

# Climate Adaptation and Land Use Governance: The Vertical Axis

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## INTRODUCTION

The existing and expected impacts of climate change are increasingly well-documented.<sup>1</sup> Recent hurricanes,<sup>2</sup> wildfires,<sup>3</sup> and

1. See generally U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES (2009) [hereinafter USGCRP REPORT], available at <http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009> (describing US impacts). A group of more than 300 experts recently finalized the 2014 National Climate Assessment, the fourth edition of the report.

heat waves<sup>4</sup> provide dramatic examples of what climate change portends, even if no single event can be directly attributed to climate change. The scale of anticipated climate change poses profound challenges to existing governance norms. This Article addresses one of those norms: the norm of local control over land use. Through an in-depth assessment of the federalism values that guide jurisdictional choices, it argues that a multilevel governance approach that supplements local control with federal parameters and resources is necessary to adequately prepare for climate change and to meet the wide range of local, state, and federal interests at stake.

Scientists agree that, no matter how quickly we reduce the greenhouse gas emissions (GHGs) that cause climate change, some degree of climate change is inevitable.<sup>5</sup> Accordingly, measures to

U.S. GLOBAL CHANGE RESEARCH PROGRAM, 2014 NATIONAL CLIMATE ASSESSMENT (2014) [hereinafter FOURTH NATIONAL ASSESSMENT], available at <http://nca2014.globalchange.gov/>. See also INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION, AND VULNERABILITY, CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 6 (2007) [hereinafter IPCC 2007], available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg2/en/contents.html](http://www.ipcc.ch/publications_and_data/ar4/wg2/en/contents.html) (describing international impacts). In the United States, scientists predict that climate change will cause sea levels along U.S. coasts to rise by several feet, increase storm intensity, and depending upon the region, cause serious additional impacts, like drought, heat waves, and wildfire. See *infra* Part I(A) (describing anticipated domestic climate change impacts).

2. Hurricane Sandy, which struck the Eastern Seaboard in Fall 2012, provided a wake-up call about the perils of sea level rise and associated storm surges. As described by the National Hurricane Center, Hurricane Sandy “devastated large portions of the coasts of New Jersey and New York.” ERIC S. BLAKE ET AL., NAT’L HURRICANE CTR., TROPICAL CYCLONE REPORT: HURRICANE SANDY 17 (2013), available at <http://www.nhc.noaa.gov/2012atlan.shtml>. The National Hurricane Center reports that “[w]hole communities were inundated by water and sand, houses were washed from their foundations, boardwalks were dismantled or destroyed, cars were tossed about, and boats were pushed well inland from the coast.” *Id.* Manhattan, Staten Island, New Jersey, and many areas along the Eastern Seaboard were inundated with two to nine feet of water. *Id.* at 8–13. 650,000 homes were damaged or destroyed. 8.5 million customers lost power, some for weeks at a time. *Id.* at 14–15. With preliminary damage estimates of at least \$50 billion dollars, the storm is ranked as one of the costliest in the nation’s history. *Id.* at 15. Although there is no direct causal link between climate change and Hurricane Sandy, Hurricane Sandy provides a snapshot of the consequences of rising sea levels and increasing storm intensity.

3. See, e.g., Matthew DeLuca, *Long, Hot, Incendiary Summer: Early Wildfires Bode Ill for California*, NBC NEWS (May 4, 2013), [http://usnews.nbcnews.com/\\_news/2013/05/04/18039779-long-hot-incendiary-summer-early-wildfires-bode-ill-for-california?lite](http://usnews.nbcnews.com/_news/2013/05/04/18039779-long-hot-incendiary-summer-early-wildfires-bode-ill-for-california?lite).

4. See, e.g., David B. Caruso, *Heat Wave 2013: Summer Temperatures Surge in Much of U.S.*, HUFF POST GREEN (July 17, 2013), [http://www.huffingtonpost.com/2013/07/17/heat-wave-2013\\_n\\_3612966.html](http://www.huffingtonpost.com/2013/07/17/heat-wave-2013_n_3612966.html).

5. Climate impacts are inevitable because emissions already in the atmosphere will require centuries to break down. See USGCRP REPORT, *supra* note 1, at 11 (“[N]o matter how

adapt to climate change are necessary.<sup>6</sup> Climate adaptation measures will implicate a wide range of legal regimes, including land-use law, water law, agriculture, and immigration, to name a few.<sup>7</sup> This Article focuses on one critical domain: land use. Land-use measures control where people live now and will live in the future, where infrastructure is and will be located, and other features of settled life that influence vulnerability to climate change.

Notwithstanding state and federal governments' influence on local land-use planning, core land-use control remains with local governments that are ill-equipped to address climate change alone. Local governments are beginning to engage in a wide variety of adaptation initiatives.<sup>8</sup> Nonetheless, their valuable but isolated initiatives are unlikely to provide a sufficient national response to the dramatic risks ahead. In some cases, local governments will lack the will to act. In many instances they will lack the means to act. In some instances, local governments are unlikely to adequately address the state, regional, and national interests at stake. Moreover, whatever the vitality of local initiatives, with almost 40,000 local government entities in the nation,<sup>9</sup> an effective

aggressively heat-trapping emissions are reduced, some amount of climate change and resulting impacts will continue due to the effects of gases that have already been released.”); NAT'L RESEARCH COUNCIL, ADAPTING TO THE IMPACTS OF CLIMATE CHANGE 31 (2010), available at [http://www.nap.edu/catalog.php?record\\_id=12783](http://www.nap.edu/catalog.php?record_id=12783) (stabilizing atmospheric GHG concentrations will not prevent all climate impacts). Moreover, the pragmatic reality is that global emissions are increasing, not decreasing. See GLOBAL CARBON PROJECT, CARBON BUDGET 2013: MEDIA SUMMARY HIGHLIGHTS (Nov. 2013), available at <http://www.globalcarbonproject.org/carbonbudget/>.

6. The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as: “The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” IPCC 2007, *supra* note 1, at 6.

7. See J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363, 411 (2010). An interesting question is whether a discrete “adaptation law” will emerge, whether adaptation initiatives will fan out and influence other areas of law, or some combination of the two. See J.B. Ruhl & James Salzman, *Climate Change Meets the Law of the Horse*, 62 DUKE L.J. 975 (2012) (discussing whether adaptation will emerge as a discrete field of law).

8. *State Adaptation Plans*, CTR. FOR CLIMATE AND ENERGY SOLUTIONS (Feb. 14, 2013), <http://www.c2es.org/us-states-regions/policy-maps/adaptation>; *State and Local Adaptation Plans*, GEORGETOWN CLIMATE CTR., (Feb. 14, 2013), <http://www.georgetownclimate.org/node/3325>.

9. As of 2012, the United States has approximately 3000 counties, close to 20,000 municipalities, and over 16,000 townships. See Press Release, U.S. Census Bureau, *Census Bureau Reports There Are 89,004 Local Governments in the United States* (Aug. 30, 2012), available

adaptation response will require cross-jurisdictional collaboration and coordination.

Although state and federal adaptation efforts would not necessarily or inevitably be superior to local efforts, they have the capacity to offer a critical complement to local efforts. At present, however, notwithstanding many state and federal influences on land use, local control over land use remains a deep governance norm that could chill worthwhile initiatives at larger jurisdictional levels.<sup>10</sup> Political opposition to non-local land use initiatives could stall federal and state efforts to use existing legal authority to adapt and could thwart efforts to promulgate new federal adaptation initiatives where existing laws prove insufficient.

To engage the political and theoretical debate, this Article challenges the norm of local control over adaptation-related land use. It synthesizes the essential federalism values at stake and analyzes how climate change alters the environmental federalism calculus that has shaped scholarship and practice in environmental law for the past several decades. The central federalism values that run through the federalism literature include pragmatic efficacy, democratic legitimacy, and prevention of tyranny. Regarding pragmatic efficacy, the Article suggests that, although local governments are well-informed about local conditions and needs, they cannot effectively manage the land-use aspects of adaptation on their own. Regarding democratic legitimacy, the Article suggests that, notwithstanding the importance of local participation and opportunities to express local preferences, exclusive local

at <https://www.census.gov/newsroom/releases/archives/governments/cb12-161.html>. The remaining local governments consist of special districts and independent school districts. *Id.*

10. See Craig Anthony (Tony) Arnold, *The Structure of the Land Use Regulatory System in the United States*, 22 J. LAND USE & ENVTL. L. 441, 488 (2007) (observing strong political pressure against federal or state displacement of local land use authority); Robert L. Glicksman, *Climate Change Adaptation: A Collective Action Perspective on Federalism Considerations*, 40 ENVTL. L. 1159, 1174 (2010) (noting significant political opposition likely to be generated by proposals for federal control of land use); Blake Hudson, *Reconstituting Land-Use Federalism to Address Transitory and Perpetual Disasters: The Bimodal Federalism Framework*, 2011 BYU L. REV. 1991, 1995 (2011) (discussing history of treating land use as the “quintessential state and local power”); Ashira Ostrow, *Land Law Federalism*, 61 EMORY L.J. 1397, 1405 (2012) (noting the consensus “that land use is primarily a prerogative of local governments”); Katherine A. Trisolini, *All Hands on Deck: Local Governments and the Potential for Bidirectional Climate Change Regulation*, 62 STAN. L. REV. 669, 740 (2010) (arguing that efforts to establish state or federal control over land use “would likely provoke fierce political opposition”). As Professor Sara Bronin has noted: “No serious scholar supports an expanded role for the national government in traditional land use regulation.” Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 262 (2008).

control over land use will not adequately address vital state and national adaptation interests, including, for example, disaster avoidance and affordable housing, and will fail to meet the preferences of all citizens affected by local decisions. Regarding the prevention of tyranny, the Article acknowledges that local governments are likely to better protect property rights, but observes their potential failure to protect vulnerable populations (particularly the poor and people of color). Ultimately, the Article concludes that only a multilevel governance structure offering the benefits of dynamic federalism can effectively, legitimately, and fairly control the intensifying land-use challenges posed by climate change.

While many scholars have debated federalism in environmental law generally,<sup>11</sup> federalism and land-use law,<sup>12</sup> and, to a limited extent, the relationship between climate change mitigation, land-use law, and multilevel governance,<sup>13</sup> only a few have addressed

11. See, e.g., ERIN RYAN, *FEDERALISM AND THE TUG OF WAR WITHIN* (2012); Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 EMORY L.J. 159 (2006); Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1992); Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141 (1995); Richard B. Stewart, *Pyramids of Sacrifice: Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196 (1977).

12. See, e.g., FRED BOSSELMAN & DAVID CALLIES, *THE QUIET REVOLUTION IN LAND USE CONTROL* (1971); William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 FORDHAM L. REV. 57 (1999); Hudson, *supra* note 10; John R. Nolon, *Katrina's Lament: Reconstructing Federalism*, 23 PACE ENVTL. L. REV. 987 (2006); Ostrow, *supra* note 10, at 1405; Patricia Salkin, *The Quiet Revolution and Federalism: Into the Future*, 45 J. MARSHALL L. REV. 253 (2012); A. Dan Tarlock, *Land Use Regulation: The Weak Link in Environmental Protection*, 82 WASH. L. REV. 651 (2007). Scholars in other disciplines have called for a greater federal role in land use to address persistent national problems, like affordable housing. See, e.g., Shelby D. Green, *The Search for a National Land Use Policy: For the Cities' Sake*, 26 FORDHAM URB. L.J. 69, 72 (1998) (describing calls for a national land use policy to overcome local decisions that fail to address regional concerns). See generally Arnold, *supra* note 10, at 458 (summarizing scholars' critiques of the capacity of local land use law to solve a range of policy problems).

13. See, e.g., John C. Dernbach & Scott Bernstein, *Pursuing Sustainable Communities: Looking Back, Looking Forward*, 35 URB. LAW. 496 (2003); Alice Kaswan, *Climate Change, Consumption, and Cities*, XXXVI FORDHAM URB. L.J. 253 (2009); Hari M. Osofsky, *Diagonal Federalism and Climate Change Implications for the Obama Administration*, 62 ALA. L. REV. 237, 290–92 (2011); Trisolini, *supra* note 10. The federalism arguments for a federal role in climate adaptation are likely to differ substantially from those in the climate mitigation context, particularly in relation to land use. A federal role may appear less necessary in the adaptation context because local governments have a greater incentive to engage in adaptation than mitigation. In the mitigation context, the “tragedy of the commons” will dull local emission reduction incentives because local governments taking action would experience the full costs of control without reaping commensurate benefits. More specifically, local governments' efforts to control emissions would impose local limits but be ineffectual at stemming climate change, and the benefits of local action would be shared

federalism and adaptation.<sup>14</sup> These excellent articles on adaptation federalism have provided worthwhile breadth, but do not concentrate on the unique issues raised by local control over land use. While one scholar has explored the constitutional issues raised by a greater federal role in land use as it relates to disaster law (a critical component of adaptation law),<sup>15</sup> this Article takes the next step by probing the underlying norms and values that are likely to be most important to the politics of land-use governance over adaptation.

An important question is whether climate change is different from other environmental problems—whether it changes the governance calculus that has, to date, largely favored local control when land-use decision-making is at stake. The answer is mixed. Land use has always been a significant factor in environmental

globally. See Kirsten H. Engel & Barak Y. Orbach, *Micro-Motives and State and Local Climate Change Initiatives*, 2 HARV. J.L. & PUB. POL'Y 119, 119 (2008); Kaswan, *supra*, at 289. In the adaptation context, in contrast, local governments would reap the benefits of their regulatory actions. Thus, the arguments for a federal role in land use in the adaptation context differ substantially from—and are more challenging than—the arguments in the mitigation context.

14. Daniel A. Farber, *Climate Adaptation and Federalism: Mapping the Issues*, 1 SAN DIEGO J. CLIMATE & ENERGY L. 259 (2009); Glicksman, *supra* note 10.

15. Hudson, *supra* note 10. According to some observers, the political impediments to a federal role in adaptation-related land use regulation are likely to be more challenging than constitutional impediments. See Farber, *supra* note 14, at 280; Glicksman, *supra* note 10, at 1173–74. Hudson's cautions about potential constitutional obstacles are, however, important to acknowledge. See Hudson, *supra* note 10, at 2032–36 (noting that continued debate over the scope of the federal Commerce power and judicial references to state control over land use suggest potential constitutional obstacles to a federal role in land-use related disaster law). These concerns are highest for small-scale events with few external impacts. See *id.* at 2047. But it is worth noting that the Supreme Court's strict "dual federalism" phase, which could have posed a significant obstacle to federal action, died when *National League of Cities v. Usery*, 426 U.S. 833 (1976), a case positing distinct substantive spheres for federal and state governments, was overruled by *Garcia v. San Antonio Metropolitan Transit Authority*, 469 U.S. 528, 531 (1985) due to the unworkability of defining discrete spheres of federal and state authority. See Deborah Jones Merritt, *Three Faces of Federalism: Finding a Formula for the Future*, 47 VAND. L. REV. 1563, 1564–66 (1994) (discussing unworkability of the territorial model of federalism). While flickers of Supreme Court concern over federal control over land use emerge in more recent case law, see *Rapanos v. United States*, 547 U.S. 715 (2006), there is no clear constitutional line that would bar a federal role over land use. The constitutionality of federal adaptation provisions would likely be provision-specific and could be clearer for some provisions than others. Generally speaking, however, federal authority could arguably be premised on Congress's power under the Commerce Clause in light of climate change's potentially large-scale impacts on interstate commerce and the importance of land use in addressing those impacts. See Hudson, *supra* note 10, at 2044–46. Alternatively, where the federal government provides funds for planning or implementation of local adaptation measures, the Spending Clause could justify the assertion of federal power. See U.S. CONST. art. I, § 8, cl. 8.

problems, and a greater federal role is arguably justified in many contexts, not just in the climate-adaptation context.<sup>16</sup> But even if a greater federal role in land use has been justified for some time, climate change ups the ante. Climate change will have far greater impacts than most other environmental challenges. If adequate planning and implementation fail to occur, the consequences will be widespread and severe. At the same time, local governments may be less likely to implement climate change adaptation initiatives than they are to address other kinds of environmental problems because the risks may appear more speculative and remote than for other environmental problems. Thus, although not all the arguments for a federal role in land use are unique to climate change, climate change poses challenges that require a new look at accepted norms of local control.

Following this Introduction, Part I demonstrates the connection between climate change and land-use law. It summarizes the research on climate impacts relevant to land-use law and then explains the central role that land-use law could play in climate adaptation. Part I then provides a snapshot of federal, state, and local adaptation land-use measures to date and identifies the need for greater action.

Part II turns to federalism. It describes the current status quo, characterized by substantial local control, and identifies multilevel governance as an alternative. To determine whether to maintain the status quo or adopt a more dynamic multi-governance approach, Part II then identifies three core federalism values that emerge from the federalism literature: pragmatic efficacy, democratic values, and prevention of tyranny. For each value, it explores the expected arguments in favor of continued local control, identifies the limits of reliance on local control, and then demonstrates how each of these values would be better realized through multilevel governance rather than exclusive local control. Part II also makes explicit that difficult governance choices are inevitably influenced not only by policy-neutral federalism values, but by substantive values that influence choices among conflicting federalism values. In Part II, I identify the substantive values that I apply to resolve conflicting federalism quandaries: the belief that enhanced preparation for climate change is an inherent good, and a deep concern for the well-being of marginalized populations.

16. See, e.g., Tarlock, *supra* note 12.



Guided by federalism and substantive values that influence governance choices, Part III provides a preliminary sketch of a multilevel governance approach. Given local variation, local knowledge, democratic values, and respect for individual rights, local governments must retain core land-use control functions. At the same time, certain federal requirements are appropriate: a threshold requirement that state and local governments engage in adaptation-related risk assessments and land-use planning and, to a limited extent, substantive parameters to guide land-use planning and establish certain federal minimum requirements. In addition, the federal government could provide a range of resources to support lower levels of government, including information, money, and coordination among the many players with a stake in climate change adaptation.

The Article's focus on the vertical governance axis—on the limits of local control and importance of multilevel governance—addresses one of the most controversial issues in land-use governance. A full model for land-use governance and adaptation must address additional issues, including the intermediary role of the states as well as the existing and dynamic web of horizontal and vertical influences over local land-use decision-making, and the way in which initiatives could flow up, down, and across relevant entities.<sup>17</sup> Numerous public entities impact land-use planning, including federal, state, and local disaster planning, as well as public health, housing development, and infrastructure programs. Private and public/private institutions, e.g. insurance companies and banks, also impact patterns of land use. Ultimately, land-use governance over adaptation must grapple with the entire web. This Article contributes to that larger project through its focused analysis of the highly contested vertical governance dimension.

### I. CLIMATE-CHANGE IMPACTS AND LAND USE

Despite political sparring over the reality of climate change, and ongoing uncertainty about the magnitude and timing of climate-change impacts, there is virtual consensus in the scientific community that human-caused climate change is happening and

17. See Osofsky, *supra* note 13; cf. Blake Hudson & Jonathan Rosenbloom, *Uncommon Approaches to Commons Problems: Nested Governance Commons and Climate Change*, 64 HASTINGS L.J. 1273, 1276–81 (2013) (describing multi-dimensional governance in natural resources context); Hari Osofsky & Hannah Wiseman, *Dynamic Energy Federalism*, 72 MD. L. REV. 773 (2013) (mapping multidimensional governance in the energy law context).

that it will have substantial consequences globally and in the United States.<sup>18</sup> Likely climate change impacts in the United States have been well documented.<sup>19</sup> This Part summarizes the research on climate change impacts relevant to land use, the importance of land use as a critical adaptation strategy, and progress to date in implementing land-use adaptation measures.

#### A. Climate-Change Impacts

Sea level rise presents one of the most dramatic consequences of global warming, and one that presents clear threats to property that can be mediated by land-use policies. As warmer seas expand and warmer temperatures melt sea ice and glaciers, global sea levels are projected to rise three to four feet by 2100.<sup>20</sup> The extent of that global sea level rise will vary regionally, depending upon whether land levels are rising or falling and on changes in ocean currents (themselves a consequence of climate change).<sup>21</sup> For example, climate-induced changes in ocean currents have led to sea level rise in the mid-Atlantic region that has exceeded global projections,<sup>22</sup> and subsidence in the Gulf Coast is exacerbating the effects of sea-level rise.<sup>23</sup> In contrast, rising land levels are predicted to mitigate (but not eliminate) the impacts of sea level rise in the Pacific Northwest.<sup>24</sup> Notwithstanding substantial uncertainties about the timing and magnitude of future sea level rise, there is little doubt that many parts of the nation will experience significant impacts.

Sea level rise will have numerous direct consequences, including submerging coastal areas, causing erosion, and infiltrating drinking

18. See IPCC 2007, *supra* note 1; USGCRP REPORT, *supra* note 1, at 14, 19–21.

19. See USGCRP REPORT, *supra* note 1. The U.S. Global Change Research Program website lists numerous studies of climate change impacts around the nation. See *USGCRP Publications*, U.S. GLOBAL CLIMATE CHANGE RESEARCH PROGRAM, <http://www.globalchange.gov/resources/reports.html> (last visited June 24, 2014).

20. USGCRP REPORT, *supra* note 1, at 25, 150.

21. See *id.* at 37, 149.

22. See Asbury H. Sallenger, Jr. et al., *Hotspot of Accelerated Sea-level Rise on the Atlantic Coast of North America*, 2 NATURE CLIMATE CHANGE (2012), available at <http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1597.html> (reporting that sea-level rise between Cape Hatteras, North Carolina and Boston, Massachusetts of 2–3.7 millimeters per year has exceeded global projections of .6–1 millimeter per year).

23. U.S. CLIMATE CHANGE SCI. PROGRAM, IMPACTS OF CLIMATE CHANGE AND VARIABILITY ON TRANSPORTATION SYSTEMS AND INFRASTRUCTURE: GULF COAST STUDY, PHASE I 3-18–3-23 (2008), available at <http://downloads.globalchange.gov/sap/sap4-7/sap4-7-final-all.pdf>.

24. NAT'L RESEARCH COUNCIL, SEA-LEVEL RISE FOR THE COASTS OF CALIFORNIA, OREGON, AND WASHINGTON: PAST, PRESENT, AND FUTURE 5–7 (2012).

water supplies.<sup>25</sup> Thousands of miles of U.S. coastlines will be impacted,<sup>26</sup> and given high and increasing population densities in coastal areas, significant portions of the US population will be impacted.<sup>27</sup> The greatest damage is likely to arise from storm surges that can cause severe flooding and erosion.<sup>28</sup> Storm surges are likely to become more severe not only due to rising sea levels, but to predicted increases in hurricane and storm intensity.<sup>29</sup> In addition to residential development along seashores, significant infrastructure in coastal areas is at risk, including roads, rail lines, sewage treatment facilities, and other commercial and industrial facilities.<sup>30</sup>

Increases in extreme precipitation will have adverse consequences inland as well as on the coasts. Scientists have already observed, and project substantial increases in, extreme precipitation in the Midwest and Northeastern United States.<sup>31</sup> More intense and frequent storms will cause greater storm damage

25. See U.S. CLIMATE CHANGE SCIENCE PROGRAM, *supra* note 23 (discussing climate change's impacts on Gulf Coast transportation and infrastructure); USGCRP REPORT, *supra* note 1, at 62 (addressing impact of sea level rise on transportation, infrastructure, and economic activity); *id.* at 47 (discussing infiltration of drinking water aquifers).

