time reduce emissions and allow for faster economic and residential growth.⁴⁸

Third, states with a significant share of national product or service markets may be able to leverage their market position by adopting regulatory controls on those products or services that will induce adoption of GHG limitations on products and services sold elsewhere. In order to comply with such regulation and maintain scale economies or otherwise efficiently adapt, manufacturers may adopt GHG limitations measures for products or services sold in other jurisdictions. This dynamic is illustrated by California's strategic position in the motor vehicle market, magnified by the markets in other "piggybacking" states that have adopted California's regulatory standards for emissions of conventional pollutants.⁴⁹ By adopting successively more stringent regulatory control, California has not only forced motor vehicle emissions control technology but also stimulated the adoption by manufacturers and the federal government of progressively stronger controls that have in turn been followed in Europe and elsewhere.⁵⁰ Thus, the "California effect" has had worldwide ramifications. Applied in the climate context, such use of market/regulatory leverage could multiply the benefits of California initiatives many-fold.⁵¹ Moreover, a substantial portion of the regulatory costs are imposed on manufacturers and consumers in other jurisdictions, reducing leakage and also enhancing the likelihood that those jurisdictions will follow California's regulatory lead. States may be able to use fuel or renewable electricity energy regulation in a similar fashion, and in doing so also confer advantages on local industry.⁵²

States can use all three of these mechanisms to make climate regulation an effective part of their competitive strategy portfolio.⁵³ The exact nature of a state's strategy will depend on the character of its industry and economy generally, the position of its firms in national and international markets, its current and anticipated future GHG emissions profiles, and relevant climate regulation adopted by other states, the federal government, and foreign jurisdictions. The three mechanisms can be mutually reinforcing. Successful market/regulatory leverage

48. See, e.g., CITY OF NEW YORK, PLANYC, 13 (Apr. 22, 2007) available at http://www.nyc.gov/html/planyc2030/downloads/pdf/report_introduction.pdf (noting that collectively, various initiatives to improve city infrastructure will also "address the greatest challenge of all: global warming").

49. See *supra* note 8 and accompanying text.

50. See, e.g., W. Michael Hanemann, Dep't of Agric. & Res. Econ., and Cal. Climate Change Ctr. Goldman Sch. of Pub. Policy, Univ. of Cal., Berkeley, How California Came to Pass AB 32, the Global Warming Solutions Act of 2006 (Jan 15, 2007) (providing overview of Cal. role as leader in promoting emissions control), available at <http://www.law.berkeley.edu/centers/envirolaw/capandtrade/speakers/PDFs/Hanemann%20paper.pdf>.

51. As discussed above, however, in the case of motor vehicle GHG emissions, the magnitude of the "California effect" internationally will be reduced because many foreign jurisdictions have adopted stringent fuel efficiency standards. See Int'l Council on Clean Transportation, *supra* note 9.

52. See DeShazo & Freeman, *supra* note 4.

53. See generally Rabe et al., *supra* note 20 (discussion and analysis of this concept in the climate regulatory context).

will provide scale markets for new technologies, and thereby potentially accelerate the race to the top by a “climate leader” state. By lowering the costs of compliance with climate regulation, technological leadership will encourage other jurisdictions to adopt more ambitious climate regulatory programs, further expanding the markets for technological leaders and potentially producing an environmentally virtuous cycle of progressively stronger SNA environmental legislation. Thus, political and market domino effects resulting from the initiatives of climate leader states may lead to stronger climate regulation horizontally by other SNAs and vertically by higher level jurisdictions.⁵⁴

Accordingly, significant SNA regulatory initiatives may well persist if climate regulatory architecture is designed to accommodate and even encourage them. The questions, then, are the role for independent SNA regulation in alternative regulatory architectures, and the normative criteria for choosing among those architectures. The following section discusses the normative criteria, while Part III discusses the unitary and plural models for climate regulatory architecture.

B. Normative Criteria for Evaluating the SNA Role

I urge a frankly instrumentalist view of the institutional arrangements for climate regulatory policy. There are deeply embedded structural obstacles, at both the domestic and international levels, to the adoption and implementation of measures that will meet the huge challenge of stabilizing GHG emissions at levels that will avoid risks of far-reaching and potentially catastrophic disruptions to natural, social, and economic systems. Legal and policy measures, including the unitary and plural models of climate regulatory design, should be judged primarily on their success in overcoming those obstacles and promoting stronger climate regulation.

Domestically, these challenges include a variety of political hurdles, including the long-term character of climate risks, the still substantial uncertainties about their magnitude, and the need to mobilize public support for major near-term investments in mitigation measures whose benefits will flow primarily to those in other countries and to future generations. Further, entirely new legal and institutional systems must be developed and implemented to regulate the myriad of activities that generate GHG, many of them undertaken by individuals or small businesses, and successfully manage the transition to a low carbon economy. In order to drive the long-term private sector R&D investment necessary to develop the new technologies required, there must be corresponding long-term, credible regulatory commitments to continuing emissions reductions. Achieving such commitments poses additional political and institutional challenges. A further political challenge is that the United States will be less adversely affected by climate change than most developing countries or Europe,⁵⁵ so that a major share

54. But note that these initiatives may well impose unwanted costs on other SNAs with lower climate protection benefits and hence be an economically vicious cycle from their perspective. But it may also confer spillover non-climate air pollution or other environmental benefits.