26. See Hudson, *supra* note 10, at 2009–10.

27. See Blake Hudson, *Coastal Land Loss and the Mitigation-Adaptation Dilemma: Between Scylla and Charybdis*, 73 LOUISIANA L. REV. 31, 36–40 (2012) (describing coastal property and resources at risk from sea level rise). Coastal counties contain fifty-three percent of the US population, *id.* at 37, and generate fifty-seven percent of civilian income. *Id.* at 38. NOAA predicts that, by 2025, seventy-five percent of the US population will live in coastal communities. See CHRISTINE A. KLEIN & SANDRA B. ZELLMER, MISSISSIPPI RIVER TRAGEDIES: A CENTURY OF UNNATURAL DISASTERS 17 (2014).

28. See USGCRP REPORT, *supra* note 1, at 103 (observing that the greatest damage is likely “when sea-level rise, heavy runoff, high tides, and storms coincide”).

29. *Id.* at 149. Hurricanes are projected to be more intense due to warmer ocean temperatures. *Id.* Although scientists are relatively confident that hurricane intensity and frequency will increase, they are less certain whether that increase in frequency will translate into more hurricanes making landfall. *Id.* at 35–36.

30. See USGCRP REPORT, *supra* note 1, at 62–64 (discussing impact of sea level rise and storm surge on transportation infrastructure). Hurricane Sandy in 2012 closed hundreds of roads, BLAKE ET AL., *supra* note 2, at 16, broke natural gas lines (causing fires), *id.* at 17, inundated airport runways, *id.* at 9, damaged piers and railroad systems, *id.* at 17, and severely damaged New York's subway system, *id.* at 18.

31. See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CLIMATE CHANGE ADAPTATION: A SPECIAL REPORT OF WORKING GROUPS I AND II OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 13 (2012) [hereinafter IPCC, EXTREME EVENTS], available at <http://www.ipcc-wg2.gov/SREX/>. For example, between 1958 and 2007, heavy storms increased in frequency by sixty-seven percent in the northeastern United States and by thirty-one percent in the Midwest. USGCRP REPORT, *supra* note 1, at 32.

and present substantial flooding risks.<sup>32</sup> Residential, commercial, and industrial development in floodplains is at risk.

In the western United States, fire will present an additional scourge. Wildfire incidence has already increased since the 1980s, largely as a consequence of warmer temperatures and more arid conditions.<sup>33</sup> Record-breaking wildfires that broke out in several western states in the summer of 2012 provide a harbinger of things to come.<sup>34</sup> Wildfires are projected to increase in the southwestern and western United States,<sup>35</sup> with adverse impacts for ecosystems, human settlements, and air quality.

Climate change will also have multiple direct and indirect public health consequences, some of which could be mediated by land-use policies. Although global warming will not lead to increases in temperature everywhere, higher average temperatures are the dominant trend and forecast.<sup>36</sup> From a public health perspective, heat waves, characterized by above-average temperatures for several days or weeks, rather than gradual increases in average temperature, are the concern. While not as dramatic as hurricanes

32. Due to insufficient data about local conditions, the IPCC has less confidence in its flooding predictions than in its predictions of more extreme weather. IPCC, EXTREME EVENTS, *supra* note 31. Other, more localized studies have linked increases in extreme precipitation with increased flooding. See, e.g., STEVEN SAUNDERS ET AL., DOUBLED TROUBLE: MORE MIDWESTERN EXTREME STORMS (2012), available at <http://rockymountainclimate.org/images/DoubledTroubleHigh.pdf>; see also FOURTH NATIONAL ASSESSMENT, *supra* note 1, at 32–37 (confirming continued predictions of more intense downpours in the Northeast and Midwest).

33. See USGCRP REPORT, *supra* note 1, at 82.

34. See, e.g., Darryl Fears, *Colorado's Table Was Set for Monster Fires*, WASH. POST (July 1, 2012), [http://www.washingtonpost.com/national/health-science/colorados-table-was-set-for-monster-fire/2012/07/01/gJQAVa6cGW\\_story.html](http://www.washingtonpost.com/national/health-science/colorados-table-was-set-for-monster-fire/2012/07/01/gJQAVa6cGW_story.html); Pete Spotts, *Monster Wildfire in Arizona: A Glimpse of What Climate Change Could Bring*, CHRISTIAN SCI. MONITOR (June 9, 2011), <http://www.csmonitor.com/Environment/2011/0609/Monster-wildfire-in-Arizona-A-glimpse-of-what-climate-change-could-bring>.

35. See USGCRP REPORT, *supra* note 1, at 66, 95, 131.

36. In much of the United States, average temperatures have increased by one to two degrees Celsius since the 1960s. *Id.* at 28. Scientists project that temperatures will increase by four to eleven degrees Fahrenheit by 2100. *Id.* at 29; see also FOURTH NATIONAL ASSESSMENT, *supra* note 1, at 38–40 (confirming continued projections of increased average temperatures).

and floods, heat waves are more deadly.<sup>37</sup> Scientists predict increases in heat waves and associated fatalities.<sup>38</sup>

An indirect consequence of increasing temperatures will be increased ozone air pollution, a lung irritant.<sup>39</sup> Notwithstanding forty years of control under the Clean Air Act, in 2010, 108 million people lived in areas that did not meet public health standards for ozone.<sup>40</sup> Warmer temperatures increase the rate of ozone formation and will exacerbate the challenge of achieving air quality standards.<sup>41</sup>

While precipitation will increase in some parts of the country, others will experience declining freshwater supplies due to drought<sup>42</sup> or to infiltrating seawater.<sup>43</sup> And in the west, decreasing snow-packs will provide increasingly smaller quantities of water during the western states' arid summers.<sup>44</sup>

A changing climate will not only endanger human life, but also render existing habitats unsuitable for many species, increasing the rate at which species will become endangered.<sup>45</sup> Shifts in species

37. See USGCRP REPORT, *supra* note 1, at 90 ("Heat is already the leading cause of weather-related deaths in the United States."). Between 1999 and 2003, 3400 died from excessive heat exposure in the United States. *Id.* In 2003, 70,000 excess deaths were reportedly caused by a European heat wave. NAT'L RESEARCH COUNCIL, *supra* note 5, at 46.

38. See USGCRP REPORT, *supra* note 1, at 91; see also FOURTH NATIONAL ASSESSMENT, *supra* note 1, at 38–40.

39. HEATHER COOLEY ET AL., SOCIAL VULNERABILITY TO CLIMATE CHANGE IN CALIFORNIA 8, 9 (2012); U.S. ENVTL. PROT. AGENCY, OUR NATION'S AIR: STATUS AND TRENDS THROUGH 2010 3 (2012) [hereinafter EPA, OUR NATION'S AIR], available at <http://www.epa.gov/airtrends/2011/report/airpollution.pdf>.

40. EPA, OUR NATION'S AIR, *supra* note 39, at 1. This figure likely underestimates exposure to unhealthy ozone levels. EPA's Scientific Advisory Committee, which recommends air quality standards for protecting public health, has stated that the existing standard does not sufficiently protect public health. See Letter from Dr. Rogene F. Henderson, Chair, Clean Air Scientific Advisory Comm. to Stephen L. Johnson, EPA Adm'r (April 7, 2008) (stating that "the members of the CASAC Ozone Review Panel do not endorse the new primary ozone standard as being sufficiently protective of public health") (emphasis in original), available at [http://yosemite.epa.gov/sab/5Csabproduct.nsf/4AF876432433128852574250069E494/\\$File/EPA-CASAC-08-009-unsigned.pdf](http://yosemite.epa.gov/sab/5Csabproduct.nsf/4AF876432433128852574250069E494/$File/EPA-CASAC-08-009-unsigned.pdf).

41. Pollution sources do not emit ozone directly. Instead, ozone is created by a chemical reaction between nitrogen oxides and volatile organic compounds, EPA, OUR NATION'S AIR, *supra* note 39, at 3, a reaction that is facilitated by higher temperatures. *Id.* at 11. As a consequence, given constant emissions, higher temperatures will lead to higher ozone levels.

42. See USGCRP REPORT, *supra* note 1, at 44; NATURAL RES. DEF. COUNCIL, CLIMATE CHANGE, WATER, AND RISK: CURRENT WATER DEMANDS ARE NOT SUSTAINABLE (2010), available at <http://www.nrdc.org/globalwarming/watersustainability/files/WaterRisk.pdf>.

43. USGCRP REPORT, *supra* note 1, at 47.

44. *Id.* at 45–46; see also FOURTH NATIONAL ASSESSMENT, *supra* note 1, at 71–75.

45. See USGCRP REPORT, *supra* note 1, at 81–82.

range are already well-documented.<sup>46</sup> New areas will need to be preserved for endangered species. In addition, human settlements create barriers to the natural migration that would otherwise enable endangered species to shift to appropriate habitat.<sup>47</sup>

## B. The Role of Land-Use Measures in Climate Adaptation

Scientists, policymakers, and legal scholars are actively engaged in developing climate adaptation strategies for responding to the wide range of predicted climate impacts. Adaptation strategies focus on reducing exposure to harm, reducing underlying sensitivity to impacts, and on increasing the capacity to cope when impacts occur.<sup>48</sup> More specifically, exposure depends upon the state of ecological resources (e.g., the presence or absence of buffering wetlands) and development patterns (e.g., proximity to fragile coasts or urban density that generates heat island effects). Sensitivity depends upon the degree of preparation and on underlying socioeconomic conditions (e.g., current health or housing conditions). The capacity to cope includes the ability to respond and recover (e.g., disaster response plans, cooling centers, and adequate financial resources for recovery). Reducing exposure and sensitivity, and increasing the capacity to cope, will ultimately enhance the nation's resilience to climate change.

Adaptation is likely to require a broad range of measures by private<sup>49</sup> and public actors at multiple levels of government. Adaptation measures will also implicate many sectors of human activity<sup>50</sup> and their associated legal domains, including land-use law, natural-resources law, public-health law, housing law, energy law, and immigration law.<sup>51</sup> Effective adaptation will require a comprehensive approach that integrates the intersections among diverse sectors and levels of government.

46. *Id.* at 80–81.

47. *Id.* at 81.

48. NAT'L RESEARCH COUNCIL, *supra* note 5, at 29.

49. For example, farmers could shift crops to adapt to a changing climate, development could edge away from the riskiest locations, and insurance companies could adjust premiums to reflect newly developing risks. *See generally* Ruhl, *supra* note 7, at 381 (describing likely role for both private and public actors).

50. *See, e.g.*, Robin Kundis Craig, "Stationarity is Dead"—*Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV. ENVTL L. REV. 9, 54 (2010); Glicksman, *supra* note 10, at 1172; Ruhl, *supra* note 7, at 410–12 (2010).

51. *See* Ruhl, *supra* note 7, at 376.

This Article focuses on the distinct issues raised by land use governance and adaptation. By “land-use regulation,” I mean multiple features of government decision-making, including general land-use planning, zoning regulations and permitting processes to implement that planning, construction and building code requirements that dictate the nature of the built environment, as well as public infrastructure decisions that enable and support land uses (including transportation, water supply and treatment systems, and energy systems).

Land-use measures will play a key role in adapting to the increasing incidence of disasters resulting from climate change.<sup>52</sup> Land-use planning determines exposure to direct risks like flooding, erosion, and fire.<sup>53</sup> In at-risk areas such as floodplains, seashores, coastal bluffs, and forested areas, decision-makers will have to make unprecedented and politically controversial determinations among three alternative approaches: (1) protect vulnerable land; (2) accommodate risk by imposing land-use or building code requirements that make existing development more resilient to disasters; or (3) retreat by abandoning high-risk development.<sup>54</sup>

Protection strategies include “hard” structural measures, like sea-coast armoring, sea walls, tidal barriers, or levees<sup>55</sup> and “soft” measures that rely on natural protections, like wetland buffers and beach renourishment.<sup>56</sup> State and local land-use regulations will influence many of these measures. For example, they specify when individual landowners can (and cannot) engage in sea-coast

52. See Hudson, *supra* note 10, at 1999–2024 (describing importance of land use regulation to disasters); John R. Nolon, *Disaster Mitigation Through Land Use Strategies*, 23 PACE ENVTL. L. REV. 959 (2006) (same).

53. See NAT'L RESEARCH COUNCIL, *supra* note 5, at 85 (observing how development patterns affect wildfire risk); Hudson, *supra* note 10, at 2001–04 (describing role of land use in preventing flooding), 2004–06 (describing role of land use in addressing fire).

54. See Robert R.M. Verchick & Joel D. Scheraga, *Protecting the Coast*, in THE LAW OF ADAPTATION TO CLIMATE CHANGE: U.S. AND INTERNATIONAL ASPECTS 235, 239 (Michael B. Gerrard & Katrina Fischer Kuh eds., 2012). In particular, the choice about whether to forego efforts to protect and accommodate and instead, retreat, are likely to be particularly freighted. See Hudson, *supra* note 27. Professor Hudson's reference to “mitigation” encompasses what is here described as protection, and his reference to “adaptation” primarily encompasses what is here described as accommodation and retreat.

55. See Verchick & Scheraga, *supra* note 54, at 239.

56. See Hudson, *supra* note 27, at 41 (describing wetlands' buffering role).

armoring measures, such as retaining walls and bulkheads.<sup>57</sup> And land-use measures, including development restrictions, rebuilding restrictions, conservation easements that roll with changing tide lines, and the exercise of eminent domain, are important tools in creating and maintaining soft protection strategies that rely upon natural buffers.<sup>58</sup>

Land-use law plays a critical role in efforts to accommodate risk by increasing resilience. Land-use regulations can establish requirements that require buildings to be set back from waterways, or require appropriate landscaping in fire-prone areas.<sup>59</sup> Building codes will also play a crucial role in determining how well new, renovated, or re-built construction can withstand future floods, heat waves, and water shortages.<sup>60</sup> Building codes can require adequate hazard preparation, such as storm-resistant structural features, stilts or other mechanisms for elevating structures,<sup>61</sup> as well as storm-water runoff controls, such as permeable surfaces, to reduce the impacts of more extreme precipitation.<sup>62</sup> Cool-building designs can improve resilience to high temperatures, and water-efficient fixtures can address anticipated water shortages.<sup>63</sup>

Land-use rules will play a critical role in the third strategy for avoiding disaster risks: retreat.<sup>64</sup> Restrictions on rebuilding or the exercise of eminent domain could force a retreat from the coastline.<sup>65</sup> And alongside retreat measures, local decision makers

57. See ANNE SIDERS, COLUMBIA LAW SCH. CTR. FOR CLIMATE CHANGE LAW, *MANAGED COASTAL RETREAT: A LEGAL HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS* 63–83 (2013), available at [https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/ManagedCoastalRetreat\\_FINAL\\_Oct%2030.pdf](https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/ManagedCoastalRetreat_FINAL_Oct%2030.pdf) (discussing forms of armoring and government controls on armoring).

58. See generally *id.*; J. Peter Byrne & Jessica Grannis, *Coastal Retreat Measures*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 54, at 267, 270–74 (describing zoning tools), 278–81 (describing rolling restrictions and easements), 283–86 (describing buy-outs).

59. See SIDERS, *supra* note 57, at 44–53; Byrne & Grannis, *supra* note 58, at 273.

60. See J. Cullen Howe, *Buildings*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 54, at 209.

61. *Id.* at 221–24 (describing mechanisms for mitigating storm and flood damage).

62. See *id.* at 217–18 (describing on-site stormwater management techniques).

63. See *id.* at 215–17 (describing water efficiency measures), 219–21 (describing cool building designs).

64. See Hudson, *supra* note 27, at 53–54 (describing retreat in response to coastal land loss).

65. See, e.g., Byrne & Grannis, *supra* note 58, at 268–69; Megan Herzog & Sean Hecht, *Combating Sea Level Rise in Southern California: How Local Governments Can Seize Adaptation Opportunities While Minimizing Legal Risk*, 19 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 463 (2013); JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., *ADAPTATION TOOL-KIT: SEA-LEVEL RISE AND COASTAL LAND USE* (2011). Other, non-land-use mechanisms could also induce



will have to consider not only where and what kind of replacement development to encourage, but also whether to rebuild at all, an open question in high-risk regions.<sup>66</sup> These land-use decisions can arise prospectively as planners look ahead at future risks and can also emerge in the disaster recovery process as local governments determine where to re-build and whose needs are served in the re-building process.

Land-use planning can also impact exposure to indirect risks. For example, the closer that hazardous land uses are to residential areas, the greater the risk that flooding or fire could result in toxic exposures.<sup>67</sup> Land-use regulations control the siting of hazardous facilities in areas at risk from fire or flooding, and can impose permit conditions that reduce disaster risks in disaster-prone areas.

Areas that remain relatively unscathed by climate-induced disasters are likely to encounter their own land-use challenge: migration from less sustainable domestic and international regions.<sup>68</sup> In the United States, certain coastal or floodplain areas may become unlivable.<sup>69</sup> The desert southwest may become

retreat, including flood insurance requirements that prove prohibitively expensive or unattainable.

66. See, e.g., NAT'L RESEARCH COUNCIL, *supra* note 5, at 72 (identifying the need to plan for abandonment and relocation of at-risk communities and noting the social and political challenge that poses), 74.

67. See ROBERT R. M. VERCHICK, *FACING CATASTROPHE: ENVIRONMENTAL ACTION FOR A POST-KATRINA WORLD* 59 (2010) (describing risks caused by flooded industry and hazardous waste sites); see also MATTHEW HEBERGER ET AL., CAL. CLIMATE CHANGE CTR., *THE IMPACTS OF SEA-LEVEL RISE ON THE CALIFORNIA COAST* 50 (2009), available at <http://www.energy.ca.gov/publications/displayOneReport.php?pubNum=CEC-500-2009-024-F> (describing California hazardous waste sites vulnerable to sea-level rise). Hurricane Katrina flooded dozens of hazardous waste sites along the Gulf Coast. LESLIE FIELDS ET AL., NATURAL RES. DEF. COUNCIL, *KATRINA'S WAKE: ARSENIC-LACED SCHOOLS AND PLAYGROUNDS PUT NEW ORLEANS CHILDREN AT RISK* 19 (2007), available at <http://www.nrdc.org/health/effects/wake/contents.asp>. Hundreds of industrial facilities storing chemicals and sewage treatment plants were in Katrina's path. Dina Cappiello, *Report Finds "Sobering" Impacts on Environment*, HOUS. CHRON. (Sept. 15, 2005), <http://www.chron.com/news/hurricanes/article/Report-finds-sobering-impact-on-environment-1668834.php>. See also KLEIN & ZELLMER, *supra* note 27, at 124 (describing toxic contamination after Mississippi River flooding in 1993).

68. The National Research Council has estimated that, worldwide, there could be 200 million climate-induced migrants by 2050. NAT'L RESEARCH COUNCIL, *supra* note 5, at 79 (citing DOMINIC KNIVETON ET AL., IOM MIGRATION RESEARCH SERIES NO. 33, INT'L ORG. FOR MIGRATION, *CLIMATE CHANGE AND MIGRATION: IMPROVING METHODOLOGIES TO ESTIMATE FLOWS* (2008), available at [http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/published\\_docs/serial\\_publications/MRS-33.pdf](http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/published_docs/serial_publications/MRS-33.pdf)); see also Craig, *supra* note 50, at 55 (predicting future climate-induced domestic migration).

69. Craig, *supra* note 50, at 55.

unmanageably hot and arid.<sup>70</sup> Internationally, climate experts predict that small island nations and low-lying nations will be substantially inundated,<sup>71</sup> while other areas will become uninhabitable due to desertification. Residents from heavily impacted regions and countries are likely to migrate to less impacted areas, creating additional housing demand. Thus, although seemingly remote from environmental law, housing availability is a critical issue in climate change adaptation.

Land-use planning is also likely to play a role in a number of other contexts. Urban design is critical to the urban “heat island” effect—the higher temperatures typically experienced in urban areas.<sup>72</sup> Land-use measures, such as greater vegetation and more open spaces, could reduce urban temperatures, lessening the impact of heat waves.<sup>73</sup> In addition, as current habitats become unsustainable, land-use planning could play a role in protecting habitat and facilitating the migration of endangered species to more sustainable habitat.<sup>74</sup> And as parts of the country face decreasing drinking-water availability, land-use regulation could encourage water-efficient building codes and sustainable landscaping to reduce water demand.

### C. The Status of Adaptation-Related Land-Use Measures

An adequate response to climate change will require localized climate-risk assessments and a planning process that identifies a range of measures to reduce exposure, reduce sensitivity, and increase the capacity to cope. State and local adaptation planning processes would ideally integrate the many strategies that comprise an effective response to climate change, including land-use and building code measures, public health strategies, water supply measures, and infrastructure investments. This Article focuses on the land-use features of adaptation.

70. *Id.*

71. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers*, in CLIMATE CHANGE 2007, *supra* note 1, at 12.

72. See BRIAN STONE JR., THE CITY AND THE COMING CLIMATE: CLIMATE CHANGE IN THE PLACES WE LIVE 75–76 (2012) (explaining how urban areas’ decreased vegetation, dark surfaces that absorb heat, reflected heat from tall buildings, and localized heat from combustion sources contribute to the urban heat island effect).

73. See NAT’L RESEARCH COUNCIL, *supra* note 5, at 70 (stating that urban design could reduce the heat island effect); Hudson, *supra* note 10, at 2007–08.

74. See generally J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1 (2008) (describing climate change impacts on endangered species).

The nation has not ignored climate change; federal, state, local, and private actors have begun to address climate risks in a variety of ways. This section outlines the status of federal, state, and local adaptation efforts, focusing on those related to land use.

### 1. Federal Adaptation-Related Land-Use Programs

Although there is no federal adaptation law and no overarching federal authority over land use, a number of existing federal programs implicate adaptation-related land use. Some federal programs have enhanced local adaptation while others have potentially impeded local adaptation.<sup>75</sup> At a general level, the Obama Administration has tasked federal agencies with addressing adaptation under their existing authority. An initial Interagency Climate Change Adaptation Task Force developed a federal adaptation strategy for federal agencies,<sup>76</sup> and in 2013 the Task Force evolved into a new Council on Climate Preparedness and Resilience.<sup>77</sup> President Obama's 2013 Climate Action Plan committed federal agencies to continued development of federal adaptation plans and to federal support for state and local adaptation, to be facilitated by a new State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience.<sup>78</sup> In March 2014, consistent with the Climate Action Plan, President Obama established a Climate Data Initiative to improve the federal government's provision of climate data to the private sector and

75. See JUSTIN B. CLANCY & JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., LESSONS LEARNED FROM IRENE: CLIMATE CHANGE, FEDERAL DISASTER RELIEF, AND BARRIERS TO ADAPTIVE RECONSTRUCTION (2013) (describing FEMA rules that jeopardized state efforts to re-build more resilient infrastructure), available at <http://www.georgetownclimate.org/sites/default/files/Lessons%20Learned%20From%20Irene%20-%20Finalv2.pdf>.

76. See COUNCIL ON ENVTL. QUALITY, PROGRESS REPORT OF THE INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE: RECOMMENDED ACTIONS IN SUPPORT OF A NATIONAL CLIMATE CHANGE ADAPTATION STRATEGY (2010), available at <http://www.whitehouse.gov/sites/default/files/microsites/ceq/Interagency-Climate-Change-Adaptation-Progress-Report.pdf>; COUNCIL ON ENVTL. QUALITY, FEDERAL ACTIONS FOR A CLIMATE RESILIENT NATION: PROGRESS REPORT OF THE INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE (2011), available at [http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011\\_adaptation\\_progress\\_report.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011_adaptation_progress_report.pdf); see generally Robert R.M. Verchick, *Adapting to Climate Change While Planning for Disaster: Footholds, Rope Lines, and the Iowa Floods*, 2011 B.Y.U. L. REV. 2203, 2216–22 (2011).

77. Exec. Order No. 13,653, 78 Fed. Reg. 66,819 (2013).

78. EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT'S CLIMATE ACTION PLAN (2013), available at <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>. President Obama further articulated his Climate Action Plan elements in a November 2013 Executive Order. See Exec. Order No. 13,653, *supra* note 77.

state and local governments.<sup>79</sup> Further, his 2015 budget request includes a \$1 billion Climate Resilience Fund to help finance adaptation initiatives by the federal government and other stakeholders.<sup>80</sup> These initiatives are important, but they do not constitute a system for ensuring comprehensive land-use planning and implementation.

Turning to specific federal programs, the Coastal Zone Management Act (“CZMA”) creates federal incentives for state coastal planning.<sup>81</sup> NOAA, the federal agency that oversees CZMA implementation, provides information on sea level rise and adaptation planning resources to states,<sup>82</sup> but it does not specifically require state and local governments to take sea-level rise into account or to undertake climate adaptation planning.<sup>83</sup>

The controversial National Flood Insurance Program (NFIP), which provides federal flood insurance in floodplains, provides an incentive for local floodplain land-use regulation and building codes because NFIP flood insurance, necessary for obtaining a federally-backed mortgage, is available only in communities that have adopted such floodplain management measures.<sup>84</sup> However, many believe the program’s provision of flood insurance in risky areas may have ultimately increased, not decreased, vulnerability to floods.<sup>85</sup> Efforts to improve the program by lessening subsidies for

79. *Fact Sheet: The President’s Climate Data Initiative: Empowering America’s Communities to Prepare for the Effects of Climate Change*, THE WHITE HOUSE (Mar. 19, 2014), <http://www.whitehouse.gov/the-press-office/2014/03/19/fact-sheet-president-s-climate-data-initiative-empowering-america-s-comm>.

80. *Id.*

81. 16 U.S.C. § 1451 (2012). The CZMA provides states with incentives for local coastal land use planning, including funding and a commitment that federal projects in areas subject to such coastal plans be consistent with the local plans. See TIMOTHY BEATLEY ET AL., AN INTRODUCTION TO COASTAL ZONE MANAGEMENT 102–06 (2d ed. 2002).

82. See *Coastal Climate Adaptation: Resources*, NAT’L OCEANIC & ATMOSPHERIC ADMIN, <http://collaborate.csc.noaa.gov/climateadaptation/default.aspx> (last visited Apr. 6, 2014).

83. See Byrne & Grannis, *supra* note 58, at 289–90. The CZMA contains broad objectives for both preserving and developing the coast, a mix of objectives that do not provide coastal states with a clear directive to engage in adaptation planning. Efforts to amend the CZMA to require adaptation planning have failed in Congress.

84. See Dan Huber, CTR. FOR CLIMATE AND ENERGY SOLUTIONS, *Fixing a Broken National Flood Insurance Program: Risks and Potential Reforms* (2012), available at <http://www.c2es.org/publications/fixing-broken-national-flood-insurance-program-risks-potential-reforms>.

85. Some argue that the availability of flood insurance furthered development in areas that should not have been developed at all, notwithstanding the adoption of building code and land use requirements. Commentators have identified numerous other problems with the NFIP, including subsidized flood insurance rates and outdated floodplain maps that fail to take rising sea levels or increasing precipitation into account. See KLEIN & ZELLMER, *supra* note 27, at 111–13 (describing NFIP), 135–37 (critiquing program), 190 (observing the

flood insurance in at-risk areas have stumbled, as 2012 reform legislation<sup>86</sup> encountered substantial political opposition and was partially rolled back in 2014.<sup>87</sup> In any case, the reform efforts have focused more on the program's finances than on enhancing safety,<sup>88</sup> and will not provide sufficient incentives to prompt a robust and comprehensive land-use response to impending flood risks.

Other federal disaster programs also implicate adaptation-related land-use planning, including FEMA-managed programs under the Stafford Act and the Disaster Mitigation Act that encourage state and local disaster mitigation plans.<sup>89</sup> However, FEMA does not require the plans to address climate change, and many states facing significant climate risks either have not chosen to incorporate climate change into their disaster plans or have not done so effectively.<sup>90</sup> Moreover, state and local disaster mitigation plans are

NFIP's failure to steer development away from high-risk areas); Byrne & Grannis, *supra* note 58, at 291–92; Sean B. Hecht, *Insurance, in THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 54, at 511, 518 (observing that offering subsidized insurance, even if conditioned on weather-proofing, could foster rather than inhibit development in risk-prone areas), 528–31 (describing numerous NFIP weaknesses); SIDERS, *supra* note 57, at 9.

86. See SIDERS, *supra* note 57, at 10–12; Hecht, *supra* note 85, at 529.

87. Nedra Pickler, *President Obama Signs Flood Insurance Relief Bill*, INS. J. (Mar. 24, 2014), <http://www.insurancejournal.com/news/national/2014/03/24/324217.htm>.

88. See Robert R.M. Verchick & Linsey R. Johnson, *When FEMA Heads for the Hills: Climate Retreat, Disaster Recovery, and the Biggert-Waters Flood Insurance Reform Act*, 47 JOHN MARSHALL L. REV. (forthcoming 2014) (stating that “[i]n the final analysis, the 2012 reforms seem much more about controlling government losses than reducing public risk” and that more emphasis on financing hazard mitigation would have increased public safety).

89. See Victor B. Flatt, *Domestic Disaster Preparedness and Response, in THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 54, at 481; see also Nolon, *supra* note 52; Patricia E. Salkin, *Sustainability at the Edge: The Opportunity and Responsibility of Local Governments to Most Effectively Plan for Natural Disaster Mitigation*, 38 ENVTL. L. REPORTER 10158, 10159 (2008). The federal Stafford Act, which primarily addresses federal disaster response, also provides some federal funding for disaster prevention efforts. See Flatt, *supra*, at 486. The Disaster Mitigation Act of 2000 encourages local and state disaster planning by conditioning funding for hazard mitigation grants on the development of state and local disaster mitigation plans. See *id.*; see also Nolon, *supra* note 52, at 965. To a limited extent, the federal government has also provided funding to buy-out risk-prone properties. See KLEIN & ZELLMER, *supra* note 27, at 133–34.

90. See MATTHEW BABCOCK, COLUMBIA LAW SCH. CTR. FOR CLIMATE CHANGE LAW, STATE HAZARD MITIGATION PLANS AND CLIMATE CHANGE: RATING THE STATES (2013), available at [http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Students/SHMP%20Survey\\_Final.pdf](http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Students/SHMP%20Survey_Final.pdf). In 2013, FEMA provided more explicit guidance to help states develop comprehensive disaster recovery plans. *National Disaster Recovery Framework*, FED. EMERGENCY MGT. AGENCY, <http://www.fema.gov/national-disaster-recovery-framework> (last updated May 9, 2013). However, that framework continues to focus on immediate disaster recovery needs and does not address longer-term measures needed to reduce climate risks, including mechanisms to retreat from at-risk areas and accommodate

not adequately integrated into local land-use planning.<sup>91</sup> On the disaster relief side, the Department of Housing and Urban Development is beginning to address the resilience of rebuilding efforts funded by federal disaster funds, at least in connection with the billions of dollars provided in the wake of Hurricane Sandy.<sup>92</sup> But federal disaster relief money has often been used to rebuild in flood-prone areas.

Other federal programs are also beginning to influence state and local land-use related adaptation. The Environmental Protection Agency is exploring green infrastructure mechanisms to manage storm-water runoff, such as natural drainage, that would be created and enforced through land-use regulation.<sup>93</sup> The Army Corps of Engineers' dam, levee, and wetland decisions have all had profound impacts on local land-use conditions<sup>94</sup> and have ultimately influenced the land-use development options available to local decision makers. Although those influences have tended to increase rather than decrease risk,<sup>95</sup> the program has the capacity to better foster effective adaptation. Discrete multi-agency

migration into lower-risk areas. See Verchick & Johnson, *supra* note 88 (manuscript at 11–14) (on file with author).

91. See Salkin, *supra* note 89, at 10159.

92. The Hurricane Sandy Rebuilding Task Force developed federal disaster relief guidelines that stressed that rebuilding should enhance resilience. See HURRICANE SANDY REBUILDING TASK FORCE, *Fact Sheet: Key Recommendations to Guide the Continued Federal Investment in the Region* (Aug. 13, 2013), <http://www.whitehouse.gov/blog/2013/08/19/hurricane-sandy-rebuilding-strategy-helping-communities-prepare-impacts-changing-climate> (describing key recommendations outlined in the Task Force's *Rebuilding Strategy*). In November 2013, HUD required applicants applying for infrastructure funding to assess how climate change could impact the proposed project, and indicated that the agency might apply this approach in other funding contexts. Ethan I. Strell, *Second Round of Sandy Relief Money Conditioned on Future Sea Level Rise Risk Analysis*, CLIMATE LAW BLOG (Nov. 25, 2013), <http://blogs.law.columbia.edu/climatechange/2013/11/25/second-round-of-sandy-relief-money-conditioned-on-future-sea-level-rise-risk-analysis/>.

93. See *Why Green Infrastructure?*, ENVIL. PROT. AGENCY, [http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_why.cfm#WaterQuality](http://water.epa.gov/infrastructure/greeninfrastructure/gi_why.cfm#WaterQuality) (last updated Mar. 26, 2014); see also Nolon, *supra* note 12, at 1007. For further information on EPA efforts to integrate adaptation into water programs, see ENVIL. PROT. AGENCY, NATIONAL WATER PROGRAM 2012 STRATEGY: RESPONSE TO CLIMATE CHANGE (2012), available at <http://water.epa.gov/scitech/climatechange/2012-National-Water-Program-Strategy.cfm>.

94. See Victor Beyers Flatt & Jeremy M. Tarr, *Adaptation, Legal Resilience, and the U.S. Army Corps of Engineers*, 89 N.C. L. REV. 1499, 1545–48 (2011) (discussing how the Army Corps of Engineers can and should exercise its discretion to respond to climate change impacts).

95. See KLEIN & ZELLMER, *supra* note 27, at 133 (observing that levee construction has created a false sense of security that has induced development), 153 (describing the Corps' role in exacerbating damage from Hurricane Katrina; see also Hudson, *supra* note 27, at 61 (describing the history of “induced risk” caused by structural flood control mechanisms that induce development in areas that are partially but not fully protected from risk)).

initiatives, such as the Sustainable Communities Initiative, are providing grants to local governments to enhance their capacity to integrate infrastructure, environmental, and housing needs to increase adaptive capacity.<sup>96</sup> But the Initiative is not explicitly focused on climate adaptation, and it provides only piecemeal grants to engaged recipients rather than encouraging widespread comprehensive planning.

This review of existing programs provides three lessons. The first is that existing federal programs already implicate land-use-related adaptation and could potentially play a more significant role in furthering adaptation. The second is that they are insufficient: They do not systematically require local or state climate assessment, planning, or adaptation measures. Federal programs often provide willing state and local governments with valuable information and piecemeal funding but do not provide a comprehensive or coordinated land-use response.<sup>97</sup> The third lesson is cautionary: some federal programs implicating land use, like the NFIP, FEMA-managed disaster relief, and decisions by the Army Corps of Engineers, might have hindered rather than furthered resilient adaptation. While the federal government has the potential to play a positive role, it is not immune from maladaptive initiatives.

## 2. State and Local Adaptation-Related Land-Use Programs

Numerous states and local governments have begun to assess anticipated state-specific climate change impacts and identify response strategies.<sup>98</sup> As of January 2012, sixteen states had completed, or were in the process of completing, climate adaptation plans.<sup>99</sup> The state plans identify anticipated climate

96. The Sustainable Communities Initiative is a joint initiative among the Department of Housing, the Environmental Protection Agency, and the Department of Transportation that provides grants to local communities integrating transportation, environmental, and housing concerns. See *Sustainable Communities Initiative*, U.S. DEP'T OF HOUS. AND URBAN DEV., <http://portal.hud.gov/hudportal/HUD?src=/hudprograms/sci> (last visited Apr. 2, 2014); see also Ostrow, *supra* note 10, at 1428.

97. See Hudson, *supra* note 27, at 58 (observing that the federal government does not have significant input on critical land use planning decisions).

98. See Vicki Arroyo & Terri Cruce, *State and Local Adaptation*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 54, at 569–87; see also *State and Local Adaptation Plans*, GEORGETOWN CLIMATE CTR. (Feb. 15, 2013), <http://www.georgetownclimate.org/node/3325>; ICLEI-LOCAL GOVERNMENTS FOR SUSTAINABILITY USA, LOCAL GOVERNMENTS, EXTREME WEATHER, AND CLIMATE CHANGE 2012 (2012), available at <http://www.icleiusa.org/action-center/learn-from-others/local-governments-extreme-weather-and-climate-change-2012> (detailing actions taken by twenty U.S. cities).

99. See Arroyo & Cruce, *supra* note 98, at 574.

impacts, address their implications for state resources and sectors, and develop recommendations for lessening impacts.<sup>100</sup> The plans vary in their degree of specificity. In addition, some plans focus primarily on state agencies and authorities, while others incorporate local and private actor needs and strategies.<sup>101</sup> Moreover, some states have addressed discrete climate risks, such as sea-level rise, rather than or in addition to developing overarching adaptation assessments and plans.<sup>102</sup>

Nonetheless, many states have not taken substantial steps to address climate adaptation; the number of states without adaptation plans is twice that of those that have them. In some instances, states have hindered rather than furthered climate adaptation efforts. In 2012, North Carolina adopted legislation that ignored state scientists' sea level rise predictions and barred further statewide predictions for four years, chilling the state's role in facilitating local planning for sea level rise.<sup>103</sup>

With or without the assistance of their state governments,<sup>104</sup> local governments have also initiated climate adaptation measures. In 2012, one observer identified twenty cities that have adopted climate adaptation plans.<sup>105</sup> For example, Chicago has developed a multi-faceted adaptation strategy that includes land-use elements to reduce urban heat, pollution, and flooding.<sup>106</sup> New York City has been assessing climate impacts and considering adaptation since 2008 and in 2013 released a \$20 billion plan for post-Hurricane-

100. *See id.*

101. *See id.* at 575.

102. *See id.* at 574, 579–81; GRANNIS, *supra* note 65, at 27 (describing Maine's "sand dune rules," which require set-backs from the shoreline based on a projected two-foot increase in sea levels over the next 100 years). States can develop sector-based responses as "climate adaptation initiatives" or simply address climate risks as they implement existing programs, like disaster plans, stormwater management plans, and the like, without explicitly treating these initiatives as "climate initiatives." *See* Arroyo & Cruce, *supra* note 98, at 583–84.

103. *See* Wade Rawlins, *North Carolina Lawmakers Reject Sea Level Rise Predictions*, REUTERS (July 3, 2012), <http://www.reuters.com/article/2012/07/03/us-usa-northcarolina-idUSBRE86217I20120703> (describing initial legislation, which required that projections be based on historic trends); Bruce Henderson, *North Carolina's Coast is 'Hot Spot' for Rising Sea Levels*, CHARLOTTE OBSERVER (Nov. 5, 2012), <http://www.mcclatchydc.com/2012/11/05/173575/north-carolinas-coast-is-hot-spot.html> (describing final legislation, which delayed but did not prevent climate change-influenced sea level rise projections).

104. Some states have developed programs to assist local government adaptation efforts. *See* Arroyo & Cruce, *supra* note 98, at 582–83.

105. *See id.* at 585.

106. *See* *Chicago Climate Action Plan: Adaptation* (Feb. 15, 2013), <http://www.chicagoclimateaction.org/pages/adaptation/11.php> (webpage summarizing strategies).



Sandy reconstruction and new adaptation measures, entitled Plan NYC: A Stronger, More Resilient New York.<sup>107</sup> In addition to the local governments that have created stand-alone adaptation plans, many local governments are addressing climate impacts as they make sector-specific decisions, such as infrastructure siting or classic zoning and building code decisions.<sup>108</sup>

But adaptation planning is spotty and specific implementation measures are the exception rather than the rule.<sup>109</sup> Most local governments are simply reacting to climate impacts as they arise rather than prospectively incorporating them into decision-making.<sup>110</sup> As Vicki Arroyo of the Georgetown Climate Center has written, existing state and local adaptation planning efforts “touch only a minority of those who will ultimately be affected by climate change in this country.”<sup>111</sup> To the extent state and local governments have engaged in planning, their plans often lack specific implementation measures.<sup>112</sup> The National Research Council notes that “vulnerable regions such as the U.S. Gulf Coasts . . . have been slow to develop comprehensive climate change adaptation plans, indicating that vulnerability, by itself, does not necessarily lead to comprehensive adaptation planning.”<sup>113</sup>

107. N.Y. ACAD. OF SCIS., CLIMATE CHANGE ADAPTATION IN NEW YORK CITY: BUILDING A RISK MANAGEMENT RESPONSE (2010), available at <http://www.nyas.org/publications/annals/Detail.aspx?cid=ab9d0f9f-1cb1-4f21-b0c8-7607daa5dfcc>; THE CITY OF N.Y., PLAN NYC: A STRONGER MORE RESILIENT NEW YORK (2013), available at <http://www.nyc.gov/html/sirt/html/report/report.shtml>.

108. For example, Chatham County, Massachusetts has prohibited development in the 100-year floodplain. See GRANNIS, *supra* note 65, at 22.

109. See JOANN CARMIN ET AL., PROGRESS AND CHALLENGES IN URBAN CLIMATE ADAPTATION PLANNING: RESULTS OF A GLOBAL SURVEY (2012), available at <http://web.mit.edu/jcarmin/www/urbanadapt/Urban%20Adaptation%20Report%20FINAL.pdf>. Internationally, of the cities that were given and responded to an international survey, cities in the United States had the lowest level of engagement in adaptation assessment and planning (fifty-nine percent). *Id.* at 26. The National Research Council reports that “surprisingly few climate change adaptation plans have been implemented anywhere in the world.” NAT’L RESEARCH COUNCIL, *supra* note 5, at 76. A detailed assessment of coastal southern California local governments revealed that most had done little to plan for sea level rise. See generally Herzog & Hecht, *supra* note 65, at 543. In the disaster context, Blake Hudson observes that “state and local governments are doing little in the way of guiding development out of disaster-prone areas, and indeed are actively promoting that development.” Hudson, *supra* note 10, at 2027.

110. Arroyo & Cruce, *supra* note 98, at 586.

111. *Id.* at 593.

112. See GRANNIS, *supra* note 65, at 7; CARMIN ET AL., *supra* note 109, at 25–26.

113. NAT’L RESEARCH COUNCIL, *supra* note 5, at 77.

Even areas that have endured severe impacts that are likely to worsen with climate change have struggled to address the magnitude of the challenges they face, and appear reluctant to contemplate the retreat from settled areas that may ultimately be necessary. For example, some commentators believe that New York City's twenty billion dollar adaptation plan, for all it does to address resilience and preparation, does not fully grapple with the intense risks that sea level rise poses to Manhattan and the city's highly vulnerable barrier islands.<sup>114</sup> And the state of Louisiana, battered by Hurricane Katrina and at tremendous risk from a combination of land subsidence and sea level rise, is planning to invest fifty billion dollars into protective measures whose capacity to protect the state from future harm is highly uncertain.<sup>115</sup>

An international survey of urban climate adaptation planning found multiple challenges to local adaptation planning. They included practical constraints like insufficient location-specific data<sup>116</sup> and inadequate staff and financial resources.<sup>117</sup> In addition, planners faced political obstacles to adaptation planning, including a lack of political commitment by local government officials,<sup>118</sup> local business communities,<sup>119</sup> and the national government.<sup>120</sup> Less than 25 percent of the surveyed US cities said that they had strong support for adaptation planning from local government officials.<sup>121</sup> As is explored further below, there are numerous reasons why local governments may be unable or unwilling to engage in more robust adaptation efforts without greater federal pressure and support.

114. See Andrew C. Revkin, *Can Cities Adjust to a Retreating Coastline?*, DOT EARTH (Aug. 22, 2013), [http://dotearth.blogs.nytimes.com/2013/08/22/can-cities-adjust-to-a-retreating-coastline/?\\_php=true&\\_type=blogs&\\_r=0](http://dotearth.blogs.nytimes.com/2013/08/22/can-cities-adjust-to-a-retreating-coastline/?_php=true&_type=blogs&_r=0) (querying whether the New York City plan is "a good one or a stopgap that fits political imperatives of the moment while building bigger risks in the long haul?").

115. See Hudson, *supra* note 27, at 49–53 (describing Louisiana Coastal Master Plan), 55–63 (describing scientific and institutional challenges to implementing the plan).

116. See CARMIN ET AL., *supra* note 109, at 24 (describing local government data needs about climate impacts and adaptation strategies). Professor Carmin notes that data needs remain an impediment even though they were not as great a challenge as other obstacles. *Id.*

117. *Id.* at 20–22 (describing financial and staff resource constraints).

118. *Id.* at 23.

119. *Id.* at 24.

120. *Id.* (observing that six percent or less of surveyed U.S. municipalities believe the national government has a strong understanding of the adaptation challenges local governments face).

121. *Id.* at 23.

In sum, land-use measures have an essential role to play in responding to climate change, but existing federal, state, and local governments are not systematically assessing risks and engaging in the kinds of land-use planning that will be necessary to reduce impending harms. The rest of this Article considers whether new governance structures would better support the development of land-use responses to climate change.

## II. FEDERALISM VALUES AND LAND-USE LAW

Notwithstanding federal and state roles in land-use planning, local governments retain substantial control over most key land-use decisions, and efforts to shift that control confront a long tradition of local control over land use. This section notes the tradition of local control, identifies multilevel governance as an alternative option, and then evaluates the key federalism values that have guided debates over the distribution of power. The analysis demonstrates that core federalism values justify a multilevel governance structure that incorporates but is less reliant upon local control.

### A. The Status Quo of Local Control

Although the states have plenary police powers to legislate for the general welfare, virtually all states have delegated fundamental zoning powers and other land-use controls to local governments.<sup>122</sup> The “quiet revolution” toward increased state control over land use that scholars began witnessing several decades ago has been manifested to varying degrees in some states,<sup>123</sup> but did not rise to a true “revolution” away from local control; local control remains strong.<sup>124</sup>

This is not to deny that many federal and state programs directly or indirectly impact land-use decisions, as revealed by the discussion of federal and state adaptation-related initiatives in the preceding section.<sup>125</sup> Nonetheless, most federal programs provide,

122. See generally David J. Barron, *A Localist Critique of the New Federalism*, 51 DUKE L.J. 377, 395 (2001); Bronin, *supra* note 10, at 236–37 (describing basic zoning authority).

123. BOSSELMAN & CALLIES, *supra* note 12.

124. See Arnold, *supra* note 10, at 486–88; Bronin, *supra* note 10, at 232.

125. See *supra* notes 75 to 108 and accompanying text (describing adaptation-related federal and state land use measures); Ostrow, *supra* note 10; Salkin, *supra* note 12 (detailing numerous federal programs impacting local land use). Non-adaptation examples of federal control over land use include Clean Water Act controls on wetlands development;

at most, piecemeal overlays or regulatory patches over what remains, essentially, local control.<sup>126</sup> Nor do they dislodge the primary control that most local governments continue to exercise over the land-use planning and land-use measures necessary to respond to climate change. Local governments are the primary land-use planners. They are responsible for developing zoning ordinances that control where and what kinds of development can and cannot occur, and they establish and administer land-use regulations, building codes, and permitting.

Local control over land use is treated as a foundational principle, and efforts to alter the status quo away from local control are likely to encounter stiff political resistance. Earlier efforts to create a more generalized and stronger federal role in land use have failed politically. For example, in the early 1970s, the proposed National Land Use Policy Act, which provided funding for state land-use planning and proposed a national data system to assist local governments, faced political opposition from state and local governments and was narrowly defeated.<sup>127</sup> Language requiring states with unhealthy air to develop land-use control measures that would indirectly improve air quality (by avoiding land-use patterns that increase driving) was deeply unpopular in early versions of the federal Clean Air Act and ultimately removed from the statute.<sup>128</sup> Administrative or legislative efforts to increase the federal role in land use must confront and address the fundamental arguments that have been used to justify local control.<sup>129</sup>

## B. Governance Alternatives

Before addressing federalism values and their implications for the distribution of power, it is worth providing a rough sketch of two conceivable governance alternatives for the vertical governance

Endangered Species Act controls on habitat disruption; requirements that local government respect religious land uses; and enhanced judicial review over local governments' cell phone tower siting decisions. In addition, federal housing programs have prompted local planning and have had varying impacts on local development over the years. See Salkin, *supra*.