55. See, e.g., William K. Stevens, *In a Warming World, Who Comes Out Ahead?*, N.Y. TIMES, Feb. 5, 1991, at C1 (noting that developing nations are “more

of the benefits of emissions limitations undertaken by the United States will accrue to other countries. Also, the U.S. system of political representation, including the basis of representation in the Senate and the system of campaign finance, and the many veto points in the congressional decision-making structure, gives significant power to organized economic interests to block climate change regulation. When combined with the Bush Administration's climate policies, the result has been a political logjam on federal climate legislation. While it appears that the next administration and probably the next Congress will be substantially more supportive of climate regulation, these structural obstacles will persist.

Globally, the challenge is to overcome free-riding incentives and competitiveness pressures in order to secure agreement by all major emitting jurisdictions to successively implement more stringent limitations and to garner such commitments. This will require inclusive international cooperation on an unprecedented scale, made more difficult by the uneven geographic distribution of the costs and benefits of climate protection measures and a north-south divide.⁵⁶ Winning participation by major developing countries will require that a great part of the costs of limitations in those countries must be financed by the developed countries, creating additional pressures on domestic political systems in those countries and posing further institutional challenges.

In these circumstances, the place of SNAs in climate regulation should be assessed in terms of how stronger climate regulation can best be promoted. This same imperative is reflected in the Supreme Court's *Massachusetts v. EPA* decision, which broadened standing by recognizing climate risks as satisfying the "injury in fact" requirement and expansively reading the Clean Air Act to effectively mandate EPA regulation of CO₂ motor vehicle emissions.⁵⁷ Judicial recognition of the value of SNA climate regulation is reflected in the two district court decisions rejecting the auto manufacturers' claims of federal preemption of the California motor vehicle CO₂ regulation.⁵⁸ As developed below, however, SNA measures can and should be subject to regulation by Congress to prevent wholly disproportionate or discriminatory economic burdens on other states or national industries and to safeguard the effective operations of overall federal climate regulatory programs and the federal role in foreign affairs.

III. TWO MODELS OF CLIMATE REGULATORY ARCHITECTURE

As a first approximation, one may posit two ideal type models of climate regulatory architecture—a unitary model and a plural model—that can be applied at either the domestic or global levels. The unitary model affords no space for significant independent SNA regulation, whereas the plural model does.

vulnerable to climate change and less able to adapt to it than are the industrialized nations of the cooler latitudes").

56. See STEWART & WIENER, *supra* note 3.

57. 137 S. Ct. 1438, 1456 (2007).

58. *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295, 397–99 (D. Vt. 2007); *Cent. Valley Chrysler-Jeep, Inc. v. Goldstene*, 529 F. Supp. 2d 1151, 1190, (E.D. Cal. 2007).

Under the international version of the unitary model, the only participating entities would be nations or regional economic organizations such as the EU. They would agree to a single international cap-and-trade climate regulatory system. The corresponding unitary domestic system would, in the case of the United States, involve a single federal cap-and-trade system to implement the United States' international commitments under the global system. States and other SNAs would play only subsidiary regulatory roles, assigned and defined by the federal government. Under the plural models, SNAs would be able to regulate independently of and more stringently than the federal government and could also cooperate in international regulatory and market initiatives that did not involve legally-binding international commitments.

A. Unitary Architecture

1. Global Unity

A unitary global architecture would involve a single overarching international emissions trading system built on national limitations commitments. Its common pool character requires unitized management of the atmospheric resource through a single global regulatory regime. The instrument of choice for doing so is an encompassing global emissions cap-and-trade system involving all of the twenty to thirty most significant emitting nations. Only such a system, or a system of harmonized emissions taxes, can ensure the cost-effectiveness that will be needed to achieve and maintain limitations of the magnitude required. For several key political and administrative reasons—including the need to engage developing countries in emissions limitations through generous allowance allocations and the profound obstacles to agreeing upon and securing compliance with a uniform international GHG tax—a global cap-and-trade system is preferable to international GHG taxes, internationally harmonized command and control measures that specify required levels of emissions control in different economic sectors, or outright subsidy payments from developed to developing countries.⁵⁹ The United Nations Framework on Climate Change and the Kyoto Protocol are initial steps towards a global cap-and-trade regime, which would realize the powerful economic and environmental advantages of a single trading market. For reasons of political achievability and operational success, the governmental participants in such a system should be limited to nations and regional economic organizations.

Under a unitary model, SNAs should not be able independently to engage in international legally binding agreements with other nations or SNAs. Notwithstanding the advantages of pluralism, such arrangements are undesirable because they would introduce considerable additional complexity in international negotiations and regulation, making achievement of an effective global cap-and-trade emissions trading system that much more difficult. For example, separate SNA emissions trading systems, including credit and offset systems, would likely result in different specifications and requirements for the GHG commodities traded than those developed among nations. Other independent SNA regulatory

59. See STEWART & WIENER, *supra* note 3.

requirements, including command regulatory requirements, would limit the scope for trading and the economic and environmental efficiencies of a global cap-and-trade system.