126. See Arnold, *supra* note 10, at 487 (describing state and federal overlays), 490–91 (describing fragmented federal and state regulatory patches over local control).

127. See Fred Bosselman, *The Twilight of National Land Use Policy*, 45 J. MARSHALL L. REV. 237 (2012); Ostrow, *supra* note 10, at 1406–07.

128. See Ostrow, *supra* note 10, at 1407. In the 1990 Clean Air Act Amendments, Congress added explicit language to the statute stating that the law does not infringe “on the existing authority of counties and cities to plan or control land use.” 42 U.S.C. § 7431 (2012).

129. See Barron, *supra* note 122, at 397 (noting the difficulty of interfering with the tradition of local control).

axis.<sup>130</sup> One option is to continue the status quo: to continue to rely primarily on state and local initiatives, with piecemeal federal influences as described above. The second option is to adopt some form of multilevel governance that integrates all levels of government, including federal, state, and local authority.<sup>131</sup> (A third option—pure federal adaptation land-use planning—is so unlikely to be effective or desirable that it does not deserve serious consideration.)<sup>132</sup>

The second option, “multilevel governance,” does not offer one single regulatory model; it can take a variety of forms. As Professors Camacho and Glicksman have recently observed, “governance” implicates a wide range of different functions,<sup>133</sup> including, substantive parameters; implementation authority (with or without discretion); procedural planning requirements (with or without substantive terms); information gathering, analysis, and distribution; regional coordination; and financing. In addition, the degree of federal versus local power over each of these functions could vary (e.g., stricter or weaker substantive and procedural requirements; more or less federal control versus local discretion).

130. As Professor Rob Glicksman has articulated in the adaptation context more broadly, the federal government could play three possible roles in adaptation-related land use: (1) the federal government could play no role, leaving control to state and local governments; (2) the federal government could set minimums and then share authority with state and local governments (in myriad possible forms presenting varying degrees of relative federal and sub-national power); and (3) the federal government could preempt state and local authority. See Glicksman, *supra* note 10, at 1165. As noted above, this Article addresses only the vertical governance axis, and does not address the separate but quite distinct issues raised by the web of existing laws, like disaster law, coastal zone management law, infrastructure programs, housing programs, and other federal programs that already indirectly implicate adaptation-related land use.

131. Cooperative federalism programs are common in many regulatory areas. See Nestor M. Davidson, *Cooperative Localism: Federal-Local Collaboration in an Era of State Sovereignty*, 93 VA. L. REV. 959, 965–66 (2007). As Professor Davidson notes, existing cooperative federalism programs reveal that our governance structure more closely resembles a “marble cake”—of mixed federal, state, and local power—than a layer cake with clearly demarcated local, state, and federal layers. *Id.* at 967. The nation’s air and water pollution control laws take a cooperative federalist approach, though one that focuses largely on the federal-state role rather than deeply engaging local power. See, e.g., John P. Dwyer, *The Practice of Federalism Under the Clean Air Act*, 54 MD. L. REV. 1183 (1995); 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, 821–23 (2008); Robert C. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141 (1995).

132. Creating a federal bureaucracy to develop locally-tailored land use plans would be practically difficult and would create serious concerns about local democratic accountability.

133. See Alejandro E. Camacho & Robert L. Glicksman, *Functional Government in 3-D*, 50 HARV. J. ON LEGIS. 19, 35–37 (2014).

The appropriate degree of centralization versus decentralization and the balance of power is also likely to vary depending upon the function in question.<sup>134</sup> For example, a multilevel governance structure could centralize scientific analysis but decentralize planning. Part II explores the federalism values that can play a key role in determining how to distribute federal, state, and local power across the range of government functions, while Part III provides a preliminary sketch of a multilevel governance structure.

In contemplating vertical governance structures, the Article focuses on federal-local relations rather than federal-state-local relations because its focus is on the federal interest in local decisions. That emphasis is not intended to minimize the potential role of state or regional entities, which might well play a critical role in the practical design of a multilevel governance approach to adaptation-related land use.<sup>135</sup> The key issue for this Article, however, is whether a federal role is justified in an area that has been dominated by local law, not the specific intermediary role of the states.

### C. Overview of Federalism Values

Federalism values inform governance choices. Scholars have extensively probed the federalism values that inform the courts' interpretation of the constitutionality of various distributions of federal and state power. These values not only inform constitutional interpretation, they can inform the political question addressed in this Article: Assuming constitutional legitimacy,<sup>136</sup> how should legislative and administrative initiatives assign power and responsibility?<sup>137</sup>

134. *See id.* at 66.

135. Determining the appropriate division of power between federal, state, and local levels is not a simple matter. Professor Nestor Davidson has argued that, in some instances, a direct federal-to-local relationship that circumvents active state involvement could be preferable to a tiered federal-state-local power structure. *See Davidson, supra* note 131; *see also Ostrow, supra* note 10, at 1437–38 (suggesting that direct federal influence over local land use could be preferable to having states as an intermediary). In contrast, this Article's emphasis on a federal role signals only the national interest in adequate land use, not a judgment about the ultimate role of the states in implementing the national program.

136. *See supra* note 15 and accompanying text (discussing constitutional issues presented by federal adaptation-related land use measures).

137. The Constitution addresses only the relationship between federal and state governments; it does not directly reference local governments, which are creatures of their states. Nonetheless, federalism values are relevant to assessing the governance values that could inform the appropriate distribution of power to the local as well as the state level.

The term “federalism” is capable of different meanings, and in some contexts the term presupposes the subsidiarity principle—a preference for distributed power.<sup>138</sup> In contrast, I intend no such presumption. Instead, the federalism values identified below are intended to articulate principles for good government, with no inherent preference for or against centralized power.

Federalism scholars and cases refer to a wide range of governance values, with some overlap but little consistency in their formulation. This Article synthesizes the literature to identify three core values. The first is pragmatic efficacy: the ability of differing distributions of power to accomplish important government ends and to generate the appropriate degree of government regulation. The second is democratic legitimacy: the ability of differing distributions of power to reflect the democratic will and secure well-functioning and accountable democratic processes. Unlike the second value, which focuses on majoritarian democratic processes, the third value focuses on checking potential government tyranny and promoting liberty. This section provides a federalism-values road map that identifies the key issues that emerge under each of these central values. Subsequent sections provide a detailed application of these values to land-use related adaptation measures.

### 1. Pragmatic Efficacy

The pragmatic<sup>139</sup> federalism strand emphasizes what Professor Erin Ryan calls the “problem-solving value” of federalism: an inquiry into what governance structure can most effectively address

138. See Erin Ryan, *Federalism and the Tug of War Within: Seeking Checks and Balance in the Interjurisdictional Gray Area*, 66 Md. L. Rev. 503, 620 (2007) (describing subsidiarity principle). “Federalism” is often associated with support for decentralized power because the constitutional framers who supported diffusion of power identified themselves as “federalists.” See DAVID L. SHAPIRO, *FEDERALISM: A DIALOGUE* 10–11 (1995). Nonetheless, debates about the appropriate allocation of power among federal, state, and local governments are often termed “federalism debates,” without inherent assumptions about decentralized power. In contrast to traditional theories of federalism premised on the subsidiarity principle, dynamic federalism theorists suggests that “federal and state governments [should] function as alternative centers of power and [that] any matter is presumptively within the authority of both federal and the state governments.” Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 EMORY L.J. 159, 176 (2006).

139. I use the term “pragmatic” in its everyday sense, connoting arguments that relate to what is practical, effective, and workable. While there may be some overlap, the reference to “pragmatic” is not a reference to philosophical “pragmatism.” Cf. *Pragmatism*, STAN. ENCYCLOPEDIA OF PHIL., <http://plato.stanford.edu/entries/pragmatism/> (last updated Oct. 7, 2013).

a particular problem.<sup>140</sup> The key issues are what jurisdictional levels have the requisite motivation and regulatory capacity and, accordingly, on what distribution of authority will provide the best regulation, both in substance and degree.

Much of the environmental federalism literature examines these pragmatic questions.<sup>141</sup> One prevalent practical issue relates to resources: what level of government has the financial resources and expertise to manage the problem?<sup>142</sup> Another frequent theme is what level has the requisite information, a factor that depends in part upon the degree of local variation and the associated need for tailored responses. The degree of local variation also affects the relative administrative efficiency of localized versus centralized decision-making, because it is difficult for centralized decision-makers to accommodate substantial local variation.<sup>143</sup> Additional efficiency concerns, such as risks of duplication and complexity, arise in connection with multilevel governance policies that blend federal, state, and local roles.<sup>144</sup> Other pragmatic themes include the virtues of “laboratories of invention,” in which different measures in different jurisdictions can emerge and inform each other.<sup>145</sup> The value of multiple policies must, however, be weighed against additional pragmatic values, including the relative virtue of

140. See Ryan, *supra* note 138, at 620–28. Professor Ryan articulates the problem-solving value of federalism as a component of the subsidiarity principle. Under the subsidiarity principle, decisionmaking should be delegated to the lowest jurisdictional level possible, and—here the problem-solving aspect emerges—decisionmaking at higher jurisdictional levels could be necessary if local jurisdictions lack the capacity to effectively address the problem in question. *Id.* at 624–28; see also Ostrow, *supra* note 10, at 1435–36 (suggesting that control over land use should be determined by assessing what level of government has the best regulatory capacity to address the cumulative consequences of local land use decisions). This Article, in contrast, does not presuppose the superiority of any one level of government and instead simply addresses the problem-solving capacity of each jurisdictional level alone and in combination.

141. See, e.g., Stewart, *supra* note 11, at 1210, 1212 (discussing “utilitarian values” that influence arguments for decentralizing or centralizing environmental controls); Esty, *supra* note 11 (discussing a range of factors, including practical efficacy, that influence appropriate environmental governance structures).

142. See Davidson, *supra* note 131, at 1011 (observing that local governments frequently lack sufficient resources to solve the problems they confront).

143. See SHAPIRO, *supra* note 138, at 36–37.

144. Cf. Percival, *supra* note 11, at 1182 (acknowledging potential inefficiency of shared state and federal roles in environmental regulation).

145. See Engel, *supra* note 139, at 182–83; Esty, *supra* note 11, at 606; Merritt, *supra* note 15, at 1575 (1994); Ryan, *supra* note 11, at 617; Stewart, *supra* note 11, at 1210. States have provided the seed bed for important innovations in many substantive areas. See SHAPIRO, *supra* note 138, at 87–88 (citing numerous examples).



regulatory uniformity for both administrators and regulated entities.<sup>146</sup>

Pragmatic analyses focus not only on what actor can achieve the best substantive approaches, but on what level will develop the optimal degree of regulation—not too much and not too little.<sup>147</sup> In the environmental pollution context, Professors Butler and Macey have encapsulated this concept in a “Matching Principle.”<sup>148</sup> They argue that “the size of the geographic area affected by a specific pollution source should determine the appropriate governmental level for responding to the pollution” and that policymaking institutions at federal, state, and local levels should be assessed to determine which “are best suited to weighing costs and benefits in the determination of the optimal level of pollution.”<sup>149</sup> Butler and Macey argue that the Matching Principle leads not only to optimal local pollution control, but that competition among jurisdictions generates optimal levels of national pollution control, as jurisdictions compete to meet the (sometimes conflicting) preferences of both local citizens and regulated entities.<sup>150</sup> But as elaborated below in the context of land-use adaptation, critics have identified numerous collective action challenges that complicate the practical application of the Matching Principle, including insufficient resources and

146. See David E. Adelman & Kirsten H. Engel, *Adaptive Federalism: The Case Against Reallocating Environmental Regulatory Authority*, 92 MINN. L. REV. 1796, 1839 (2008) (describing value of regulatory uniformity).

147. Although Butler and Macey are clearly influenced by economic principles, the reference to the “optimal” degree of regulation suggests only “not too much and not too little,” not a more sophisticated assessment of, say, “pareto optimality” or other technical economic definitions of “optimal.”

148. Henry N. Butler & Jonathan R. Macey, *Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority*, 14 YALE L. & POL'Y REV. 23 (1996); see also Adelman & Engel, *supra* note 146, at 1803–05 (describing the history of the matching principle and its influence on environmental federalism scholarship).

149. Butler & Macey, *supra* note 148.; see also Esty, *supra* note 11, at 587 (noting that “structural failure,” manifested by too little or too much regulation, could occur if a regulating entity is not well-positioned to consider all the costs and benefits of regulation).

150. Butler & Macey, *supra* note 148, at 31. States and local governments would engage in regulatory competition to attract both businesses (who are likely to resist environmental regulation) and residents (some of whom could seek environmental protection). Different areas might choose a different balance between economic development and environmental protection. Butler and Macey articulate several conditions that are necessary for interstate competition to generate an optimal level of pollution control, including: (1) mobility of regulated entities; (2) local regulation’s impacts do not extend beyond the local jurisdiction; (3) local governments are responsive to new circumstances and changes in voter preferences; and (4) local governments have the power to enact any laws they desire. *Id.* at 31–36.

information, inter-jurisdictional competition, and the inherent multi-scalar nature of many environmental problems.

## 2. Democratic Legitimacy

Pragmatic federalism values are important but incomplete. Federalism debates also concern critical questions of democratic legitimacy and democratic process.<sup>151</sup> This section highlights the kinds of democratic legitimacy themes prevalent in federalism debates.

Self-determination is a core democratic value.<sup>152</sup> One key theme that emerges under this value is which levels of government facilitate citizen engagement and participation.<sup>153</sup> Other themes include how best to reflect the diversity of citizen views and enhance the range of choices available to citizens.<sup>154</sup> Moreover, in evaluating whether democratic processes reflect the collective will of “the people,” federalism must grapple with how to determine the relevant polity.<sup>155</sup>

151. Professors Rubin and Feeley suggest that only these kinds of democratic considerations, not utilitarian concerns, are relevant to “federalism.” They argue that utilitarian considerations focused on achieving effective management are about “decentralization,” not about federalism, and they would limit the term “federalism” to contexts where the issue is the capacity of states to articulate substantive values that differ from the federal government’s values. Edward L. Rubin & Malcolm Feeley, *Federalism: Some Notes on a National Neurosis*, 41 UCLA L. REV. 903, 910–13 (1994). This Article takes a broader view of the federalism discussion and considers both utilitarian and democratic process issues as issues of “federalism.”

152. See, e.g., Stewart, *supra* note 11, at 1210 (articulating self-determination governance value).

153. See, e.g., Richard Briffault, *The Local Government Boundary Problem in Metropolitan Areas*, 48 STAN. L. REV. 1115, 1123–24 (1996) (discussing participation value).

154. See, e.g., Barry Friedman, *Valuing Federalism*, 82 MINN. L. REV. 317, 386–87, 401–02 (1997) (describing federalism value that focuses on meeting a diversity of citizen preferences); Merritt, *supra* note 15, at 1574 (observing how decentralized authority provides citizens with choices and allows for the expression of “multiple social values”); Ryan, *supra* note 138, at 612–14 (describing how decentralized governance structures enhance the expression of diverse views).

155. See generally JONATHAN LEVINE, ZONED OUT: REGULATION, MARKETS, AND CHOICES IN TRANSPORTATION AND METROPOLITAN LAND-USE 42 (2006) (stating that, notwithstanding an ostensible preference for local decisionmaking, “any geographic aggregation in a democratic system includes some dimension of the people’s will and excludes others”); Esty, *supra* note 11, at 595 (observing that federalism debates must confront the “choice of public” issue, recognizing that those who are not immediately present could nonetheless have deep concerns about local choices); Rubin & Feeley, *supra* note 151, at 948–49 (stating that “[d]etermining the identity of the polity to which one speaks necessarily precedes resolution of questions about the desires or interests of its citizens”).

Government accountability is another central theme in the federalism literature.<sup>156</sup> One issue is how best to foster government responsiveness to citizen preferences. Some scholars argue that decentralized power will promote responsiveness because it creates inter-jurisdictional competition for citizens, and local governments will do their citizens' bidding to keep them from "exiting" to other jurisdictions.<sup>157</sup> A second accountability issue is the degree to which citizens can easily trace relevant government actors and hold them accountable for their decisions.<sup>158</sup> This accountability concern is revealed in the Supreme Court's "anti-commandeering" cases, in which the Court has found that federal laws requiring states to act are unconstitutional because they let Congress avoid direct accountability for its own decisions.<sup>159</sup>

### 3. Prevention of Tyranny and Enhancement of Liberty

Another key theme in federalism theory is a fear of government power. Federalism theorists argue that the Constitution's federalist structure shares power between the federal government and the states to reduce the risk of one level of government exerting tyrannical powers over citizens and to enhance liberty.<sup>160</sup> Preventing tyranny and enhancing liberty implicate two distinct issues. One is the distribution of power that will best protect individual and citizen rights.<sup>161</sup> Another is the autonomy of jurisdictional units themselves, particularly state and local governments.<sup>162</sup>

156. See Ryan, *supra* note 138, at 606 (describing "accountability" as a central federalism value); Friedman, *supra* note 154, at 394–95.

157. See Esty, *supra* note 11, at 608 (describing how citizen exit generates more responsive government); Friedman, *supra* note 154, at 387; Ryan, *supra* note 138, at 614 (same).

158. See Davidson, *supra* note 131, at 1007 (noting the federalism argument that "clear lines of authority prevent abuse of power by reinforcing political accountability").

159. See SHAPIRO, *supra* note 138, at 67–69 (discussing *New York v. United States*, 505 U.S. 1444 (1992), and the accountability concerns raised by federal requirements that commandeered state regulatory processes to make states responsible for radioactive wastes).

160. See RYAN, *supra* note 11, at 39–44; Rubin & Feeley, *supra* note 151, at 927–28 (suggesting that the framers and recent federalism advocates were motivated by the desire to restrict federal power and promote liberty); cf. Davidson, *supra* note 131, at 1007 (describing federalism argument that giving states power "serves as a check on the potential abuse of federal power").

161. See SHAPIRO, *supra* note 138, at 50.

162. See Barron, *supra* note 122, at 379–80. This version of liberty is evident in the cases prohibiting the federal government from "commandeering" state governments by requiring them to undertake regulatory actions. See Friedman, *supra* note 154, at 364; see also SHAPIRO, *supra* note 138, at 58–75 (discussing value of preserving and protecting state autonomy and sovereignty).

Anti-tyranny arguments do not provide a clear answer for or against centralized power. Some theorists argue that the framers dispersed power to the states in order to avoid overbearing federal control.<sup>163</sup> But the Framers also recognized the risk of oppressive state measures and explicitly extended power to the federal government to check state power.<sup>164</sup> Professor Ryan has labeled this value the “checks and balances” theory of federalism.<sup>165</sup> A key dispute is whether this checking function is best achieved by exclusive realms of power that prevent substantive incursions from other levels of government<sup>166</sup> or by multilevel governance structures that allow one level to check the other through direct interaction.<sup>167</sup>

#### 4. Incongruity and Conflict Among Federalism Values

As Professor Erin Ryan has artfully elaborated, federalism values can be incongruous; conflicts among them are possible if not probable.<sup>168</sup> For example, pragmatic and democratic values could be in tension; the most efficient jurisdictional arrangement might not adequately reflect the democratic will.<sup>169</sup> Even more dramatically, jurisdictional arrangements to foster the democratic will and support majoritarian decision-making could conflict with arrangements designed to promote the protection of individual liberties. An exploration of federalism values will not provide simple answers to jurisdictional questions. Ultimately, decision-makers must confront the tensions among federalism values and

163. See Merritt, *supra* note 15, at 1573; Rubin & Feeley, *supra* note 151, at 928–29. This fear of overriding national control over states and citizens has been expressed in cases invalidating federal laws like *Gregory v. Ashcroft*, 501 U.S. 452 (1991), which held that a federal statute did not apply to state officials.

164. See SHAPIRO, *supra* note 138, at 17–24 (describing how constitutional provisions allocating federal and state power did not envision unfettered state sovereignty).

165. Ryan, *supra* note 138, at 602.

166. See *Gregory*, 501 U.S. at 458–59; Ryan, *supra* note 138, at 604.

167. See Glicksman & Camacho, *supra* note 133, at 52; Ryan, *supra* note 138, at 605. Professors Rubin and Feeley argue that cooperative federalism programs offer “[a]ll the advantages associated with power dispersion” by providing multiple sources for standards, subjecting standards to debate, and decreasing arbitrariness and corruption. They argue that cooperative federalism arrangements “thereby expand liberty.” Rubin & Feeley, *supra* note 151, at 933–34.

168. RYAN, *supra* note 11.

169. Ryan, *supra* note 138, at 626–28; cf. Camacho & Glicksman, *supra* note 133, at 31 (discussing tradeoffs in the values relevant to determining the best allocation of government authority).

make value choices.<sup>170</sup> And in making those value choices, decision-makers will inevitably consider not only the federalism values discussed here but substantive policy values as well, a parameter addressed explicitly below in Section G of this Part.

#### D. Pragmatic Efficacy

The first key federalism value focuses on pragmatic effectiveness. Relevant considerations include what governance structure will lead to the most effective adaptation policies, as well as what governance structure will lead to the optimal degree of government intervention.

##### 1. Pragmatic Arguments for Local Control

Many of the arguments for local control over land use are premised on the assumption that local land-use measures respond to local problems. The land-use implications of adaptation appear, at first blush, to present quintessentially local concerns. Flood, fire, infrastructure collapse, housing, and water shortages are all intensely immediate experiences. Moreover, where the response to these impacts requires land-use measures like development bans or building codes, the measures themselves have critical local implications. While global climate change is caused by global emissions and will cause global consequences, many consequences and the responses to them will be manifested locally.<sup>171</sup>

Given the high degree of local variation, local governments will know more about the direct impacts of climate change than larger jurisdictional levels. For example, they are more familiar with likely flood areas, have information on populations most likely to be impacted by heat waves, and can identify the areas most vulnerable to wildfire. In addition to having greater knowledge about the on-the-ground consequences of climate change, local governments will be more knowledgeable about the positive and negative

170. See Friedman, *supra* note 154, at 385 (observing the importance of valuing and accommodating a wide range of federalism values, not just efficiency); see generally RYAN, *supra* note 11, at 181–264 (describing how government institutions have balanced competing federalism values).

171. See NAT'L RESEARCH COUNCIL, *supra* note 5, at 55 (observing that “impacts and adaptation are often local issues” because the actual impact is a function of exposure as it interacts with locally-contingent features and capacity to respond); Farber, *supra* note 14, at 260 (noting that “state and local governments are in some ways the natural ‘first responders’ to climate change”).

consequences of measures to address those impacts.<sup>172</sup> Sensitive decisions about housing preservation and development, open space conservation or creation, and other land-use adaptation measures require a deep grounding in a given region's history, culture, and trends.

The high degree of local variation and superior local knowledge also means that local governments can more effectively and efficiently design responses than more centralized authorities. State and federal agencies would not have the capacity to design adaptation land-use policies to address every unique local adaptation problem or would have to develop a massive decentralized local infrastructure to do so.<sup>173</sup> According to the argument for local control, only local officials have the existing capacity to tailor local land-use laws to their jurisdiction's particular environmental and socioeconomic parameters.<sup>174</sup> In addition, as new localized circumstances arise, local governments have the capacity to be more responsive. For example, as increased precipitation leads to increased flooding, local governments could rezone developable land or apply construction and building code requirements in new areas as needed. Federal or state governments are unlikely to have the capacity to respond to such localized impacts. Moreover, smaller entities with more focused responsibilities are likely to be more nimble and experience less inertia than large bureaucracies.<sup>175</sup>

Local control also offers laboratories of invention for land-use related climate change adaptation measures. For example, efforts to restrict and shift development to reduce climate risks are likely to present significant legal and political challenges as local

172. See Buzbee, *supra* note 12, at 94 (explaining how local governments have control over land use because their local knowledge gives them the requisite institutional competence); Ostrow, *supra* note 10, at 1442 (discussing local governments' greater knowledge of local conditions and the implications of land use measures).

173. Cf. Trisolini, *supra* note 10, at 736 (observing, in the climate mitigation context, that the federal government could not manage the implementation of land use, building code, and other local measures to reduce greenhouse gases).

174. See Glicksman, *supra* note 10, at 1172; see generally Briffault, *supra* note 153, at 1124 (observing the capacity of local governments to efficiently address "distinctive local conditions and preferences"); Butler & Macey, *supra* note 148, at 49–50 (describing federal government's inability to design environmental policies that adequately address local variations); Davidson, *supra* note 131, at 1008, 1011; Esty, *supra* note 11, at 606–07, 617.

175. See Adelman & Engel, *supra* note 146, at 1826–27 (noting the greater inertia and reduced responsiveness associated with federal control); Craig Anthony Arnold & Lance H. Gunderman, *Adaptive Law and Resilience*, 43 ENVTL. L. REP. 10426, 10434 (2013) (observing that decentralized actors are likely to be more agile than a single centralized agency).

governments potentially unsettle the status quo; jurisdictions may well experiment with new approaches to civic planning and with new legal techniques, such as rolling easements, staged development moratoria, or ways of conditioning post-disaster rebuilding to achieve long-term resilience. This value is significant regardless of local variation; in fact, it is most valuable where jurisdictions are similar, not different, so that one jurisdiction's experiment is capable of application to other similar jurisdictions. A single federal approach risks policy stagnation with little learning and evolution. In addition, having a multiplicity of local strategies contains the consequences if any one strategy were to fail.<sup>176</sup>

Nor does a need for uniformity provide a countervailing justification for more centralized control. Uniformity is desirable where national or international actors would be frustrated by a multiplicity of differing approaches.<sup>177</sup> But in the land-use context we have long accepted highly differentiated and locally tailored zoning and building requirements, so the need for uniformity does not present a compelling argument against continued local control over adaptation-related land-use measures.

According to Butler and Macey's "Matching Principle," to the degree that climate impacts and land-use measures to address them are local, local governments are also best-positioned to provide the optimal *level* of adaptation response. They argue that, where local governments can fully and efficiently address the range of costs and benefits associated with local environmental problems, local governments will find the right balance and federal control is unjustified.<sup>178</sup> Local control over local environmental problems "allows decisions to be made by the representatives of the citizens who benefit the most from and pay the most for higher environmental quality."<sup>179</sup> Local polities will therefore avoid both under-regulation (due to the inability to appreciate the benefits of

176. See Butler & Macey, *supra* note 148, at 53; Ryan, *supra* note 11, at 617 (quoting Justice Brandeis's famous statement that "a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments *without risk to the rest of the country.*") (emphasis added by Ryan).

177. See, e.g., Ann E. Carlson, *Federalism, Preemption, and Greenhouse Gas Emissions*, 37 DAVIS L. REV. 281, 313–14 (2003) (describing nationwide industries' desire for uniformity).

178. Although Butler and Macey focus on pollution control, the Matching Principle is relevant to climate adaptation because adaptation similarly requires government decisions that affect the environment. Adaptation policies are likely to impose restrictions or require expenditures that, like pollution control decisions, require the governing body to weigh the costs and benefits of the contemplated measures.

179. *Id.* at 31.

action) and overregulation (which can occur when jurisdictions externalize the costs of regulation).<sup>180</sup> Applied to the climate change adaptation context, this means that, to the extent that climate impacts and the consequences of land-use measures to address them are local, local governments are arguably best positioned to assess the trade-offs between risking climate impacts and incurring the limitations and costs of adaptation measures. If local measures reduce climate impacts, then they can realize the benefits of action and therefore have sufficient motivation to act.<sup>181</sup> At the same time, they are well-positioned to understand the costs of land-use controls, including limited or foregone development. To the extent impacts are local, then, arguably, local governments are well-positioned to decide on the appropriate degree of control.

## 2. Pragmatic Limits to Local Control

Upon further inquiry, however, it becomes apparent that pragmatic efficacy considerations do not justify exclusive reliance on local government land-use adaptation measures. As described more fully below, even where the impacts are local, numerous collective action impediments are likely to unduly inhibit local action. In addition, local action or inaction could have external impacts on other jurisdictions. Moreover, many climate impacts will not be exclusively local, necessitating a larger jurisdictional role to manage the consequences and achieve the right degree of adaptation response. Similar weaknesses afflict local control over land use in other environmental contexts, like water and air pollution.<sup>182</sup> Because the scale of climate impacts will dramatically

180. Stewart, *supra* note 11, at 1219–20 (1976) (suggesting that local decisionmakers can better address the tradeoffs between the costs and benefits of regulation and avoid the risk of federal overregulation).

181. Local adaptation measures are more likely to be adopted than local mitigation measures because, in contrast to adaptation, local governments are unlikely to experience direct and commensurate benefits from climate mitigation measures to reduce GHGs. *See supra* note 13 (discussing why local governments are more likely to adopt climate adaptation than climate mitigation measures). Notwithstanding the apparent irrationality of local action to reduce GHG emissions, many local governments are, in fact, engaging in climate mitigation measures. *See State and Local Climate and Energy Program, Local Examples*, ENVTL. PROT. AGENCY (Aug. 10, 2013), <http://www.epa.gov/statelocalclimate/local/local-examples/index.html>; Engel & Orbach, *supra* note 13; Kaswan, *supra* note 13, at 285–88; Hari M. Osofsky & Janet Koven Levit, *The Scale of Networks?: Local Climate Change Coalitions*, 8 CHI. J. INT'L. L. 409 (2008); Trisolini, *supra* note 10, at 675–77. These jurisdictions experience a variety of political benefits and, in some instances, contemplate net economic and other co-benefits. *See Kaswan, supra* note 13, at 289–90.

182. *See, e.g., Tarlock, supra* note 12.



exceed prior environmental harms, however, continued reliance on local land-use authority could have increasingly severe consequences.

a. Collective Action Barriers to Local Action

The fact that climate impacts will be experienced locally does not mean that local governments will have the means or will to respond adequately. As Professor Glicksman and other federalism scholars have articulated,<sup>183</sup> the collective action barriers described above impede desirable local adaptation measures, including inadequate information, insufficient funds, “race-to-the-bottom” competition among jurisdictions, and the risk of free-riding.

Although local governments are knowledgeable about local conditions, needs, and preferences, a significant impediment to local action will be their lack of information about the latest climate science and their lack of access to tools that allow them to assess localized short- and long-term implications.<sup>184</sup> Moreover, notwithstanding the tremendous variety of adaptation needs that local governments will face and the impossibility of developing a suitably tailored national adaptation plan, local governments will experience many common challenges. Information sharing among jurisdictions would benefit local initiatives.<sup>185</sup>

Insufficient finances present another highly significant impediment to local action. Many local jurisdictions do not have the money to engage in either adaptation planning or implementation measures, particularly if implementation requires costly measures such as purchasing vulnerable land, moving or protecting significant infrastructure, and relocating threatened communities.<sup>186</sup> While some large cities might have significant financial resources, most local governments will be unable to

183. See Farber, *supra* note 14, at 266–69; Glicksman, *supra* note 10, at 1176–86.

184. See NAT’L RESEARCH COUNCIL, *supra* note 5, at 75 (noting that states have identified information needs for coastal adaptation planning).

185. See generally Alejandro E. Camacho, *Adapting Governance to Climate Change: Managing Uncertainty Through a Learning Infrastructure*, 59 EMORY L.J. 1 (2009) (noting the importance of ongoing information acquisition to adaptation).

186. See NAT’L RESEARCH COUNCIL, *supra* note 5, at 75 (observing that federal funding under the Coastal Zone Management Act programs is insufficient to fund large-scale coastal adaptation programs); Glicksman, *supra* note 10, at 1182 (noting that even if states have incentives to act, they lack necessary resources). Estimates for relocating the 400-person Alaskan tribal village of Kivalina range from 95 to 400 million dollars. See Randall S. Abate, *Public Nuisance Suits for the Climate Justice Movement: The Right Thing and the Right Time*, 85 WASH. L. REV. 197 (2010).

finance necessary adaptation planning and implementation without an infusion of outside funds.<sup>187</sup> The federal government has a larger capacity to pool federal resources and distribute them to the communities requiring adaptation assistance.<sup>188</sup>

Local governments contemplating adaptation measures could also find themselves in a race-to-the-bottom that could chill desired control measures.<sup>189</sup> For example, although local governments might believe that floodplain restrictions or stricter building codes would be desirable, they might fear that establishing such restrictions would chill development.<sup>190</sup> Jurisdiction after jurisdiction could spiral into a race-to-the-bottom, with all avoiding desired land-use regulations due to the fear that they would lose development to less restrictive communities.<sup>191</sup> While some scholars describe this dynamic as healthy competition that allows jurisdictions to offer differing mixes of economic and environmental conditions, suiting a variety of preferences,<sup>192</sup> it is likely that the threat of losing economic development altogether could force some local governments to adopt fewer controls than

187. See CARMIN ET AL., *supra* note 109, at 20–22.

188. Whether the federal government *should* provide such financing is an important question, which I address in the section sketching a multilevel governance approach. See *infra* notes 339 to 348 and accompanying text. In this section, I focus on whether insufficient finances present an impediment to otherwise desirable local action, not the policy arguments for and against federal financing.

189. Scholars have identified the “race-to-the-bottom” as a significant impediment to otherwise appropriate local regulation, and described it as a significant factor in the federalization of environmental law. See Esty, *supra* note 11, at 603–04; Percival, *supra* note 131, at 1150 (describing “race” that deterred worker safety measures), at 1157 (describing “race” that deterred adequate solid waste controls), 1162 (describing federalization of water pollution controls to reduce interstate competition); Stewart, *supra* note 11, at 1211–12.

190. See EDWARD L. GLAESER & MATTHEW KAHN, POLICY BRIEF: THE GREENNESS OF CITIES 11 (2008), available at [http://www.hks.harvard.edu/var/ezp\\_site/storage/fckeditor/file/pdfs/centers-programs/centers/taubman/policybriefs/greencities\\_final.pdf](http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/centers/taubman/policybriefs/greencities_final.pdf) (noting that environmental land use measures could shift development to less-regulated jurisdictions); Hudson, *supra* note 10, at 2002 (providing examples of local jurisdictions’ allowing (and facilitating) floodplain development due to fears that they would otherwise lose economic development). Hudson quotes a Missouri councilwoman who stated that, “in the past . . . [we] hugged a lot of trees, and we’ve lost out on a lot of development. We’re going to be surrounded by businesses while we’re looking at a flood plain.” *Id.*

191. See Farber, *supra* note 14, at 267; Glicksman, *supra* note 10, at 1186.

192. See Butler & Macey, *supra* note 148, at 42–45; Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race-to-the-Bottom” Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1211 (1992).

they or their citizens desire and lead to less than optimal adaptation.<sup>193</sup>

Free-riding is another collective action impediment that could arise in the land-use adaptation context.<sup>194</sup> Some local governments might hope to benefit from neighboring jurisdictions' adaptive measures without investing in measures themselves. For example, a downstream jurisdiction might hope that upstream communities would restrict floodplain development and restore wetlands, thus lessening the downstream community's flood risk without that community's having to restrict its own development.

Thus, even where the impacts and measures to address them are primarily local, collective action impediments such as a lack of climate science information, a lack of financial and technical resources, race-to-the bottom dynamics, and free-riding could impede desirable local adaptation measures. These impediments could prevent a local government from implementing effective adaptation measures and lead to a less-than-optimal level of adaptation.

#### b. Local Mismatches

The fact that the consequences of climate change will be intensely local does not mean that they will be purely local. Butler and Macey's Matching Principle suggests a preference for local decision-making, but it acknowledges that larger jurisdictional involvement is necessary when there are externalities that a local government is unlikely to consider in its decision-making or when the scale of the problem transcends local boundaries.<sup>195</sup>

Local action and inaction to address climate impacts could have external consequences for those outside a given jurisdiction. Federalism theorists uniformly agree that the presence of external impacts provides a powerful justification for engagement by larger

193. See, e.g., Kirsten H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "To the Bottom"?*, 48 HASTINGS L.J. 271, 303-04 (1997) (providing empirical data showing that states fear the impact of environmental regulations on economic investment); Esty, *supra* note 11, at 631-34 (explaining why regulatory competition between jurisdictions is likely to be skewed in favor of economic interests and against environmental concerns).

194. See generally Engel & Orbach, *supra* note 13, at 120, 129 (describing why actors who cannot reap the direct benefits of their actions may be inclined to "free ride" on others' efforts).

195. Butler & Macey, *supra* note 148, at 26.

jurisdictional levels.<sup>196</sup> As Professor Ashira Ostrow has observed, federal incursions on local land-use authority have historically been most common when local action or inaction generates adverse cumulative effects that extend beyond local borders.<sup>197</sup>

Local action to address local impacts could have external impacts. One jurisdiction's flood control measures could increase flood risks in a neighboring jurisdiction.<sup>198</sup> Or one jurisdiction's coastal armoring could increase coastal erosion in neighboring areas.<sup>199</sup>

A local jurisdiction's inaction creates even more dramatic external impacts. One impact stems from an existing federal commitment: at present, the federal government has a long tradition of assisting state and local governments with disaster recovery. That preexisting tradition means that, if local governments fail to take adequate adaptation measures and suffer damage from disasters for which they failed to adequately prepare, the federal government will almost certainly provide substantial recovery funds.<sup>200</sup> The federal government recently authorized over \$50 billion in federal expenditures for recovery from Hurricane Sandy.<sup>201</sup> In addition, because federal flood insurance rates are subsidized, post-disaster insurance payments to policyholders are partially covered by taxpayers. Given the inevitability of federal support for disaster recovery and on-going federal subsidies for flood insurance, costs to taxpayers are a significant externality arising from inadequate local measures to

196. See, e.g., SHAPIRO, *supra* note 138, at 40–42; Esty, *supra* note 11, at 587; Stewart, *supra* note 11, at 1215–16, 1227.

197. See Ostrow, *supra* note 10, at 1408–20, 1421, 1438. For example, Professor Ostrow details how federal law has intervened to address local governments' failure to site affordable housing, *id.* at 1410–13, and to temper local governments' resistance to cell phone tower siting, *id.* at 1418–19.

198. See Farber, *supra* note 14, at 266; Glicksman, *supra* note 10, at 1184.

199. See Verchick & Scheraga, *supra* note 54, at 235, 241.

200. See Hudson, *supra* note 10, at 1996–97. Of course, one could argue that federal bailouts are not an externality caused by local governments; federal payments are a choice made by the federal government, not a consequence imposed by the reckless state or local government. Because the commitment to aid disaster victims is so strong, however, I interpret a local government's failure to prepare as taking advantage of the federal government's generosity and, in that way, creating an externality.

201. See John Rudolph, *Sandy Bill Passes Senate, Measure Heads to White House for Obama Signature*, HUFFINGTON POST (Jan. 28, 2013), [http://www.huffingtonpost.com/2013/01/28/sandy-bill\\_n\\_2569312.html](http://www.huffingtonpost.com/2013/01/28/sandy-bill_n_2569312.html).

avoid disaster and justify a federal role in ensuring adequate local adaptation.<sup>202</sup>

Local inaction creates additional external impacts.<sup>203</sup> One jurisdiction's development of vulnerable land that is later flooded could generate storm refugees who overwhelm nearby communities.<sup>204</sup> One jurisdiction's failure to control the location of industrial or waste sites could contaminate floodwaters reaching neighboring areas.<sup>205</sup> One jurisdiction's failure to site and protect infrastructure (such as electricity lines, cell phone towers, roads, rail lines, or airports) could adversely impact those outside the community who rely on that infrastructure.<sup>206</sup>

Local action and inaction to address locally-experienced climate impacts not only create indirect external consequences; the scale of the climate impacts themselves also transcends local impacts.<sup>207</sup> Butler and Macey note that, if an environmental problem extends beyond a local government's boundaries, then the host jurisdiction is unlikely to regulate the problem optimally because it does not experience the full problem and would not receive the full benefits of regulation.<sup>208</sup> Relatedly, as Professor William Buzbee has noted,

202. See Hudson, *supra* note 10, at 1998.

203. Professor Ryan details how Hurricane Katrina caused extensive external impacts, suggesting that a local government's failure to address disaster risks could have large-scale ripple effects. See RYAN, *supra* note 138, at 591–93.

204. See Farber, *supra* note 14, at 267 (“As illustrated by Hurricane Katrina, major disasters may also displace large populations, imposing costs on communities outside their state of origin.”).

205. See Alice Kaswan, *Domestic Climate Change Adaptation and Equity*, 42 ENVTL. L. REP. 11125, 11130 (2012) (describing indirect hazards created by flooded industrial and waste sites).

206. See Farber, *supra* note 14, at 267; Glicksman, *supra* note 10, at 1185; see also NAT'L RESEARCH COUNCIL, *supra* note 5, at 79 (noting that the impacts of Hurricane Katrina extended beyond the immediate coastal region because New Orleans is a hub for international trade and national rail traffic), 83 (describing the national significance of infrastructure located in the vulnerable Gulf Coast region); Hudson, *supra* note 27, at 50–51 (describing the importance of Louisiana and its ports to national commerce and observing that coastal land loss threatens not only Louisiana's well-being, “but also the well-being of the country”).

207. The problem of mismatches between an environmental problem and jurisdiction occurs frequently. Professor Arnold describes the mismatch between local control over land use and water quality in Craig Anthony (Tony) Arnold, *Clean-Water Land Use: Connecting Scale and Function*, 23 PACE ENVTL. L. REV. 291, 301–03 (2006).

208. See Butler & Macey, *supra* note 148, at 36. As Professor Glicksman explains, the presence of negative transboundary externalities justifies a federal role because states in which the harmful activity is located can enjoy the benefits of the activity while exporting the harm, and thus have less incentive to control the harm. Meanwhile, the state experiencing the externalized harm has no jurisdiction to control it. See Glicksman, *supra* note 10, at 1176–77; see also Esty, *supra* note 11, at 593, 624.

where the social ill fails to match an existing political or legal regime, a “regulatory commons” emerges and leads to a systemic risk of under-regulation.<sup>209</sup>

The scale of climate impacts and the measures necessary to address them extend beyond local jurisdictions.<sup>210</sup> The “match” is often to a larger jurisdictional level. For example, river and coastal flooding caused by extreme precipitation or hurricanes is likely to affect entire regions of the nation, not just individual communities.<sup>211</sup> Although local governments can address certain dimensions of local risk by limiting development and imposing building codes requirements in risk-prone areas, a comprehensive response requires attention to the location of housing and infrastructure across metropolitan areas and beyond. The urban heat island effect is created in metropolitan areas—not just in particular local jurisdictions—and can be addressed only through regional land-use measures. If endangered species require migration corridors, those corridors must be developed regionally, not just locally. Local governments, divided between urban centers, suburban governments, and unincorporated settlements will be unable to adequately address many of the consequences of climate change without coordinated and integrated planning and implementation. Even where local governments have a vital interest, they recognize the need for coordination among local, state, and federal programs and across different interested agencies.<sup>212</sup>

209. William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1 (2003). Under-regulation is likely because jurisdictional mismatch makes it is more difficult for the affected public or interest groups to focus their political pressure, more difficult for policymakers to be held accountable (to receive credit or blame), and more difficult to obtain necessary information when the problem at issue does not match the policy makers’ jurisdictional control. *Id.* at 30–33.

210. *See id.* at 13 (“Global warming . . . confronts no matching or commensurate political or legal regime that, due to the regime’s geographical turf, subject responsibilities, or political constituency, is logically situated to take the lead and address global warming’s causes and anticipated harm.”). Professor Buzbee identifies numerous forms of “mismatch.” Climate change adaptation and land use measures to address them fall into two of the categories: (1) the environmental problem and government entity match, but the government’s actions could cause external harm, *see id.* at 24; and (2) the government entity is smaller or larger (here, smaller), than the underlying resource suffering the harm, *id.* at 25.

211. *See Hudson, supra* note 10, at 2020 (arguing that the intensity and broad scale of hurricanes, coupled with their significant national impact, “justifies greater federal inputs into mitigatory land-use planning.”).

212. *See Arroyo & Cruce, supra* note 98, at 588.

In sum, local governments are unlikely to adapt sufficiently on their own. Even where climate impacts are primarily local, there are systemic reasons why local governments might fail to engage in the optimal level of adaptation, including insufficient information and financial resources, the race-to-the-bottom, and free rider concerns. And in many instances, climate impacts and the measures to address them are not isolated and cannot be managed by local jurisdictions on their own. Local action or inaction could have negative externalities that local jurisdictions are unlikely to address adequately. Numerous climate impacts themselves extend beyond local boundaries and are beyond the control of individual jurisdictions.

### 3. Multilevel Governance and Pragmatic Efficacy

Whatever the value of predominantly local control over land use in the past, the pressures of climate change have changed the calculus for determining the most effective allocation of control. The foregoing analysis reveals that jurisdictional choices about governance over land-use adaptation measures present a complex pattern of advantages and disadvantages. A multilevel governance approach that integrates jurisdictional levels could retain the benefits of local control while providing key advantages associated with larger jurisdictional levels.<sup>213</sup> Moreover, multilevel engagement provides its own unique pragmatic governance benefits, and enables “a collaboration in which each level of government takes responsibility for what it can do best.”<sup>214</sup>

Multilevel governance could incorporate valuable features of local control while simultaneously addressing both the collective action constraints and external impacts that hamper local control. On a pragmatic level, local knowledge and the uniqueness of every setting require a continued vital role for local governments in basic land-use planning and zoning functions. However, dynamic multilevel governance could provide more effective adaptation responses. As described further in Part III, which provides a brief

213. See Buzbee, *supra* note 12, at 94 (stating that “[t]he optimal mix of federal, state, and local regulatory roles . . . inevitably changes over time as technological, environmental, market, and political changes occur”). Pragmatic actors, like the Association of State Floodplain Managers, have called for national leadership in floodplain and coastal areas management, urging the adoption of federal policies to be implemented by states and other sub-national institutions. See Hudson, *supra* note 10, at 2046–47.

214. Ryan, *supra* note 138, at 639 (describing argument in favor of cooperative federalism).

sketch of possible contours for a multilevel governance approach, the federal government could provide information, resources, and facilitate inter-jurisdictional coordination for impacts that transcend local borders.<sup>215</sup> The federal government is likely to have greater resources available, and having the federal government (or delegated state governments) collect and disseminate information could be more efficient than having every local government independently analyze impacts and explore the full range of adaptation responses. Minimum federal standards or guidelines in areas like floodplain development, building standards, or infrastructure siting could avoid the race to the bottom and prevent free-riding.<sup>216</sup> A federal role could also facilitate local laboratories of invention by providing information and resources for local experimentation and facilitating the sharing of information developed from such local initiatives.<sup>217</sup>

Multilevel governance itself provides inherent pragmatic benefits. The problem with pure local control over land-use decisions to address climate impacts is not just that climate impacts cross local boundaries, it is that climate impacts occur at a multiplicity of scales.<sup>218</sup> Multilevel governance recognizes that there is no way to coherently match climate harms with a single jurisdictional level, and it recognizes the multifaceted, multilevel nature of many climate impacts and the measures needed to address them.<sup>219</sup> For

215. See generally Hudson, *supra* note 10 (observing how fragmented and uncoordinated land use planning throughout the Mississippi River hinders land-use related disaster mitigation measures).