2. Domestic Unity

Under the domestic version of the unitary model, climate regulation requires comprehensive and far-reaching changes in technologies and market practices that can best be achieved by the federal government through a uniform nationwide cap-and-trade program implementing the global trading regime.⁶⁰ Independent state regulation, whether in the form of trading systems taxes, or command and control, would undermine the coherence and efficacy of a national scheme for the same reasons as noted above in the global context. Where nationally (and globally) marketed products are involved, there is an even stronger case for uniform federal rules because of the increased transaction costs and threats to scale economies posed by many different and potentially inconsistent regulations of products by different jurisdictions. SNAs may appropriately play a subsidiary role in certain aspects of climate regulation, for example in the renewable energy, housing, transportation infrastructure, and forestry and land use sectors, under the umbrella of a single federal cap-and-trade system. But the SNAs' role should be specified and supervised by the federal government.

Externally, the United States needs to speak with one voice in international negotiations in order to efficiently and effectively advance the nation's interest. State engagement in global regulation would undermine the federal government's bargaining leverage and the negotiation of beneficial agreements. SNA measures, especially if undertaken in alliance with SNAs in other nations, could also complicate the federal government's ability to comply with its international obligations and expose it to potential sanctions because of uncoordinated state behavior.

B. Pluralist Architecture

1. Global Pluralism

Pluralism at the global level has two related dimensions. The first relates to the design of the regulatory architecture. Should there be one encompassing international climate regulatory scheme, such as a global cap-and-trade system, or multiple agreements involving varying participants and embodying different regulatory strategies and agreements? The other dimension relates to the participants in international regulatory agreements. Should they be limited to nations, or also include SNAs?

60. The European Union's vast Emissions Trading System (ETS)—the world's largest—has struggled with a range of problems caused at least in part by lack of uniformity in implementation by member states. See Alice Kaswan, *A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a Federal System*, 85 DENV. U. L. REV. 791, 818–21 (2008); James Kanter, *The Trouble with Markets for Carbon*, N.Y. TIMES, June 20, 2008, at B1).

While a single overarching global climate regulatory/trading regime should probably remain a longer term goal, there are serious practical obstacles to achieving such a regime within the next decade or two. These include the urgent need to bring the United States and also major developing countries into international limitations agreements. It will not be feasible to simply slot these nations into the current Kyoto framework, which does not include the United States and omits any emissions limitations obligations for developing countries. The engagement of the United States and developing countries must proceed stepwise, most likely through a series of bilateral, plurilateral, and regional agreements involving limited numbers of participants.⁶¹ These confidence-building agreements may include cap-and-trade arrangements, which could be limited to certain sectors such as electricity generation, or credit or offset systems. They could also include an agreement to adopt harmonized policies on such matters as renewable energy, energy efficiency, motor vehicle emissions, or motor vehicle fuels as well as cooperation on technology development and sharing of best practices.⁶² Thus, for the foreseeable future, the world, and the United States, must deal with an international climate regulatory regime that is pluralist in character. This structure, which has advantages in terms of innovation and experimentation, can accommodate a substantial role for SNAs.

An important virtue of a plural approach to regulatory design in the nascent field of climate policy is its ability to address uncertainties about the best design of regulatory regimes. We are still in the early learning process with trading and its climate regulatory systems, as exemplified by the uneven experience with the Kyoto Clean Development Mechanism and the EU CO₂ emissions trading system. Experimentation and experience with various approaches at the international as well as domestic levels will be highly beneficial. Different international trading and other regulatory arrangements will facilitate benchmarking and comparative assessment of performance. Over time, the search by buyers for the least cost GHG allowances or credit and arbitrage by speculators and brokers will tend to promote functional integration among different trading markets, and create incentives for harmonization of allowance and credit arrangements and liability rules.

A plural regulatory design would also allow greater scope for regulatory initiatives by jurisdictions that wish, for environmental or economic reasons, to adopt more ambitious measures than those that emerge in a multilateral Kyoto successor. Enabling them to do so through agreements with other like-minded jurisdictions can reduce leakage problems and support such efforts, which will advance the overall goal of climate protection.

61. See Michele M. Betsill, *Regional Governance of Global Climate Change: The North American Commission for Environmental Cooperation*, 7.2 GLOBAL ENVTL. POLITICS 11, 12–15, available at http://muse.jhu.edu/journals/global_environmental_politics/v007/7.2betsill.pdf (highlighting potential benefits of regional environmental governance) (last visited Sept. 6, 2008).

62. Some of these non-universal agreements on climate regulatory cooperation could usefully continue in operation as a valuable supplement after an encompassing global cap-and-trade system emerges.