216. The federal government's approach to stormwater regulation provides a useful analogy. Because stormwater remains a significant source of water pollution, as pollutants wash off of land surfaces into water-bodies, the federal interest in clean water cannot be met without local control over the land uses that ultimately result in stormwater pollution. See RYAN, *supra* note 11, at 151–53. EPA, under its authority to regulate municipal stormwater discharges, has adopted minimum standards for municipal controls to reduce pollutants while leaving substantial discretion about how to do so to local governments. See *id.* at 153–55; ENVTL. PROT. AGENCY, STORMWATER PHASE II FINAL RULE: AN OVERVIEW (2005), available at <http://www.epa.gov/npdes/pubs/fact1-0.pdf>.

217. See Adelman & Engel, *supra* note 146, at 1824–25 (noting how the federal government can facilitate more localized regulatory innovations); Rubin & Feeley, *supra* note 151, at 925–26 (arguing that centralized mechanisms facilitate local experimentalism given local jurisdictions' risk aversion).

218. Cf. Arnold, *supra* note 207, at 320–21 (discussing the multiple scales in which water quality problems manifest).

219. As Professors Adelman and Engel note in their rejection of the Matching Principle's "traditional static optimization model," and "environmental problems are multifaceted." Adelman & Engel, *supra* note 146, at 1798–99; see also *id.* at 1814–15 (describing the multiple geographic and temporal scales of many environmental problems). Professor Ryan observes



example, floodplain development is simultaneously a local, regional, and national problem, with localized flooding, increased downstream flood risks, federal financial costs for disaster relief, and regional housing impacts when housing is destroyed.

Moreover, by creating links between local, federal (and possibly state) programs, multilevel governance provides an opportunity for dynamic engagement among levels of government. Such engagement could prompt federal, state, and local dialogue, dialogue that could lead to more carefully considered and effective regulatory outcomes.<sup>220</sup> Local players can learn from insights at the state and federal level, and vice versa.<sup>221</sup> A dynamic regulatory environment is more likely to prompt innovation and reflection than single-actor regulatory programs.<sup>222</sup> In addition, multilevel governance could provide vehicles for coordinating the information and needs of differing governmental levels in a manner that creates more effective communication and superior adaptation responses than would occur with an exclusively local or exclusively federal approach.

Finally, multilevel governance could provide a safety net against regulatory failures or inaction at any one level of government.<sup>223</sup> Advocates for polycentric governance have highlighted how diffusing authority across differing agencies and governance levels can lead to more resilient governance by diversifying risk.<sup>224</sup> Similarly, systems with some redundancy, for example shared

that many modern policy challenges, including environmental protection, national security, and telecommunications, fall into an “interjurisdictional gray area” that cannot be characterized as exclusively local, state, or federal. Ryan, *supra* note 138, at 567–96.

220. See Engel, *supra* note 11, at 171–73.

221. See generally Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW. U. L. REV. 1097 (2009) (describing the policy dynamism that emerges from federal programs that allow and promote state variations, as revealed in the context of motor vehicle emissions standards and regional cap-and-trade programs).

222. See SHAPIRO, *supra* note 138, at 77.

223. See RYAN, *supra* note 11, at 42 (discussing how simultaneous authority at multiple governance levels creates a “regulatory backstop” in the event that any one level of government fails to act); Camacho & Glicksman, *supra* note 133, at 52. Some argue the opposite: to the extent that multilevel governance leads to overlapping jurisdiction, with federal, state, and local jurisdiction over adaptation planning, the existence of other actors could chill the incentives for any one level to act and lead to a form of administrative free-riding, in which one level hopes that others will take action and blames other jurisdictions for failures to act. See *id.* at 49. However, these risks could be minimized by a federal program that established clear and distinct roles for sub-national jurisdictions, or by coordination provisions that allowed differing levels to monitor and provide a “check” on other levels’ performance. See *id.* at 55.

224. See Arnold & Gunderman, *supra* note 175, at 10433.

responsibility for land-use planning, are more resilient than systems that rely solely on a single government entity.<sup>225</sup> For example, a federal requirement that state and local governments engage in adaptation planning could involve planning at multiple scales and could also include back-up provisions that allow for state or federal planning and implementation if local governments fail to act.<sup>226</sup>

Multilevel governance's regulatory dynamism does create certain pragmatic challenges. Federal parameters for local planning would add one more layer to the planning calculus, creating the kinds of administrative costs and potential inefficiencies potentially associated with shared substantive jurisdiction.<sup>227</sup> Nonetheless, shared substantive jurisdiction would not necessarily result in overlapping jurisdiction (and its potential inefficiencies) if the federal and sub-national levels engaged in different functions.<sup>228</sup> For example, the federal government could establish adaptation planning and control parameters, while local governments develop and implement specific plans or control measures, reducing duplication.

To the extent federal land-use parameters and federal review of local or state planning do lead to some duplication and some greater administrative costs, those costs could nonetheless be justified if the multilevel governance provided superior adaptation responses and, as noted above, provided a safety net against government failure. Some tradeoff in administrative efficiency could be worth achieving more effective multijurisdictional adaptation responses.<sup>229</sup>

In sum, multilevel governance is more likely to result in effective land-use adaptation measures than an exclusive reliance on local control. Given intensely local manifestations and local knowledge of the implications of action, a local role in adaptation is essential. But state and federal government action will be necessary to overcome local obstacles, enable local action, and to address the

225. *See id.*

226. The Clean Air Act contains such back-up federal authority if states fail to develop acceptable implementation plans for meeting air quality standards. 42 U.S.C. §7410(c)(1) (2012).

227. *See Arnold, supra* note 207, at 307–08 (observing the administrative complexity that could arise if regional agencies controlled local land use decisions impacting water quality); Camacho & Glicksman, *supra* note 133, at 48.

228. *See id.* at 64.

229. *See Percival, supra* note 11, at 1182 (observing that “efficiency is not the primary value served by federalism.”).

external costs and benefits of adaptation land-use measures that local governments could fail to integrate.

#### E. Democratic Theory Principles

Arguably, even if multilevel governance were justified on pragmatic grounds, democratic principles could justify continued local control.<sup>230</sup> Land-use law provides a key mechanism through which communities establish their sense of place and plays a key role in mediating local power dynamics.<sup>231</sup> From a democratic theory perspective, central issues are the capacity for participation and self-determination, as well as government accountability.

##### 1. Democratic Arguments for Local Control

Local control over land use is supported by the general principle of “subsidiarity,” which holds that government decisions should be made by the smallest jurisdictional level possible.<sup>232</sup> Advocates for local control argue that local decision-making enables self-determination and allows citizens to express their views in government policy.<sup>233</sup> That capacity for local self-determination could be seen as particularly important in the land-use context because land-use decisions impact local residents more profoundly than many other kinds of governmental decisions.<sup>234</sup> Political participation in local land-use decisions implicates personal economic interests given the impact of land-use decisions on home value,<sup>235</sup> and it implicates important personal and social interests given the importance of land-use decisions in defining the character of a community.<sup>236</sup> For example, adaptation-related land-use decisions in vulnerable coastal areas must address such critical questions as what neighborhoods or uses to protect, where and how

230. See Friedman, *supra* note 154, at 388 (arguing that efficiency is not the only relevant federalism value).

231. See Arnold, *supra* note 10, at 462–73 (describing land use system’s role in defining place) and 473–77 (describing land use system’s role in mediating local power dynamics).

232. See Ryan, *supra* note 138, at 620.

233. See Briffault, *supra* note 153, at 1123–24; Buzbee, *supra* note 12, at 92; Ryan, *supra* note 138, at 611; Stewart, *supra* note 11, at 1210.

234. See Arnold, *supra* note 207, at 329–30.

235. See WILLIAM A. FISCHER, THE HOMEVOTER HYPOTHESIS: HOW HOME VALUES INFLUENCE LOCAL GOVERNMENT TAXATION, SCHOOL FINANCE, AND LAND USE POLICIES (2001).

236. See Arnold, *supra* note 207, at 329–30.

to adjust to risk, what areas to abandon—and how. Such decisions go to the heart of a community's identity and existence.

The argument for local control posits that individual citizens can more easily and effectively participate in local decision making.<sup>237</sup> They are more likely to have direct contact with and access to local decision-makers.<sup>238</sup> Local decision-making substantially reduces the logistical challenges of participating in hearings and attending meetings. The possibility of greater access and influence itself encourages more engaged and active citizens.<sup>239</sup>

Theorists argue that decentralized decision-making also enhances the likelihood that diverse views will find expression in local law and enhances the choices available to meet citizen preferences. Assuming that views differ locally and regionally, the diverse views of distinct areas can be reflected in local law.<sup>240</sup> If decisions were instead made at a larger scale, those distinct local views could be lost in the shuffle and fail to find political expression.<sup>241</sup> Assuming that different jurisdictions have chosen to respond to adaptation challenges in differing ways, citizens will then have a range of response options to choose from, increasing their ability to satisfy their unique preferences.

According to arguments for local control over land use, local control also enhances government accountability. Decentralized decision-making means that citizens can “exit” to a more appealing jurisdiction if their government fails to meet their preferences. Governments facing the threat of citizen exit are more likely to be responsive and accountable to their citizenry.<sup>242</sup> They are also likely to compete for residents and businesses. Arguably, that competition and accountability could avoid the stagnation that would occur if there were only one monopolistic legal regime. Moreover, some argue that local officials are likely to be more visible and accessible than officials at higher jurisdictional levels, increasing their accountability.<sup>243</sup>

237. See Briffault, *supra* note 153, at 1123–24; Bronin, *supra* note 10, at 239; Buzbee, *supra* note 12, at 123–24; Friedman, *supra* note 154, at 389–90; Ostrow, *supra* note 10, at 1442–43; Ryan, *supra* note 138, at 611–12.

238. See SHAPIRO, *supra* note 138, at 93 (discussing greater opportunities for personal participation in small states, relative to participation in federal processes).

239. See Davidson, *supra* note 131, at 1007 (suggesting the “civic republican” virtues of local decision-making to encouraging citizens’ democratic engagement and participation).

240. See SHAPIRO, *supra* note 138, at 95–96

241. See Ryan, *supra* note 138, at 612–14.

242. See Esty, *supra* note 11, at 608; Ryan, *supra* note 138, at 614.

243. See SHAPIRO, *supra* note 138, at 91–92; Friedman, *supra* note 154, at 395.

## 2. The Democratic Limits of Local Control

That said, democratic theory arguments are not unidirectional in favor of local decision-making over land-use concerns. First, it is not always clear that local decision-making will best represent citizen views. Second, a number of factors could distort local decision-making processes. Third, federal parameters could help, not hurt, local governments' capacity to realize their preferences if they mitigate the race to the bottom. And, finally, the government accountability benefits associated with local decision-making may not always be realized.

### a. Local Decision-Making Does Not Always Best Represent "Citizen" Views

If democratic decision-making is intended to express the collective interest, then it is important to define the relevant "collective."<sup>244</sup> Local land-use decisions can cumulatively affect state, regional, or federal interests. Local decision-making that serves the interests of a local community but fails to reflect the collective interests of the larger community could undermine regional, state, or federal interests. While larger decision-making units might blunt the expression of local values,<sup>245</sup> they might better facilitate the democratic preferences of the larger constituencies impacted by local decision-making. Rubin and Feeley argue that the nation is a valid political community and that it "constitute[s] our political sense of self and the arena in which our basic normative positions about government must be argued and resolved."<sup>246</sup> They state further that: "If 'we'—the political community of the United States—decide upon a particular course of action, federalism should not constrain its implementation."<sup>247</sup> Thus, if the federal government determines that land-use planning should take future climate change into account because of the

244. For example, the New Jersey Supreme Court explicitly recognized that local governments' authority to regulate in pursuit of the "general welfare" referred not only to each local municipality's welfare, but to the general welfare of state's residents. *See S. Burlington Cnty. N.A.A.C.P. v. Mount Laurel Twp.*, 336 A.2d 713, 726 (N.J. 1975).

245. Butler and Macey, in contrast, argue that expressions of national policy are inappropriate because they could impose unwanted values on some local communities. Butler & Macey, *supra* note 148, at 51–53.

246. Rubin & Feeley, *supra* note 151, at 949. They argue that "national actions are 'our' actions; they are decisions of the polity to which we all belong, and which constitute our decision-making arena." *Id.* at 951.

247. *Id.* at 948.

strong federal interest in national resilience and concerns about the economic and social upheaval that could result from a failure to do so, that is a democratically legitimate collective decision, even if not shared by every locality.

Moreover, to the extent that local decision-making is justified based upon its superior capacity to allow citizens to realize their preferences, the question of what constitutes true preferences, and what jurisdictional level best reflects those preferences, is more complicated than it might first appear.<sup>248</sup> At the local level, citizens could be more likely to defend their immediate self-interest as residents or property owners<sup>249</sup> rather than acting upon broader principles. At a larger jurisdictional level, where voters and their representatives consider broader principles and goals independent of immediate and direct consequences, different, and less self-interested preferences, might emerge. In a sense, at larger levels decision-makers can more easily operate behind a Rawlsian “veil of ignorance” that fosters public deliberation about collective well-being.<sup>250</sup> The expression of such larger values, independent of their immediate consequences, is as democratically legitimate as the values citizens reveal in the local decision-making context. For example, in the affordable housing context, an individual at the local level might resist nearby affordable housing due to fears about impacts on property values. But that same person could support a statewide policy ensuring affordable housing within the state. There is no reason why the preferences expressed in the local context should be considered more legitimate than the preferences expressed in statewide or federal deliberative processes.<sup>251</sup>

Not only are legislative decisions at the federal and state level democratically legitimate; reliance on local governments could directly exclude citizens with a direct interest in the outcome. A democratic deficit occurs when local land-use decisions have significant external impacts but fail to include the voice of those

248. As Professor Davidson notes, people perceive themselves as members of multiple communities at multiple levels, not just at the local level. Davidson, *supra* note 131, at 1013.

249. See Bronin, *supra* note 10, at 239 (discussing Fischel’s “homevoter hypothesis,” which suggests that people are motivated to engage in politics to protect their property values).

250. See generally JOHN RAWLS, A THEORY OF JUSTICE (1971).

251. Professors Rubin and Feeley go so far as to argue that: “It is the nation as a whole that constructs our sense of self and that provides a sense of participation in the larger group.” Rubin & Feeley, *supra* note 151, at 945–46.

impacted by local decisions.<sup>252</sup> Localized decision-making that inadequately reflects affected interests leads to parochialism.<sup>253</sup> For example, as noted above, adaptation actions (e.g., coastal armoring) or inaction (e.g., failure to preserve wetlands) could impose externalities by worsening climate impacts for neighboring jurisdictions.<sup>254</sup>

Affordable housing provides a case in point. Some local governments' long-standing and continued resistance to affordable housing could have widespread national impacts.<sup>255</sup> Climate change will decrease the habitability of some parts of the country. As a consequence, other areas will need to absorb internal migrants on a scale like or exceeding the Dust Bowl of the 1930s. Increased international migration of climate refugees is also likely.<sup>256</sup> Adequate affordable housing in less vulnerable areas will be essential to avoid serious, widespread, and long-term displacement and homelessness. If local governments in less vulnerable areas maintain minimum lot sizes, prohibitions on multi-family housing, or other zoning measures that inhibit affordable housing,<sup>257</sup> then their local parochialism could undermine the collective interest in adequate housing and undermine the national interest in effective

252. See LEVINE, *supra* note 155, at 42; Briffault, *supra* note 153, at 1132–33; see also Davidson, *supra* note 131, at 1025 (observing that “majority preferences” are defined as such only “by virtue of the line drawn around the locus of decisionmaking”).

253. See Davidson, *supra* note 131, at 1023–26.

254. See *supra* notes 195–212 (discussing externalities caused by adaptation action and inaction, including coastal armoring, wetland protection decisions, and infrastructure location).

255. See, e.g., Briffault, *supra* note 153, at 1134 (observing that suburban communities have zoned out affordable housing to maintain property values and reduce the cost of public services); Peter W. Salsich, *Toward a Policy of Heterogeneity: Overcoming a Long History of Socioeconomic Segregation in Housing*, 42 WAKE FOREST L. REV. 459, 497–98 (2007); Norman Williams, Jr., *The Three Systems of Land Use Control*, 25 RUTGERS L. REV. 80, 82–85 (1970) (describing “fiscal zoning” as zoning to foster development that generates tax revenue without requiring services). New housing at all income levels will be needed. However, a government role in facilitating such housing is likely to be necessary only for affordable housing; the private market will likely generate sufficient high-end housing.

256. Though conceding great uncertainty, the International Organization for Migration (IOM) notes that estimates of environmentally-induced global migration (both within and between countries) vary from 25 million to 1 billion, “with 200 million being the most widely cited estimate.” See *Migration, Climate Change and the Environment*, INT’L ORG. FOR MIGRATION, <http://www.iom.int/cms/en/sites/iom/home/what-we-do/migration-and-climate-change/a-complex-nexus.html#estimates> (last visited June 26, 2014).

257. See Glicksman, *supra* note 10, at 1190 (noting that states could try to block climate-sparked immigration).

adaptation.<sup>258</sup> When a local government's actions will adversely affect larger jurisdictions, the larger jurisdiction is entitled to a voice in local decisions.<sup>259</sup>

Lastly, while local decision-making reflects discrete geographic communities, it does not necessarily provide a voice for interests that lack power within a given jurisdiction; in some instances, certain groups might participate more effectively at a larger, not smaller, jurisdictional scale. Political influence is often accomplished through organized action, not through individual votes. Those with distinct viewpoints are not always geographically clustered. To the extent that there are "affective communities" with distinct views in common, Professors Rubin and Feeley argue that those communities do not correspond to jurisdictional lines.<sup>260</sup> These groups could more effectively generate a critical mass capable of exerting political influence by consolidating their voices at larger jurisdictional levels. For example, low-income residents advocating for more affordable housing might be a minority in a given local jurisdiction, but could have more political voice when joined with other low-income residents within a larger jurisdiction. Their participation could be more effective at larger, not smaller, jurisdictional levels.

#### b. Factors that Distort Local Decision-Making

Local decision-making is also vulnerable to numerous potential distortions that might be more easily overcome at larger

258. In the 1970s, these principles motivated the New Jersey Supreme Court to invalidate local governments' exclusionary zoning provisions and require each local government to provide a "fair share" of the state's affordable housing needs. *See S. Burlington Cnty. N.A.A.C.P. v. Mount Laurel Township*, 336 A.2d 713, 727–28 (N.J. 1975). Although this approach has been highly controversial and not widely adopted, the case provides a compelling statement of the principle and an example of its application in practice. *See generally* Roderick M. Hills, Jr., *Saving Mount Laurel?*, 40 *Fordham Urb. L.J.* 1611 (2013) (discussing the challenges of implementing the *Mount Laurel* decision).

259. As Professor Richard Stewart stated in the context of the tension between federal and state governance, "a state should not be entitled to invoke the principle of local self-determination against federal controls where that state generates significant spillovers which impair the corresponding ability of sister states to determine the environmental quality they shall enjoy." Stewart, *supra* note 11, at 1227.

260. Rubin & Feeley, *supra* note 151, at 944–45 (noting that, to the extent the United States has distinct communities, like communities defined by ethnicity, religion, economics, or ideology, they are dispersed, not concentrated). Other scholars disagree. Professor Friedman suggests that, although the US may be more homogeneous than in the past, it still retains meaningful diversity that could be expressed through local jurisdictions. Friedman, *supra* note 154, at 402.



jurisdictional levels. The first is the risk of interest-group capture. Fear of interest group capture was a factor in constitutional design; James Madison advocated for a strong federal government in order to limit the risk of “factions” that could unduly influence local and state governments to the detriment of the public interest.<sup>261</sup> At the local level and in relation to land-use matters, concentrated interests such as real estate developers could be better organized and more influential than dispersed citizens, distorting local participation.<sup>262</sup> Interest group-capture is possible at every level of government, including at the federal level, but the role of real estate interests and developers in land-use decision-making is likely to be particularly strong at the state and local level.<sup>263</sup> For example, as noted above, a business group closely connected with North Carolina real estate interests promoted state legislation to prevent state agencies from incorporating climate-induced sea-level rise into their sea level projections.<sup>264</sup>

261. See SHAPIRO, *supra* note 138, at 44–45 (discussing Madison’s FEDERALIST NO. 10 and its concerns about the undue influence of factions on state governments).

262. See generally Esty, *supra* note 11, at 598 (observing that in the context of environmental regulation, “asymmetries of political activity and influence between polluters and pollutees” can be especially pronounced at state and local levels).

263. See Buzbee, *supra* note 12, at 80–84 (describing the powerful role of transportation and real estate interests relative to citizens); Hudson, *supra* note 10, at 2022 (describing role of business interests in shaping Los Angeles development patterns in ways that fail to reflect earthquake risks), 2046 (quoting disaster scholar’s observation that property and building interests are likely to reduce the reliability of local government-led disaster mitigation measures). The point should not be overstated. National real estate or construction groups undoubtedly exert considerable influence at the federal level and could operate to slow or weaken potential federal adaptation land use parameters. As noted above, generalizations are difficult. See *supra* note 10. Relatedly, campaign finance realities could also affect local governments’ commitment to retaining control over land use decisions. Developers often play an important role in financing local election campaigns. Local officials could resist shifting land use decisionmaking to higher levels of government if that meant that developers, their steady campaign funders, became less interested—and invested—in local political campaigns.

264. See Sue Sturgis, *The Big Money Behind the Assault Against Sea Level Rise Science in North Carolina*, FACING SOUTH (July 11, 2012), <http://www.southernstudies.org/2012/07/the-big-money-behind-the-assault-against-sea-level-rise-science-in-north-carolina.html>. Real estate interests have reportedly also influenced development controls even in the liberal San Francisco Bay Area in California. When the San Francisco Bay Conservation and Development Commission (BCDC) proposed draft limits on development along the bay in light of sea level rise projections, real estate interests strongly opposed the limits and convinced the agency to soften the prohibitory language. See Julia Scott, *Developers Withdraw Opposition to Bay Area Planning Document that Takes Sea Level Rise into Account*, SAN JOSE MERCURY NEWS (Aug. 21, 2011), [http://www.mercurynews.com/san-mateo-county/ci\\_18726092](http://www.mercurynews.com/san-mateo-county/ci_18726092). The proposed restrictions were also opposed by the impacted local governments who resisted BCDC’s implicit assertion of regional jurisdiction in place of local control. *Id.*

Prompting local citizens to engage in proactive efforts to address climate change impacts could also be more difficult than mobilizing around other kinds of environmental problems. Unless and until residents have experienced the immediate consequences of climate-related harms, it is difficult to garner political support for short-term restrictions that offer only long-term—and potentially speculative—benefits.<sup>265</sup> Development restrictions, expensive building codes, water use restrictions, affordable housing planning mandates, and other land-use related measures could all be hard sells if they do not respond to an immediately obvious need and are based on technical scientific projections that are fundamentally uncertain in their local implications. Of course, these same dynamics have stymied federal action as well, and local action in an area experiencing climate impacts could be as or more robust than federal efforts. But not all local governments are acting, and, if the federal will is there, it could provide an important antidote to the risk of local inertia.