A plural global regulatory design could be built with participation limited to nations. But allowing SNAs to participate would increase the extent of transnational regulatory experimentation and promote cooperative learning by doing and comparative evaluation of different approaches, especially in localized sectors like those mentioned above where SNAs often enjoy a comparative advantage over national governments. The fast-emerging international cooperation among cities on climate-related energy, housing, and transportation issues is illustrative.⁶³ Further, SNA participation would allow greater scope for important jurisdictions, like California, that have strategic market/regulatory leverage to cooperate with other similarly situated jurisdictions to drive climate protection forward. The developing cooperation between California and the EU on motor vehicle fuels is an example.⁶⁴

2. Domestic Pluralism

Allowing wide scope for domestic SNA climate regulatory initiatives is desirable for many of the reasons already discussed in the global context, including the greater scope afforded for innovation and diversity and the political desirability of enabling “leader” jurisdictions to adopt more ambitious measures than a nation as a whole is willing to adopt. Development of different regulatory approaches, including different designs for various forms of trading systems, including credit and offset systems, will promote experimentation, benchmarking, mutual learning, and performance evaluation.⁶⁵ Some aspects of climate regulation, relating to buildings, energy supply and regulation, and transportation, may be best handled at the state or local levels. Furthermore, an encompassing single federal cap-and-trade system will not be built overnight. As reflected in the climate regulatory bills currently before Congress,⁶⁶ any national cap-and-trade system will be limited to certain gases and sectors, and gradually extended to others.⁶⁷ SNA regulation can play a useful role in extending the operation of trading systems by taking the lead in extending the coverage of cap-and-trade or emissions reduction credit systems to sectors of the economy or to GHGs not covered by the federal regime. SNA initiatives can also help force the pace and stringency of national regulation.

One could allow SNAs a substantial independent role in domestic regulation while limiting participation in international regulatory agreements to

63. See United Nations Env't Programme, Urban Environment Unit, Cities and Climate Change, available at http://www.unep.org/urban_environment/Issues/climate_change.asp (describing the program's “Campaign on Cities and Climate Change” and other initiatives); see also sources cited *supra* notes 31–34.

64. For information see Cooperation Project, *supra* note 30.

65. See generally Joshua Cohen & Charles Sabel, *Directly-Deliberative Polyarchy*, 3 EUR. L.J. 313 (1997) (providing an elaboration of these virtues).

66. See Pew Ctr. on Global Climate Change, Climate Action in Congress, available at http://www.pewclimate.org/what_s_being_done/in_the_congress (providing a round-up of proposed legislation) (last visited Sept. 6, 2008).

67. New Zealand is the only country that is proposing to undertake a cap-and-trade system that includes all major anthropogenic GHGs and all major sectors of the economy. Toni E. Moyes, *Greenhouse Gas Emissions Trading in New Zealand: How Great a Leap Forward?*, 35 ECOLOGY L.Q. (forthcoming 2008).

nations. But this would foreclose international partnerships between U.S. SNAs and other jurisdictions abroad, which would be beneficial for reasons discussed above.⁶⁸

IV. THE APPROPRIATE ROLE FOR INDEPENDENT SNA REGULATION: STRIKING THE BALANCE

Drawing on the analysis in Parts II.A and III, this Part presents a balance sheet, summarizing the advantages and the disadvantages of significant independent SNA regulation, both domestically and globally, in the long term. It then applies the normative criteria sketched in Part II.B to evaluate the overall desirability of independent SNA regulation, taking into account the safeguards available through legal disciplines on SNA regulatory activities by the courts and by Congress. It concludes in favor of a significant independent role for SNAs in climate regulation both domestically and internationally. SNAs may not, however, conclude binding climate regulatory agreements with foreign nations. Also, Congress may appropriately regulate the design and operation of independent SNA cap-and-trade and other climate measures to safeguard the integrity and effectiveness of federal emissions limitations systems. Courts, however, should be extremely reluctant to use negative commerce clause or implied preemption principles to invalidate SNA climate regulation measures.

A. Benefits of Independent SNA Regulation

For the reasons discussed in Part IIA, the SNAs most likely to be climate leaders and initiate significant independent climate regulation measures are those that enjoy relatively high benefits (including psychic benefits) from climate protection and gain significant economic or environmental co-benefits from such measures. SNAs that face relatively low costs in reducing emissions enjoy market/regulatory leverage in relevant product and service markets, and would create market opportunities for local firms from stimulating a regulatory “race to the top.” They are also more likely to be climate leaders. Domestic and international climate regulatory initiatives by these “leader” SNAs are likely to produce climate protection benefits through a variety of mechanisms discussed below.

1. Reducing Emissions in Leader SNAs

The direct effect of independent SNA regulatory initiatives will reduce emissions in the jurisdictions that adopt them.⁶⁹ Cooperative agreements among SNAs, whether domestic or transnational, to adopt common regulatory measures will increase the amount of reductions achieved.

68. See discussion *supra* Part III.B.1.

69. These reductions will, to some extent, be offset by leakage. See *supra* note 37 and accompanying text.

2. Fostering Adoption of Stronger Climate Regulation by Other SNAs and the Federal Government

The indirect effects of SNA initiatives on regulatory policies at the national and international levels and in other SNAs may be more powerful than the direct effects of such initiatives in terms of the emissions reductions that they achieve. Successful SNA regulatory measures will demonstrate that it is feasible to reduce emissions at an acceptable or even negative cost. They may also demonstrate that jurisdictions that initiate such measures may reap competitive advantages or other co-benefits. This demonstration effect can stimulate stronger climate regulation in other SNAs and at the federal level by helping to build public awareness of and support for their adoption, perhaps lessen industry or other opposition, and provide templates for initiatives by political or governmental policy entrepreneurs. These “radiator” effects may help build a foundation for successive rounds of regulatory initiatives by leader SNAs. Even where strong federal measures are adopted, the structural barriers discussed above will mean that they will almost inevitably be inadequate. Accordingly, the prod and stimulus of regulatory initiatives by leader SNAs will continue to be needed. Successively stronger national regulations by the United States are likely to lead to strengthened global regulation.

3. Filling Regulatory Gaps and Extending the Operation of Trading Systems

Because of the characteristics of national and international climate political processes and the inherent limitations of centralized regulation, gaps in centralized regulation are inevitable. These will include large gaps in the coverage of trading programs. SNA measures can fill those gaps by extending the operation of trading through offset and credit systems.

4. Regulatory Innovation and Experimentation

While there are undoubtedly economies of scale in research and analysis and other aspects of climate regulation design and implementation, regulation at the national or international level can also involve greater difficulties in reaching agreement on new measures, mobilizing national or international bureaucracies, the danger of excessive regulatory rigidity, and other scale diseconomies. SNA regulation can be more nimble and often more innovative. Also, decentralized regulation allows for many more different measures and policies to be tried out. Experience with a diversity of approaches can advance knowledge about the best regulatory approaches. A single federal or global experiment, however thoughtfully designed, may turn out to be a costly failure.

5. Benchmarking and Comparative Learning

The adoption of a number of different climate regulatory measures in different SNAs facilitates mutual learning by providing a foundation for mutual learning and sharing of best practices. The comparative performance of different measures in similar jurisdictions allows benchmarks to be established to evaluate and improve regulatory approaches.

6. Regulatory Comparative Advantage

Important elements of climate regulation can be better designed and implemented by SNAs. These include some aspects of electricity regulation, building energy efficiency, transportation infrastructure, and land use and development patterns. Generic regulatory measures adopted at the national level, including emissions trading systems, must be carefully linked with functionally related local regulatory programs (e.g., building codes, state electric utility regulation) and institutional arrangements. These linkages cannot be designed in a wholly top-down fashion; there must be room for local initiative and learning, which can feed back iteratively with regulatory design at higher levels.

B. Drawbacks of Independent SNA Regulation

1. Leakage

Jonathan Wiener has emphasized that state climate regulatory initiatives create leakage effects that would reduce the limitations achieved in regulating state emissions and increase emissions elsewhere.⁷⁰ While such effects will occur, they are a problem with any climate regulation that is not global, universal, and uniform. The leakage problem is in some measure self-correcting in that it will tend to damp the level of independent regulatory initiative by individual jurisdictions. But the adverse impacts of leakage on aggregate emissions reductions and the welfare of the regulating jurisdictions can be outweighed by the other effects of local initiative, including market leverage, race-to-the-top, and demonstration effects. Local jurisdictions will presumably not undertake independent regulation unless they expect that the economic and environmental benefits will outweigh the costs, including leakage costs. And in that event the positive external benefits may well outweigh the external costs.

2. Increased Transaction Costs and Complexity

Independent SNA regulation will increase transactions costs and complexity for regulated firms, and create problems of coordination among various regulatory regimes at both the domestic and global levels. These costs, however, may well be outweighed by the benefits of regulatory gap-filling, innovation and experimentation, and mutual learning, but only if the SNA, national, and international systems develop in ways that promote integration and mutual reinforcement.

3. Cost Externalization

SNA regulation may also impose economic costs on other jurisdictions and national industries, most notably where they exploit market leverage, as California and the piggy-back states have done in the case of motor vehicle emissions controls.⁷¹ From the viewpoint of political representation, imposition of

70. See Wiener, *supra* note 37.

71. States may also seek to discriminate against out-of-state firms in favor of their own when they adopt climate regulations in contexts where they do not enjoy significant market leverage. It does not yet appear, however, that the nature of this problem

such burdens on other states that have not had a say in their adoption is unfair. But from the viewpoint of promoting stronger climate regulation, such impositions are likely to be desirable. Under defensive preemption theory, where state regulatory initiatives can provoke the regulated industry to seek preemptive congressional legislation,⁷² this cost externalization provides the political motive to unblock policy logjams at the national level and put otherwise neglected issues on Congress's agenda. In that event, Congress can balance the costs and benefits from an encompassing national perspective. Under the status quo, states dominated by interests opposed to regulation can often logjam the national political process, and thereby impose environmental costs on other states that value climate protection more highly.⁷³

4. *Interference with Trading Markets*

Different SNA regulatory requirements may restrict the operation of national or global trading markets by imposing command controls or other requirements that restrict the flexibility of firms to use the GHG trading markets to meet their regulatory obligations, undermining the environmental and economic benefits of the trading system. The advantages of trading systems can also be undermined in a different way by proliferation of different SNA GHG trading regimes that fragment the market. The incentives of buyers, speculators, and other market makers to take advantage of differences between the price of GHG allowances or credits in different trading systems will tend to integrate the markets operating under separate regulatory/trading rules. But there may be a need for higher-level restrictions on SNA measures that significantly interfere with higher-level trading systems.