Other local political dynamics could also chill desirable climate adaptation measures. Land use measures that disrupt existing lifestyles are a hard sell under any circumstances.<sup>266</sup> Adaptation measures affecting development, such as decisions to retreat or to restrict further development in at-risk areas, would have immediate short-term impacts on governmental functions and civic life that make it particularly difficult for local governments to take steps in their citizens' long-term best interests.<sup>267</sup> Restricting or reducing development, particularly if alternative internal municipal development sites are not viable, means reducing population, reducing overall economic activity, reducing tax revenue, and

265. See Esty, *supra* note 11, at 598–99 (noting, in the climate mitigation context, that: “From a politician’s perspective, there is little incentive to impose costly controls on greenhouse gas emissions that must be borne today when the benefits will not show up until 2050.”), 631–33, 637 (observing that governments balancing tradeoffs between economic and environmental well-being may often over-respond to concrete and immediate economic costs and be less responsive to intangible and more uncertain future harms); Hudson, *supra* note 10, at 2011–12, 227 n.178 (observing the political challenge to mobilizing the public to respond to slow-moving and long-term risks like sea level rise); Hudson, *supra* note 27, at 64 (observing the political challenge of expecting local governments to support retreat to avoid long-term risks).

266. Cf. Edward H. Ziegler, *Urban Sprawl, Growth Management, and Sustainable Development in the United States: Thoughts on the Sentimental Quest for a New Middle Landscape*, 11 VA. J. SOC. POL’Y & L. 26, 61 & n.138 (2003) (describing how citizens’ fear of the unknown could hamper smart growth efforts).

267. See Hudson, *supra* note 27, at 59–61 (observing that local governments’ economic interests conflict with coastal preservation).

reducing a municipality's overall cultural vitality. No matter how necessary from a long-term perspective, individual local governments are unlikely to have the democratic will to make decisions with these consequences, particularly when threatened climate risks appear remote and speculative.<sup>268</sup> Moreover, federal disaster bail-outs create a perceived safety net, lessening the incentive for precautionary local land-use decision-making.

c. How Federal Parameters Could Further Local Preferences

Somewhat ironically, a role for larger jurisdictional units is justified not only to meet the preferences of larger constituencies but, in some instances, to help local governments realize their own preferences.<sup>269</sup> To the extent that local governments fail to take adaptive measures, like limitations on floodplain development, due to race-to-the-bottom considerations that force them to choose between environmental and economic well-being, minimum federal parameters help to slow the "race" and allow jurisdictions to achieve environmental protection without sacrificing development to other jurisdictions.<sup>270</sup> Federal parameters could thus facilitate local preferences for protective measures by lessening inter-jurisdictional economic competition.<sup>271</sup>

Moreover, in some cases, a federal role could empower local governments who would otherwise be limited by state law. For example, some states could preempt local regulation of certain enterprises, like hydraulic fracturing, in order to promote statewide

268. In reaction to New York City's plans to protect rather than retreat from its waterfront, environmental commentator Andrew Revkin stated, "Of course, who could ever imagine a politician standing on a coastline proclaiming, 'We *will* retreat!'" Andrew C. Revkin, *Can Cities Adjust to a Retreating Coastline?*, DOT EARTH (Aug. 22, 2013, 1:37 PM) (emphasis in original), [http://dotearth.blogs.nytimes.com/2013/08/22/can-cities-adjust-to-a-retreating-coastline/?\\_r=0](http://dotearth.blogs.nytimes.com/2013/08/22/can-cities-adjust-to-a-retreating-coastline/?_r=0).

269. See Barron, *supra* note 122, at 387 ("[T]he call for central action rests less on a fear that respecting local power will undermine a more general, statewide interest than on a recognition that the opportunities for the exercise of local power might be enhanced by preemptive action that removes existing constraints on local discretion.").

270. It should be noted that, in the adaptation context, federal measures cannot eliminate the race-to-the-bottom in general, but only as between jurisdictions confronting climate risks and subject to similar federally-driven land use limitations. Because safer inland locations would not face the same limitations, federal adaptation parameters would not dampen competition between at-risk and safer locations.

271. Although some commentators have suggested that such competition creates a healthy dynamic that provides citizens with a range of choices, see Revesz, *supra* note 192, that competition can simultaneously constrain local governmental choices. Removing that competition by creating federal baselines can thus enable rather than defeat the achievement of local democratic preferences. See Kaswan, *supra* note 131, at 799.

economic development.<sup>272</sup> That preemption could impede a local government's ability to protect fracking sites against climate change risks, like flooding. Federal law could prevent states from preempting local authority to engage in adaptation measures, thus empowering local governments.<sup>273</sup>

d. Qualifications on "Exit" as a Mechanism for Ensuring Local Accountability

Nor are the arguments that local decision-making enhances government accountability immune from criticism. The argument for local government responsiveness and accountability rests in large measure on the assumption that unhappy citizens' capacity to exit gives local governments an incentive to be responsive and accountable to local citizens. But citizens' housing decisions are shaped by a multiplicity of factors, including family and community ties, work, schools, and the availability of suitable alternatives (a significant constraint for low-income residents seeking limited affordable housing).<sup>274</sup> Because local government land-use decisions are only one of many factors citizens consider, the fear of citizen exit does not provide full assurances of local government responsiveness and accountability.

272. See Hudson & Rosenbloom, *supra* note 17, at 1311 (discussing state preemption of local regulation). For example, Pennsylvania attempted to preempt local regulation of fracking. However, the Pennsylvania Supreme Court struck down the state's preemption of local law because it violated a Pennsylvania constitutional environmental protection provision. *Robinson Township v. Commonwealth of Pennsylvania*, 83 A.3d 901 (2013). See generally JOHN C. DERNBACH ET AL., WHITE PAPER: ROBINSON TOWNSHIP V. COMMONWEALTH OF PENNSYLVANIA: EXAMINATION AND IMPLICATIONS (2014), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2412657](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2412657).

273. Scholars have advocated for such federal empowerment of local governments in order to further federal goals, see Davidson, *supra* note 131, as well as to further local interests themselves. See SHANNON M. ROESLER, FEDERALISM AND LOCAL AUTHORITY: EMPOWERING LOCAL GOVERNMENTS TO ADDRESS ENVIRONMENTAL PROBLEMS (Sept. 10, 2013) (unpublished manuscript), available at <http://ssrn.com/abstract=2323891>.

274. Cf. Friedman, *supra* note 154, at 387–88 ("People can and do move, but inertia is a large factor in why each of us lives where we do. Even when moves occur, they tend to be for reasons largely unrelated to government policy decisions . . ."); Rubin & Feeley, *supra* note 151, at 917–18 (suggesting constraints on "exit" from states); SHAPIRO, *supra* note 138, at 37 ("[T]o take one of the more specific arguments for diffusion of policy-making authority, the premise of mobility . . . appears considerably overstated. Whatever constitutional rights of movement individuals may have, there are practical barriers to moving, especially for those who find themselves in the lower economic brackets in the state in which they live.").

### 3. Multilevel Governance and Democratic Values

The democratic arguments for and against local land-use control are compelling. They reveal the insufficiency of exclusive reliance on either level and justify a more nuanced multilevel governance approach. Local land-use decisions do matter to local citizens, and local decision-making offers opportunities for participation and self-determination that are not replicable at larger jurisdictional levels. At the same time, local decision-making could be distorted by concentrated interests, like the real estate industry, or could fail to provide a voice for communities with distinct voices who are distributed among jurisdictions rather than concentrated within one. Where local decision-making has external impacts or larger state or federal interests are implicated by cumulative local decisions, a democratic deficit emerges when those impacted by the decisions have no voice. Furthermore, local governments may find their ability to meet local preferences constrained by inter-jurisdictional competition. And, while the risk of citizen exit undoubtedly does operate to hold local governments accountable to some degree, that accountability benefit is attenuated by the complexity of citizen residential choices.

Multilevel governance can negotiate the complex democratic terrain. Overarching federal adaptation parameters could ensure that national interests, and the voices of those impacted by but excluded from local decision-making, are addressed. While the distribution of power could in some instances override local political determinations,<sup>275</sup> that result is a consequence of recognizing legitimate regional, state, or national considerations and preferences. Minimum federal parameters could also help thwart local political dysfunctions, such as interest group capture or the race to the bottom.

At the same time, a multilevel governance approach could recognize the importance of local preferences and local participatory process by retaining local planning and control over specific land-use measures (though limited by federal parameters).<sup>276</sup> Of course, the actual distribution of power depends upon the scope of federal parameters and the room they leave for local land-use discretion. At a minimum a multilevel governance structure allows for a direct grappling with that

275. See Davidson, *supra* note 131, at 1014.

276. See *id.* at 1015.

distribution of power without presuming that it should reside exclusively at one or another level.

Multilevel governance also provides inherent democratic benefits that exclusive local or federal control would not offer. Given the risk of interest group capture at all levels of government, having more than one jurisdictional level engaged reduces the consequences of capture at any one level.<sup>277</sup> For example, if the federal government were to establish minimum floodplain development parameters, then local real estate interests would have less capacity to chill local development controls. Conversely, if national building associations were to lobby successfully for weak minimum federal parameters, local governments could have the discretion to adopt stricter standards.<sup>278</sup>

Multilevel governance has mixed impacts on democratic accountability. Multilevel governance can provide a mechanism for increasing the likelihood of government follow-through by creating internal institutional pressures for action. In a multilevel governance system, local governments would be accountable for fulfilling their obligations to larger jurisdictional levels and vice versa, increasing the likelihood that each would be “accountable” for their adaptation responsibilities.<sup>279</sup>

Viewing accountability from the standpoint of the capacity to trace government actors, multilevel governance does create a challenge where multiple jurisdictions have played a role in an ultimate land-use decision.<sup>280</sup> Where more than one jurisdiction influences policy outcomes, as would be the case where local land-use restrictions are partially influenced by federal parameters, it could be more difficult to attribute particular policy outcomes to the responsible elected officials, decreasing direct accountability. The challenge is real but should not be overstated; local officials might be effective at indicating the respective federal and local

277. See RYAN, *supra* note 11, at 42; Camacho & Glicksman, *supra* note 133, at 52; Engel, *supra* note 11, at 178–79, 181.

278. This discussion presumes that any federal parameters would establish minimum standards that state or local controls could exceed, not maximum standards. See *infra* note 326 to 329 and accompanying text (describing importance of establishing regulatory floors that allow more stringent state and local standards). That approach is common in existing environmental statutes. See William W. Buzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 N.Y.U. L. REV. 1547 (2007).

279. See generally Camacho & Glicksman, *supra* note 133, at 52.

280. See *id.* at 48; Davidson, *supra* note 131, at 1007 (noting the federalism argument that “clear lines of authority prevents abuse of power by reinforcing political accountability”).

roles in a particular land-use decision.<sup>281</sup> Concerned citizens have demonstrated their capacity to unravel responsibility and to respond to unwanted provisions through the political process.<sup>282</sup>

Ultimately, accountability and responsiveness is a double-edged sword. The ability to resist interest group capture and address the public interest can be tied to the capacity to be somewhat *less* responsive and accountable to local political influences.<sup>283</sup> Local governments might appreciate the ability to say, “the federal government won’t allow floodplain development,” rather than having to face the local donors or constituents who might resist such measures. Or a local government could appreciate the ability to say, “the federal government requires an affordable housing component,” in the face of local concerns about property values. While that insulation might appear to reduce responsiveness and direct accountability to local interests, it is important to recognize that the imposed viewpoint from the larger jurisdictional level is itself a product of democratic deliberation. The views of the larger jurisdiction cannot find expression without the capacity to influence local governments, notwithstanding some reduction in local self-determination.

Thus, multilevel governance presents clear benefits over exclusive local or federal control, but it also creates certain democratic legitimacy trade-offs, particularly with respect to accountability.<sup>284</sup> The possibility of somewhat murkier accountability is a cost of developing a governance structure that

281. See Adelman & Engel, *supra* note 146, at 1829 (acknowledging the accountability challenge created by multilevel governance but suggesting that many factors “mitigate public confusion”).

282. For example, when the federal government attempted to require land use controls in order to reduce air pollution, relevant actors were able to clearly identify the federal role and, ultimately, repeal it. See *supra* note 128 and accompanying text (describing repeal of Clean Air Act provision requiring land use planning). While not a promising story about the political viability of federal controls on land use, the story does suggest that citizens are capable of holding relevant government officials accountable even when there is shared authority. See generally Ryan, *supra* note 138, at 608 (suggesting that citizens are capable of sorting out federal and state roles and expressing their political preferences about those roles through the federal political process).

283. Cf. Ostrow, *supra* note 10, at 1439–40 (observing that the federal government’s insulation “from local politics and economic constraints” gives it a “greater capacity to enact” redistributive policies); Stewart, *supra* note 11, at 1218–19 (observing that national bureaucracies’ remoteness from public discontent could make it easier to impose politically controversial but necessary measures).

284. See Ryan, *supra* note 138, at 609–10 (observing the tension between “accountability” and other important federalism values, and noting that accountability is not the dominant value given the framers’ inclusion of structures that clearly compromise accountability).

adequately reflects the range of legitimate local, state, and federal interests at stake in many land-use decisions.

#### F. Prevention of Tyranny and Enhancement of Liberty

Federalism arguments for the prevention of tyranny and enhancement of liberty address two separate themes. The first focuses on the risk of government tyranny over individual and citizen rights. The second focuses on the risk of federal tyranny over state or local jurisdictions, with a greater focus on the autonomy and “liberty” of the jurisdictions themselves. Given the distinct nature of these two considerations, the analysis below first considers rights-based arguments and then briefly discusses the issues raised by jurisdictional autonomy.

##### 1. Rights-Based Arguments for Local Control

Another potential argument for local control over land use is that local governments are more likely to protect individual property rights than the federal government.<sup>285</sup> Property rights are important not only as economic rights, but as personal rights. Land-use rules strongly impact personal autonomy as expressed through property ownership and control.<sup>286</sup> If the federal government were to control adaptation land-use measures, then federal officials, insulated from local property owners, might sacrifice private property rights by imposing restrictions on development or rebuilding that reduce land value. Of course, such measures may well be necessary for long-term well-being, but property owners could fear that the federal government would fail to acknowledge or address personal attachments to land in developing land-use related adaptation strategies. Local governments, in contrast, might be more likely to respect the property rights of local citizens and to recognize and address the consequences of restrictions on individual autonomy as expressed through property ownership.

285. Of course, local governments do not necessarily protect individual property rights. The Fifth Amendment Takings Clause is specifically designed to constrain government takings and is frequently invoked against local governments. *See* U.S. CONST. AMEND V. Nonetheless, local governments’ enhanced local accountability may create at least somewhat greater constraints than are faced by federal decision-makers.

286. *See* Bronin, *supra* note 10, at 239; *see also* Arnold, *supra* note 10, at 479 (observing that a key function of the land use system is to address the tension between land owner freedoms and legal boundaries on that freedom).



## 2. Rights-Based Arguments against Local Control

In contrast, some rights might be better protected by federal parameters than by exclusive local control.<sup>287</sup> The history of the civil rights movement reveals the importance of federal civil rights protections to end state-driven discrimination.<sup>288</sup> Similar risks to minority rights could arise in the context of exclusive local control over land-use adaptation measures. Local power structures could disproportionately serve the interests of more powerful constituents and discount the interests of marginalized and more vulnerable groups within the community.<sup>289</sup> Difficult decisions about what neighborhoods to protect versus abandon could be skewed against poorer and less powerful neighborhoods.<sup>290</sup>

For example, left to their own devices, local governments deciding what flood-prone land to protect and what land requires retreat could be tempted to retreat from the lowest valued land because it is likely to be owned by less powerful constituents and because, assuming compensation is provided, it would be cheaper to provide compensation for land that has a lower value. That approach would disproportionately impact poorer and less politically powerful neighborhoods,<sup>291</sup> and impact those neighborhoods that are likely to face the greatest challenge in finding alternative affordable housing.

Recent disasters have revealed the racial and class tensions raised by difficult post-disaster recovery decisions. Such decisions often trigger internal local battles, with racial justice as a lightning rod for dispute. For example, after Hurricane Katrina, some

287. See SHAPIRO, *supra* note 138, at 55–56 (discussing states' disregard for the rights of criminal defendants, state restrictions on freedom of speech, state restrictions on freedom of religion, and state interference with privacy); Davidson, *supra* note 131, at 1024–25 (observing that, "the more local the level of decisionmaking, the greater the risk that homogeneous local majorities will tend to act to oppress local minorities" and interfere with individual rights); Friedman, *supra* note 154, at 367 (observing that the federal centralization of power has been motivated by distrust of the states' reactionary approaches). The point should not be overstated; in some cases, states have provided more civil rights protection than the federal government. See SHAPIRO, *supra* note 138, at 98–99.

288. See RYAN, *supra* note 11, at xxvii; SHAPIRO, *supra* note 138, at 52–55 (discussing states' disregard of racial minorities' rights).

289. See Kaswan, *supra* note 205 (describing equity issues that arise in adaptation decisionmaking).

290. See HEBERGER ET AL., *supra* note 67, at 51 (observing that "what we choose to protect and how we pay for it may have a disproportionate impact on low-income neighborhoods and communities of color.").

291. See *id.* (observing potential demographic impacts of decisions about what areas to protect).

commentators on post-hurricane construction alleged that rebuilding and land-use decisions disproportionately favored whiter and richer communities and disadvantaged poorer African-American neighborhoods.<sup>292</sup> Similarly, efforts to rebuild public housing in Galveston, Texas after a 2008 hurricane created a political firestorm that was, according to some, racially driven.<sup>293</sup> Leaving such land-use decisions purely to local discretion could systematically undercut the civil rights of vulnerable populations.

### 3. Multilevel Governance and Citizen Rights

Viewing liberty from the standpoint of protecting individual rights, the anti-tyranny value sends us in two directions: toward local control to protect local private property rights, and toward a federal role to protect marginalized populations. While multilevel governance cannot provide a perfect answer, it could avoid the risks of exclusive power at the local or federal levels by providing roles for both.

Eliminating local control over land-use decisions would not solve the civil rights issue; it would simply disempower everyone and could prevent the active engagement of marginalized communities.<sup>294</sup> Instead, a multi-governance approach could seek to empower marginalized communities within local decision-making contexts. Overarching federal parameters could establish basic conditions that protect minority interests, while leaving local implementation to local officials who are likely to be more sensitive

292. See Robert D. Bullard & Beverly Wright, *Race, Place and the Environment in Post-Katrina New Orleans*, in RACE, PLACE, AND ENVIRONMENTAL JUSTICE AFTER HURRICANE KATRINA: STRUGGLES TO RECLAIM, REBUILD, AND REVITALIZE NEW ORLEANS AND THE GULF COAST 19, 38–39 (Robert D. Bullard & Beverly Wright eds., 2009) (contending that decisions about which levees to improve disproportionately benefited white communities); Mafruz Khan, *The Color of Opportunity and the Future of New Orleans: Planning, Rebuilding, and Social Inclusion after Hurricane Katrina*, in RACE, PLACE AND ENVIRONMENTAL JUSTICE, *supra*, at 205, 214 (describing initial local government decision to retreat from low-lying areas historically occupied by African American neighborhoods); see also ROBERT D. BULLARD & BEVERLY WRIGHT, THE WRONG COMPLEXION FOR PROTECTION: HOW THE GOVERNMENT RESPONSE TO DISASTER ENDANGERS AFRICAN AMERICAN COMMUNITIES 70–71 (2012) (describing initial plans to abandon rather than protect an historic African-American North Carolina town after flood damage).

293. See Robbie Whelan, *A Texas-Sized Housing Fight*, WALL ST. J., Aug. 3, 2012, at A3 (quoting a local housing organization representative who said that “race is central to this discussion” about re-building damaged public housing).

294. Cf. Arnold, *supra* note 207, at 331–32 (observing the importance of retaining local land use control due to the risk that larger-scale entities could ignore environmental justice considerations).

and responsive to individual property rights. Federal guideposts for local adaptation land-use planning could establish substantive principles to ensure that poor and of-color neighborhoods are not disproportionately harmed by land-use planning and zoning measures.<sup>295</sup> To avoid the risk that low-valued land is systematically abandoned, federal adaptation planning parameters could require local governments to take a multiplicity of factors, not just land value, into consideration.

Federal parameters could also address participation in adaptation planning. Effective participation is critical to achieving adaptation plans that address the needs of all population sectors.<sup>296</sup> Local governments that rely on the repeat players and loudest voices could fail to address the needs and preferences of traditionally marginalized populations. Federal planning parameters that establish local participatory requirements could better ensure that local adaptation planning provides meaningful participatory opportunities and explicitly includes mechanisms for encouraging widespread participation, with a special focus on inclusion of historically marginalized populations.<sup>297</sup> Through multilevel governance, federal parameters could enhance local participation and help protect local citizen rights.

#### 4. Jurisdictional Autonomy

The “prevention of tyranny and enhancement of liberty” value is sometimes framed in terms of the protection of jurisdictional autonomy rather than the protection of citizen rights, where the jurisdiction itself (rather than individuals within it) is viewed as being entitled to a degree of sovereignty.<sup>298</sup> Local control over adaptation-related land-use measures would preserve a local government’s autonomy to control local land use.<sup>299</sup> Federal

295. As Rob Verchick has articulated in the disaster policy context, a guiding principle for future policy-making should be: “Be Fair.” VERCHICK, *supra* note 67, at 3.

296. See Kaswan, *supra* note 205, at 11141–42 (describing importance of participatory processes to equitable adaptation).

297. *Id.*

298. In this context, it is not clear whether jurisdictional autonomy is a good in itself, as a matter of sovereignty, or a “good” because such autonomy serves the other federalism values described above, including pragmatic efficacy democratic legitimacy, or protection against tyranny. Because many of the academic discussions appear to treat autonomy and sovereignty as intrinsic values, however, I give this strand of the literature separate attention.

299. See Barron, *supra* note 122, at 383 (noting one perspective on local autonomy: that of being free from centralized interference).

parameters would constrain the autonomy of local governments that prefer inaction.

As Professor David Barron has argued, however, under some circumstances centralized control can enhance local liberty. He observes that when local jurisdictions' action or inaction harms neighboring jurisdictions, the neighboring jurisdictions' autonomy interests are impaired because they are forced to deal with the externalities caused by the harming jurisdiction.<sup>300</sup> Centralized controls that prevent inter-jurisdictional harm thus further the liberty interests of jurisdictions that are freed from neighboring jurisdictions' external consequences.<sup>301</sup> For example, if a federal law required local jurisdictions to address flood risks, that requirement would protect neighboring jurisdictions from spillover flooding, loss of infrastructure serving regional areas, storm refugees, longer-term pressures on housing availability, and all of the other external impacts associated with adaptation measures or their absence.

Considering liberty from the standpoint of local jurisdictions' autonomy rather than individual rights, multilevel governance could provide a moderating influence. Federal parameters that establish minimum standards to prevent external harm would enhance the liberty of protected states. Although a multilevel governance approach limits full local autonomy, it could continue to allow substantial local discretion that would preserve some measure of local autonomy.

#### G. The Relationship Between Federalism Values and Substantive Values

At least in principle, federalism theories are intended to guide assessments of the appropriate jurisdictional level without regard to substantive policy positions. While federalism theories do reflect certain principles (e.g., pragmatic effectiveness, democratic participation, or protection of individual rights), the theories are nonetheless neutral about policy outcomes such as environmental protection choices.

Most advocates for particular allocations of government authority, though, are motivated by substantive as well as federalism values and advocate for governmental authority to be allocated to

300. *Id.* at 379–80, 385–86.

301. *Id.* at 380, 383, 386.

the level that is most likely to adopt a desired substantive outcome. In fact, some argue that advocates strategically deploy federalism arguments to support their substantive agendas.<sup>302</sup> Rather than relying solely on policy-neutral federalism values to justify multilevel governance, in this section I explicitly acknowledge the substantive values that support the multilevel governance proposal.