With pressure mounting on Congress to enact comprehensive climate regulation featuring an economy-wide cap-and-trade system,⁷⁴ difficult questions

is different in kind or scope in climate regulation than in any other area of regulation; if so, it can be adequately handled by existing judicial techniques under the dormant Commerce Clause.

72. For an informative analysis of defensive preemption theory in the context of climate change regulation, see sources cited *supra* note 20. See also Kristen H. Engel & Scott R. Saleska, *Subglobal Regulation of the Global Commons: The Case of Climate Change*, 32 *ECOLOGY L.Q.* 183, 223 (2005) (noting that "many U.S. federal environmental laws and multilateral international environmental agreements came about only after the underlying environmental issue was already being addressed by a subset of lower-level jurisdictions").

73. See, e.g., Michael Weisskopf, *Industries Dance with the Devil on Clean Air*, *N.Y. TIMES*, Dec. 24, 1990, at A13 (describing long success of power companies and other polluters in blocking national legislation before passage of the Clean Air Act); see also Noah Sachs, *Planning the Funeral at the Birth: Extended Producer Responsibility in the European Union and the United States*, 30 *HARV. ENVTL. L. REV.* 51, 87 (2006) (noting the "numerous access points in the American system for industry to block efforts to impose new environmental regulations, through campaign contributions, lobbying, and judicial challenges").

74. See, e.g., John M. Broder, *Governors Join in Creating Regional Pacts on Climate Change*, *N.Y. TIMES*, Nov. 15, 2007, at A20 (describing efforts by various governors to create regional cap-and-trade programs and to lobby Congress for federal

loom about how to resolve potential conflicts between existing (or pending) state and regional trading systems and a nascent federal system. The Lieberman-Warner Climate Security Act of 2008, a leading proposal for a national cap-and-trade program, includes provisions allowing states to adopt and enforce local emissions caps and regulations so long as they are at least as stringent as the federal standards.⁷⁵ But, as noted by a recent House Committee on Energy and Commerce white paper, “sorting out the appropriate roles of each level of government in addressing climate change is far more complicated than the specific question of whether state climate change programs should be preempted.”⁷⁶ These include, for example, steps to promote regulatory and market integration of state and federal trading systems, the role of states in monitoring and implementing of integrated or coordinated state-federal systems, and transition measures for merger of state systems into a federal system.⁷⁷

If federal and regional markets are to function in tandem, what is to prevent the movement of large emitters in states with strict local caps to other states covered only by the federal system (the “leakage” problem)? Can states with caps that are tighter than the federal system prohibit state-regulated sources from using or selling their unneeded federal allowances to cover emissions in other states (thus resulting in emissions leakage that would offset the additional reductions sought to be achieved by the state system)? If emission allowances are auctioned, might entities covered by both a federal and a state system be forced to buy two different allowances for the same ton of emissions? Will allowances or offset credits banked under an existing regional or state system be recognized by the federal system? If so, how will the federal system guard against over-allocation of local allowances and the resulting market distortions? Will monitoring and reporting be coordinated to avoid costly redundancy? Where states involved in regional trading schemes rely on revenue from allowance auctions, will they be compensated if a federal system takes over allowance allocation?

State and federal policymakers are increasingly turning their attention to the political, administrative, and technical challenges posed by these and other questions tied to the transition to a national trading scheme.⁷⁸ For example, Senator

regulation); U.S. CLIMATE ACTION PARTNERSHIP, A CALL FOR ACTION, *available at* <http://www.uscap.org/USCAPCallForAction.pdf> (a partnership of major businesses, including Ford, Shell, and ConocoPhillips, and advocacy groups, including The Nature Conservancy and the NRDC, calls for a national cap-and-trade program).

75. S. 2191, 110th Cong. § 9003(a)–(b) (2007).

76. WHITE PAPER, *supra* note 17, at 1.

77. *See generally id.* (analysis of possible integration and transition problems); Jonas Monast, *Integrating State, Regional, and Federal Greenhouse Gas Markets: Options and Tradeoffs*, DUKE ENVTL. L. & POL’Y F. (forthcoming), *available at* http://www.nicholas.duke.edu/ccpp/convenientguide/PDFs/integ_mark_080304_v2.pdf (last visited Sept. 6, 2008); Harvard Law School, Carbon Offsets Conference: Opportunities and Challenges for State Carbon Trading Schemes, Background Paper, for Panel 4: Anticipation for Federal Programs, Apr. 11, 2008, *available at* <http://www.law.harvard.edu/programs/elp/Offsets%20Background%20Paper%203%20Final.pdf>; Farber, *supra* note 4.

78. *See, e.g.,* Darren Samuelsohn, *To Sidestep Pre-emption, States Pitch Changes for Lieberman-Warner Bill*, ENV’T & ENERGY DAILY, Apr. 24, 2008, *available at*

Barbara Boxer recently proposed amendments to the Lieberman-Warner cap-and-trade bill that call for EPA to contract with the National Academies of Sciences or other research institutions to compare the costs and benefits of preserving state systems with those of moving to an exclusively federal system.⁷⁹

Fast action by Congress could reduce integration and transition problems if it establishes a national framework before any of the major state or regional trading markets has become entrenched. To date, none of the regional markets has been implemented, though the Regional Greenhouse Gas Initiative is scheduled to hold its first allowance auction in September, 2008, and to begin its first compliance period on January 1, 2009.⁸⁰ Cap-and-trade proposals are still under review by California,⁸¹ the Midwest Greenhouse Gas Accord,⁸² and the Western Climate Initiative.⁸³ Even if Congress moves quickly, however, it must carefully consider which aspects of SNA initiatives are helpful and worth preserving and which will undermine the shared goal of cost-effective emissions reductions. For political reasons, Congress must also respect the efforts and commitments state officials and legislators have invested in state initiatives.⁸⁴

<http://www.eenews.net/public/EEDaily/2008/04/24/1> (describing negotiations between state officials and Senate staff on pre-emption issues and the possibility of transition assistance to compensate states for early climate initiatives); Nora Macaluso, *Climate Change: Midwest Climate Groups Collaborate on Scope, Targets for Emissions Accord*, Daily Env't Rep. (BNA), No. 70, at A8 (Apr. 11, 2008) available at <http://ippubs.bna.com/ip/BNA/DER.NSF/9311bd429c19a79485256b57005ace13/083993ec78a54b998525742800115bae?OpenDocument> (noting that the midwestern governors involved in the accord "resolved to devise a system that will be able to link with those of other jurisdictions as well as an eventual federal program") [hereinafter Macaluso]; Robert N. Stavins, A U.S. Cap-and-Trade System to Address Global Climate Change, The Brookings Institution Hamilton Project Discussion Paper, Oct. 2007, at 27 (arguing that a national cap-and-trade system could replace SNA systems "so as to avoid duplication, double counting, and conflicting requirements"); WHITE PAPER, *supra* note 17. For analysis of Constitutional issues raised by interplay between state and federal systems, see Farber, *supra* note 4; Robert K. Huffman & Jonathan M. Weisgall, *Climate Change and the States: Constitutional Issues Arising from State Climate Protection Leadership*, 8 SUSTAINABLE DEV. L. & POL'Y 6 (Winter 2008), available at <http://www.wcl.american.edu/org/sustainabledevelopment/2008/winter08.pdf?rd=1#page=>.

79. S. 3036, 110th Cong. § 1781 (2008).

80. Regional Greenhouse Gas Initiative, Date Announced for the Nation's First Auction of Greenhouse Gas Emissions Allowances, (Mar. 17, 2008), available at http://www.rggi.org/docs/20080317news_release.pdf.

81. California Global Warming Solutions Act of 2006, CAL. HEALTH & SAFETY CODE § 38562(a) (West 2006).

82. See Macaluso, *supra* note 78.

83. See Western Climate Initiative, available at www.westernclimateinitiative.org (last visited Sept. 6, 2008).

84. See, e.g., Samuelsohn, *supra* note 78 (quoting former Deputy Secretary of the Interior Hayes under President Clinton as saying, "It's naïve to think they're simply going to put down their pens and say 'Oh, OK, never-mind'").

5. *Undermining a United U.S. Front in International Negotiations*

Even purely domestic SNA GHG regulatory initiatives could fragment the U.S. negotiating position in international climate regulation by depriving the U.S. government of potential bargaining chips. Transnational climate regulatory agreements between SNAs and foreign jurisdictions could have the same effect and produce a fragmented and uncoordinated U.S. posture that would further undermine the ability of the federal government to pursue and protect the overall national interest, including climate protection. While both of these are genuine risks, there may well be countervailing benefits. SNA regulatory initiatives, in the form of international commitments, may work as confidence-building measures that enhance the likelihood of successful agreements between the United States and other nations, especially developing nations that are profoundly suspicious of American motives and want to see concrete action before entering into serious negotiations. In addition, initiatives by SNAs may trigger demands for international regulation by U.S. industry in order to impose regulatory requirements on currently unregulated foreign competitors. Both of these effects would probably increase the commitment credibility of the United States in international negotiations, actually strengthening its negotiating position.⁸⁵

C. *Striking the Balance*

Under optimal conditions, it could well be desirable to adopt a unitary model at both the global and domestic levels. At the global level, the optimal scenario would include early adoption of a single global cap-and-trade regulatory system involving all major emitting jurisdictions, successful design and functioning of such a system, and relatively prompt development and adoption of technologies and shifts in production and consumption patterns that would achieve emissions stabilization. There are similar arguments for a unitary domestic system if national political and institutional decisional processes could generate and successfully implement optimal policies. If unitary models worked optimally, independent SNA measures at the domestic and global levels would produce added complexity and transaction costs without offering any additional benefits.⁸⁶

The political and institutional world we face, however, is far short of the optimal. Institutional imperfections and barriers, domestic and global political obstacles and logjams, and limits to our knowledge must be confronted under sub-

85. See Daniel Halberstam, *The Foreign Affairs of Federal Systems: A National Perspective on the Benefits of State Participation*, 46 VILL. L. REV. 1015 (2001); see generally SCOTT BARRETT, ENVIRONMENT AND STATECRAFT: THE STRATEGY OF ENVIRONMENTAL TREATY-MAKING (2003). Peter Spiro has argued for a relaxed attitude to the functional disaggregation of the state in global policy making, pointing to the fact that a significant degree of functional fragmentation has already occurred, as various federal agencies have engaged directly in various regulatory agreements and other forms of cooperation with foreign counterparts. See Peter J. Spiro, *Disaggregating U.S. Interests in International Law*, 67 LAW & CONTEMP. PROBS. 195 (2004). But logic and potential consequences of the two forms of disaggregation are significantly different, and require full analysis.

86. On ideal assumptions, Jonathan Wiener is quite right that independent SNA regulation is suboptimal. See Wiener, *supra* note 37, at 1962.

optimal circumstances; a diversified, pluralist approach to regulatory design and learning would achieve less than a unitary approach. But in the world as it is, a pluralist design is likely to achieve more climate protection. This does not mean, however, that efforts to achieve the most inclusive possible emissions trading systems should be abandoned.

Because, in my judgment, independent SNA climate regulation, both domestically and through global cooperative arrangements, is more likely to advance climate protection, it should be presumptively accommodated and encouraged within the U.S. legal order. A number of articles have analyzed the possible legal impediments to SNA regulatory agreements with other jurisdictions, domestic and foreign, under the Compact Clause and constitutional provisions relating to the treaty power and the federal government's authority with respect to foreign commerce as well as judicially-created doctrines regarding the federal foreign affairs power.⁸⁷ Other potential impediments may be found in the dormant Commerce Clause, and in implied preemption of state or local action under federal statutes.⁸⁸ My basic position on these questions is quite similar to that advocated by Dan Farber. Courts should be extremely reluctant to use any of these implied preemption principle mechanisms to invalidate SNA climate regulation measure, or forms of international cooperation that do not involve legally binding obligations on SNAs, except in several carefully defined circumstances. As Farber concludes:

Courts should reject regulations that discriminate against interstate or foreign commerce or ban otherwise lawful transactions under federal trading schemes. Apart from these clearcut types of invalidity . . . [courts should adopt] a strong presumption of validity for state climate change regulation.⁸⁹

Thus, judges as well as legislators and other policymakers should embrace a pluralist legal architecture for climate regulation. This would be consistent with other steps that courts have recently taken to accommodate or even require climate regulation. Congress, of course, can act to explicitly prohibit, limit, or regulate SNA climate regulatory measures that it judges undesirable, either because they are inconsistent with federal climate regulatory programs, impose undue economic burdens on other states or on national industries, undermine the U.S. position internationally, or are otherwise contrary to the national interest. Due to the number of veto points in the congressional process and the structure of representation in the Senate, it is, of course, often quite difficult to enact federal legislation, especially on climate regulation, but it is time to change the default

87. See, e.g., Douglas A. Kysar, *Like a Nation State*, 55 UCLA L. REV. (forthcoming 2008) (analyzing a range of possible constitutional objections to state-level GJG emissions trading systems of the sort contemplated by California).

88. See Claire Carothers, *United We Stand: The Interstate Compact as a Tool for Effecting Climate Change*, 41 GA. L. REV. 229 (2006); Edward T. Swaine, *Negotiating Federalism: State Bargaining and the Dormant Treaty Power*, 49 DUKE L.J. 1127 (2000); Notes, *The Compact Clause and the Regional Greenhouse Gas Initiative*, 120 HARV. L. REV. 1958, 1965 (2007).

89. Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 50 ARIZ. L. REV. 879, 881 (2008).

position to favor SNA regulation and climate protection. The burdens of inertia in the Congress and other federal government institutions should not continue to be imposed on the climate, but should be borne by those opposing climate protection.

CONCLUSION

The challenge of climate change presents difficult issues of regulatory institutional design. The global common pool character of GHG emissions to the atmosphere argues powerfully for a unitary regulatory model employing a single worldwide cap-and-trade system in which nations alone participate. But there are nonetheless strong pragmatic advantages to a plural regulatory model that accords subnational authorities independent authority to regulate GHG emissions through emissions trading systems or other measures. These advantages include greater scope for regulatory experimentation, innovation and mutual learning, filling regulatory gaps, and above all providing the political impetus for progressively stronger regulatory measures. While a plural system has disadvantages, including the problem of leakage, the risk of undermining the efficiency of an inclusive trading system, and local rent-seeking, the advantages predominate and favor a strong presumption for an independent SNA regulatory role.