Substantive policy values are also relevant to federalism debates themselves. In many instances, federalism values are in conflict and not determinative; substantive values can influence how such conflicts are resolved.<sup>303</sup> Tensions within federalism values are revealed in the prevention-of-tyranny context, where the governmental structure that best protects individual property rights could conflict with the structure that best protects civil rights.<sup>304</sup> In the local jurisdiction autonomy context, there is a tension between being free of centralized requirements and furthering local jurisdictions' freedom from local governments' externalities.<sup>305</sup> Moreover, in addition to its internal contradictions, the prevention-of-tyranny value is in tension with the democratic legitimacy value to the extent that protecting minorities or avoiding external impacts undermines the approaches local government majorities might have chosen.<sup>306</sup> To the extent that local decision-making is valued for preventing tyranny, it could interfere with pragmatic federalism values if a more centralized approach were more effective.<sup>307</sup> Where federalism values lead in conflicting directions, substantive values can help shape policy choices.

302. See Rubin & Feeley, *supra* note 151, at 935, 948; Ryan, *supra* note 138, at 598–600; SHAPIRO, *supra* note 138, at 7–8. This Article's separate discussion of direct substantive values in addition to federalism values is intended to avoid any such appearance.

303. See RYAN, *supra* note 11.

304. See Marci A. Hamilton, *Nine Shibboleths of the New Federalism*, 47 WAYNE L. REV. 931, 942–43 (2001) (noting how preserving some rights, like religious freedom, could interfere with other rights, like housing rights).

305. See Barron, *supra* note 122, at 386. Barron uses air pollution as one example. In deciding whether to establish federal pollution controls to prevent interstate pollution, he notes that “the central government [must] make a policy judgment about the type of local autonomy that it wishes to promote rather than a choice about whether to trump local autonomy in the name of some greater central governmental interest.” *Id.*; see also *id.* at 404 (noting that, where the exercise of central authority is being contemplated, policymakers must consider whether incursions on local autonomy are outweighed by ways in which the central authority could enhance local autonomy).

306. See *id.* at 428 (observing that centralized power that protects jurisdictions from external impacts does go against the will of some jurisdictions).

307. See Friedman, *supra* note 154, at 388 (observing that, by creating a federalist system, the framers intentionally accepted a certain degree of inefficiency in exchange for enhanced liberty).

I articulate two substantive values that inform why I support a multilevel governance approach and that could also inform the resolution among some of the conflicting federalism values. The first is a general environmental protection value. I implicitly assume that adaptation measures—including land-use measures—are necessary to protect the population from serious harm. I take as a given that preparing for climate change is a national moral imperative, and that all citizens deserve adequate preparation and protection regardless of their local government's foresight or political will. The environmental protection value supports federal requirements for local planning to ensure that local citizens do not become the victims of inertia (at best) or climate-denying politics (at worst).<sup>308</sup>

A local jurisdiction that does not want to engage in adaptation planning might argue that national requirements interfere with the federalism value of self-determination.<sup>309</sup> Although many federalism values provide a strong rejoinder to that claim (including the likely external impacts of such a refusal and the importance of recognizing democratic sentiments expressed at larger jurisdictional levels), the argument for requiring adaptation planning does not rest on federalism values such as self-determination alone. My support for a federal approach that potentially imposes unwanted adaptation planning requirements on local or state jurisdictions rests also, in part, on the substantive value of protecting people from harm.

A second substantive value that guides the multilevel governance proposal is a concern for the voice and well-being of marginalized groups. To the extent that the rights-based prevention-of-tyranny federalism value leads in opposite directions, with concerns about property rights suggesting the importance of local control and concerns about civil rights suggesting the importance of federal parameters and oversight, the substantive concern for marginalized

308. See Glicksman, *supra* note 10, at 1193 (arguing that a federal role is needed to provide minimal protections in case state and local governments are reluctant to act). Butler and Macey disagree. They state that: "The key to our position is that local governments ought to be allowed to make judgments about their own interests, even if those judgments turn out to be misguided, as long as the costs of these decisions are fully internalized by the particular communities served by the local government." Butler & Macey, *supra* note 148, at 36–37.

309. See Stewart, *supra* note 11, at 1210 (recognizing a "contest of moral claims" between interference with local political self-determination and protection of the environment and public health).

groups tips the scale in favor of federal parameters (though not to the exclusion of local choices). Given the risks faced by vulnerable communities, federal substantive and procedural guideposts would help ensure that local governments address the needs of vulnerable and marginalized populations.

This section simply makes explicit the substantive values that inform my assessment of the appropriate distribution of governmental authority over land-use-related adaptation measures. Those with different substantive values could well resolve federalism trade-offs differently. Fundamentally, federalism debates will be richer and more transparent if participants reveal the range of values—federalism values and substantive values—that inform their views.

### III: A SKETCH OF MULTILEVEL GOVERNANCE

Multilevel governance provides a mechanism for obtaining the essential benefits of both local and federal roles.<sup>310</sup> It allows the realization of federal goals and the benefits of federal resources and coordination while leaving essential discretion and control to local governments.<sup>311</sup> Multilevel governance also provides its own institutional virtues, including the regulatory dynamism that arises as the federal government interacts with states, a safety net if any one level of government fails to act effectively, and, from a democratic theory perspective, a mechanism for avoiding potential interest-group capture that could occur if control rested at only one level of government.

This Part provides a preliminary sketch of a multilevel governance approach. Multilevel governance schemes create a coordinated network of responsibilities. Based on the federalism and substantive values that influence governance choices, I identify how some of the key functions associated with adaptation-related land use could be distributed among governmental levels.<sup>312</sup> This

310. See Davidson, *supra* note 131, at 1014 (observing that cooperative regimes that share power among multiple levels of government temper the drawbacks to decentralized power while still allowing the benefits of decentralization).

311. See Ostrow, *supra* note 10, at 1436–37 (discussing the benefits of shared federal-local power over land use that allows federal goals to be met but utilizes local governments' capacity to tailor such policies to "local geographic and economic conditions and community preferences"); see also Arnold, *supra* note 207 (proposing a multilevel governance approach for watershed management that integrates regional and local land use roles).

312. See generally Camacho & Glicksman, *supra* note 133 (describing fundamental governance dimensions including centralization versus decentralization, distinct versus

Article explores two key roles the federal government could play within a multilevel structure. First, it could require risk assessments and adaptation planning pursuant to certain minimum federal standards.<sup>313</sup> Second, the federal government could play a key role in providing needed resources, including information, money, and coordination of federal and sub-national initiatives.

A couple of caveats are in order. First, the sketch below focuses on the division of federal and local responsibilities to emphasize the importance of the federal role relative to the local, but also acknowledges that states or new regional institutions could serve important intermediary roles.<sup>314</sup> Second, this section sketches a potential division of responsibility in the abstract. The goal is to more closely connect the theoretical material on federalism and substantive values to a hypothetical governance framework, not to analyze how and where existing laws already embody multigovernance land use elements. Part B acknowledges the complex existing institutional framework, and identifies the differing ways the Article's insights could be realized, whether through mainstreaming into existing programs, through piecemeal legislative revisions to existing authorities, or through an entirely new adaptation-specific federal initiative.

#### A. Federal Requirements for State and Local Action

Federal requirements for state and local governments could have two dimensions: one is procedural, consisting of requirements that

overlapping jurisdiction, and separate versus coordinated action, and the importance of considering these dimensions on a function-by-function basis).

313. This Article focuses on direct federal planning and adaptation requirements. The federal government could also influence individual decisions through indirect market mechanisms, like the National Flood Insurance Program's requirement for flood insurance as a precondition for a federally-guaranteed mortgage. *See supra* notes 84–88 and accompanying text. A full discussion of the relative strengths and weaknesses of planning versus market-based approaches is beyond the scope of the Article. For the present, I note only that land use planning provides a democratic, participatory process for community decision-making and that it has the capacity to be more comprehensive than market-based mechanisms. While I do not rule out the possibility that market-based incentives could provide a useful complement to land use decision-making, particularly if political pressures stall needed controls, I nonetheless start with the assumption that at least some degree of adaptation planning should occur through a deliberative process.

314. Given the Article's focus on why federalism theory justifies a federal role in matters of traditional local control, the analysis of the states' potential role is preliminary. The role of the states in a federal multilevel governance structure presents additional and distinct questions that are beyond the scope of this paper. *See supra* notes 122–29 and accompanying text.



state and local governments engage in, for example, assessments and planning, but without dictating the process or outcome of the required action. The second dimension is substantive, consisting of direct federal requirements or federal parameters that shape state and local initiatives. Each of these dimensions is addressed below.

### 1. Federal Procedural Requirement: Risk Assessments and Adaptation Planning

Fundamentally, the nation would benefit from a federal requirement that state and local governments conduct climate risk assessments and adaptation planning (including land-use related aspects of such assessments and planning).<sup>315</sup> Although many states and some local governments have begun to engage in such assessments and planning, many have not, or have done so only in very general ways.<sup>316</sup> Not only are the interests of local citizens at stake; state and local failure to assess and plan for future climate impacts could adversely impact surrounding jurisdictions and, in areas vulnerable to disasters, impose enormous disaster relief costs on the federal government. Moreover, the environmental value of protecting people from harm justifies this requirement even if it conflicts with local self-determination.

The federal interest does not justify federal planning. Only local, regional, or state entities will have the requisite local knowledge. The presence of federal interests does not negate the many sensitive local judgments that adaptation planning is likely to require. Therefore, a federal planning requirement would establish the contours of local adaptation planning, but leave many key judgments about specific land use (and other adaptation measures) to state and local control. (I discuss the issue of *which* key judgments would be left to state or local governments and which would be dictated by federal law below, in the section addressing substantive federal standards.)

Although this is not the place to resolve the precise role of the states, I note that states would likely need to serve as intermediaries in any multilevel governance approach to planning. Climate harms will transcend local boundaries, and a state role in planning would provide a mechanism for addressing larger-scale impacts while retaining a local role in the planning process. Given each state's

315. *Cf.* Hudson, *supra* note 10, at 2050 (proposing a federal law requiring state and local disaster mitigation planning).

316. *See supra* notes 109 to 121 and accompanying text.

unique challenges, states may be in the best position to determine the appropriate planning level for particular features of adaptation planning and could retain or delegate planning authority as appropriate.<sup>317</sup> In some instances, coordinated planning at multiple levels could work best, with state or regional planning processes developing larger-scale approaches and local governments then engaging in more detailed and location-specific assessment and planning.<sup>318</sup> Where planning occurs at multiple levels, it will be critically important to coordinate higher-level planning with local planning and decision-making and to develop mechanisms for translating state and regional adaptation planning into local land-use controls.<sup>319</sup>

## 2. Substantive Planning and Development Standards

Although sensitive judgments must be made at a sub-national level, federalism and substantive values suggest that the federal role should move beyond a bare-bones assessment and planning requirement and also include certain substantive federal goals, planning parameters, and, potentially, required restrictions or measures. Federal goals and minimum federal standards or guidelines would address collective action failures that could

317. The Coastal Zone Management Act requires state coastal zone management plans, but some states, like California, have delegated some planning functions to the local level. See CAL. COASTAL COMM'N, DESCRIPTION OF CALIFORNIA'S COASTAL ZONE MANAGEMENT PROGRAM, available at [http://www.coastal.ca.gov/fedcd/ccmp\\_description.pdf](http://www.coastal.ca.gov/fedcd/ccmp_description.pdf) (describing state oversight of local coastal plans). Similarly, the Clean Air Act requires state implementation plans for meeting National Ambient Air Quality Standards, but some states have delegated specific planning functions to regional air quality control boards that cover distinct air basins. See, e.g., 2001 Ozone Attainment Plan, BAY AREA AIR QUALITY MGMT. DIST., <http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Ozone-Attainment-Plans/2001-Ozone-Attainment-Plan.aspx> (last updated Oct. 4, 2010) (providing regional Bay Area plan as part of the overarching statewide state implementation plan).

318. The Disaster Mitigation Act of 2000 contemplates both state and local hazard mitigation planning. See Nolon, *supra* note 52; Salkin, *supra* note 89.

319. In California, SB 375, a state law requiring regional land use planning to reduce GHG emissions, lacks this ultimate connection to local land use plans, a consequence of local government opposition to state-level incursions on local planning authority. See William Fulton, *The Disconnect Between SB 375 and Local Planning*, CAL. PLANNING AND DEV. REPORT (Sept. 23, 2008), <http://www.cp-dr.com/node/2134>. Greater assurances of connections between state or regional planning and local land use may be needed to translate regional planning into real local change. In the watershed planning context, Professor Tony Arnold suggests that regional entities be developed to engage in regional watershed land use planning and that local governments be subject to a consistency requirement: local governments would retain substantial land use authority, but their decisions must be consistent with the regional plan. See Arnold, *supra* note 207, at 346–47.

otherwise chill necessary local action.<sup>320</sup> They could provide a national regulatory floor that would avoid inter-jurisdictional competition that would otherwise constrain local choices.<sup>321</sup> Minimum federal planning or development standards would also reduce the risk of free riding. They would reduce external impacts, including the federal financial toll that would otherwise likely arise if local governments failed to engage in adequate preparation. And they could better meet federal interests in ensuring adequate preparation, avoiding a national housing crisis, and providing an equitable response to climate change. Imposing requirements on the planning process could subtly shift the function of land-use planning from one that primarily mediates existing local political and economic forces to one that does so subject to certain overarching parameters.<sup>322</sup>

A detailed assessment of appropriate substantive federal parameters and requirements is beyond the scope of this Article. Nonetheless, I provide a few illustrative suggestions regarding possible components. For example, a federal planning requirement could establish the overarching goals that such planning should achieve. Without attempting a comprehensive list, such goals could include reducing exposure to risk by precluding or reducing development in vulnerable areas, increasing resilience by developing land-use and other institutional measures that reduce the impacts of disasters and long-term harm, and planning processes and decision-making metrics that protect vulnerable populations.

Federal law could also establish parameters for state and local risk assessments and planning. It could require that assessments and planning consider long time horizons to encourage state and local governments to identify and plan for the long-term impacts of climate change rather than focusing on short-term measures that inadequately prepare for long-term conditions. Given the uncertainties associated with climate change impacts, especially at the local level, federal law could also require state and local governments to develop flexible planning strategies that require the jurisdiction to regularly revisit data and develop alternative

320. See Camacho & Glicksman, *supra* note 133, at 83 (observing that centralization of standards can help overcome local collective action failures).

321. Cf. Hudson, *supra* note 10, at 2059 (stating that overarching land development standards would help dampen the race-to-the bottom).

322. See Arnold, *supra* note 10, at 460–81.

plans if initial assumptions prove false. For example, more protective land use measures could be required if flood levels or frequencies prove to be higher than anticipated by initial adaptation plans.

In addition, federal legislation could require state, regional, or local governments to identify the externalities that could arise from planned actions and inaction.<sup>323</sup> In other words, if a local government identifies vulnerability to flooding, then the jurisdiction could be expected to assess available resources for evacuees and the likelihood that residents would be forced to leave the jurisdiction for short or long periods of time. Federal legislation could identify numerous other potential externalities that state and local governments would be required to evaluate and consider.

The federal government could also include parameters to protect the interests of potentially marginalized neighborhoods in the planning process. In addition to establishing an overall goal for addressing the particular needs of marginalized and vulnerable populations, federal planning requirements could include more specific substantive provisions that, for example, require local governments to assess the particular circumstances faced by low-income and marginalized populations and suggest or impose decision-making criteria to prevent local jurisdictions from automatically prioritizing high-value property at the expense of low-value property.

A critical question is the degree to which federal requirements should be hard or soft: whether they should simply require the evaluation of risks and impacts, or also require state and local governments to address identified impacts. That determination will require context-specific assessments and the participation of a wide range of knowledgeable stakeholders, an inquiry beyond the scope of this Article.

In addition to establishing goals and imposing planning requirements, federal law could also impose certain direct restrictions or requirements on state and local land-use decision-making.<sup>324</sup> For example, whether through direct requirements or

323. See, e.g., Verchick & Johnson, *supra* note 88, at 7 (suggesting, in the context of retreat, that communities should consider transboundary spillover effects).

324. See Arnold, *supra* note 207, at 309–10 (suggesting that purely voluntary measures are unlikely to motivate local land use changes). Though often criticized as insufficient, see *supra* notes 84–87 and accompanying text, the NFIP's floodplain standards and building

indirect market mechanisms (such as conditions on insurance or limitations on disaster relief funding), it could impose development restrictions in floodplains and other areas facing flood, erosion, or wildfire risks. Or, given the external impacts of certain flood protection measures, like coastal armoring, the federal government could impose specific requirements or limitations. Again, determining precisely when the government should impose direct requirements rather than deferring to state or local planning will be a context-dependent and complex determination beyond the scope of this Article.

Direct federal requirements and federal parameters for state or local planning and action create overlapping jurisdiction: both the federal government and lower levels would have some degree of land use authority. That raises the question of preemption: should federal standards preempt more protective local standards? For example, if the federal government establishes limits on developing in floodplains, should local governments be permitted to establish even more protective standards?

Federal preemption of state and local planning standards is not justified in the land-use planning context.<sup>325</sup> Neither pragmatic nor democratic legitimacy arguments justify limits on more stringent local measures. Nor would a desire for federal uniformity justify preemption given our long tradition of accepting variation in land use and building codes.<sup>326</sup> Allowing more stringent local standards would allow local governments to express their preference for greater protection. And if the federal government fails to provide sufficient adaptation,<sup>327</sup> allowing more stringent state or local standards would provide a safety net.<sup>328</sup> Moreover, the risk that local governments would adopt more stringent standards that trample liberty—that unduly burden property owners—is unlikely

requirements, set as a condition for communities to participate in the NFIP program, provide an example of federal standards. 44 C.F.R. §§ 59.1–.24, 60.3–.5, 60.12 .

325. *See generally* Buzbee, *supra* note 278 (discussing arguments against preemption of more stringent state and local regulation). The federal floodplain and building standards required for communities to participate in the NFIP do not preempt more stringent state or local standards. *See* 44 C.F.R. § 60.1 (d).

326. *See supra* note 177 and accompanying text.

327. *Cf.* Arnold, *supra* note 207, at 332 (observing that regional approaches to land use planning to protect watersheds will not necessarily be better than local approaches).

328. *See* Adelman & Engel, *supra* note 146 (arguing against federal preemption); Buzbee, *supra* note 278 (arguing that federal standards should be adopted as minimums that states can exceed); Engel, *supra* note 194, at 184 (arguing against federal preemption).

to materialize because local governments are likely to be more, not less, protective of property rights than the federal government.

### 3. Incentivizing and Monitoring Local Action

Local governments are overburdened and beleaguered; a new federal mandate for federal adaptation-related land-use planning and measures will go nowhere unless the federal government includes appropriate inducements for local action.<sup>329</sup> Federal financing is justified not only to provide and equalize resources but as a mechanism to prompt local action.<sup>330</sup> The federal government, confronting record-breaking deficits as of this writing, is unlikely to finance a massive local adaptation initiative out of general revenues. Ultimately, significant federal action on adaptation must await a new infusion of funds. The most likely scenario would be a federal market-based mechanism for controlling GHG emissions, such as a carbon tax or cap-and-trade program, that devotes part of the revenue to adaptation measures.

But incentives alone are unlikely to be sufficient if local governments are resistant to the hard choices that planning will require. Significant federal sanctions are likely to be necessary.<sup>331</sup> In the Clean Air Act context, the risk of federal planning coupled with the loss of highway funds has been a strong inducement to comprehensive state planning.<sup>332</sup> While the process has not been

329. Federal programs to encourage state and local planning have come and gone, often without much efficacy. Nonpoint source controls provide one example. See ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 794–96 (7<sup>th</sup> ed. 2013) (discussing the limited progress made through federal programs to encourage nonpoint source controls).

330. See Hudson, *supra* note 10, at 2049 (discussing need for financial “carrots” to induce local government disaster planning). The Coastal Zone Management Act provides funding for state coastal zone management plans. See *id.* at 2052.

331. See *id.* at 2054–57 (discussing federal “sticks” to induce state and local participation in disaster mitigation planning).

332. In the wake of *National Federation of Independent Businesses v. Sebelius*, 132 S. Ct. 2566 (2012), which invalidated Congress’s attempt to condition continued Medicaid funding on acceptance of the program’s new terms, *id.* at 2601–07, there has been some question about whether the Clean Air Act’s highway funding sanctions impermissibly coerce state compliance with the Clean Air Act. See, e.g., ERIN RYAN, AM. CONST. SOC’Y, ENVIRONMENTAL LAW AFTER SEBELIUS: WILL THE COURT’S NEW SPENDING POWER LIMITS AFFECT ENVIRONMENTAL STATE-FEDERAL PARTNERSHIPS? 14–19 (2013). If federal control over land-use related measures is premised upon Spending Clause authority rather than Commerce Clause authority, then federal measures would have to demonstrate a close connection between the federal funding at stake and the federal requirements at issue. In addition, the amount of money at stake could not be so great that states would feel coerced into complying with the federal program because they could not sustain the loss of federal

perfect, either in terms of air quality or procedure, the penalties for state failure have prompted substantial state action that would otherwise have been unlikely to emerge. Similar sanctions would be appropriate in this context. Highway funds or other forms of infrastructure funding could again be on the table. After all, if a local government fails to plan adequately and puts federally-funded infrastructure at risk, the federal government is arguably justified in withholding federal infrastructure money. A more controversial suggestion would be to tie the availability of disaster-relief funds to adequate adaptation planning.<sup>333</sup>

In addition, some sort of state or federal approval process will be necessary to ensure state and local accountability. Ideally, that process would be less rigid and time-consuming than the existing process for approving state implementation plans under the Clean Air Act, but still detailed and substantive enough to ensure that state and local governments are complying with federal planning requirements.

## B. Federal Resources to Support Sub-National Action

In addition to imposing planning and substantive adaptation requirements, the federal government can play a crucial role in providing essential resources to state and local governments, including information, implementation funds, and coordinating structures. The federal government is already engaging in many of these support functions under existing authorities; this section justifies the continuation and further development of those efforts.

### 1. Information Resources

Effective risk assessments and planning require quality information. As existing federal information programs already recognize, local governments do not have the resources or expertise to evaluate the latest climate science projections, and national and state scientists can more efficiently analyze the local implications of larger climate models and transmit the downscaled

funding. *See id.* (describing parameters). Potential constitutional limitations on sanctions will be an important consideration in designing any potential financial sanctions associated with federal adaptation requirements.

333. *See* Nolon, *supra* note 52, at 965 (describing Disaster Mitigation Act provisions that condition the availability of hazard mitigation grants on the development of hazard mitigation plans); Hudson, *supra* note 10, at 2055.

information from larger studies to local jurisdictions.<sup>334</sup> A multilevel governance approach taps the federal government's greater informational resources and achieves economies of scale for research on climate impacts and their local implications.<sup>335</sup> This is not to say that federal or state officials are able to project local impacts with certainty. Climate scientists encounter significant uncertainties in projecting impacts generally, and the uncertainties increase as the scale decreases.<sup>336</sup> Nonetheless, federal or state information and assistance are essential for local governments to make informed land-use choices.<sup>337</sup> Armed with quality information, local governments can then use their local knowledge to assess how predicted climate impacts will affect their local jurisdictions and the capacity to weigh the trade-offs associated with alternative mechanisms for addressing those impacts.

Local governments would also benefit from mechanisms for information sharing about viable adaptation measures. Local "laboratories of invention" cannot provide national benefits unless local governments have mechanisms to learn from one another. While the federal government is not the only institution that can serve this function and local governments and think tanks have set up vital networks for cross-jurisdictional information sharing,<sup>338</sup> the federal government could play a constructive role in creating a national clearinghouse and in assessing the strengths and weaknesses of a variety of land-use-related adaptation measures.

334. See generally Glicksman, *supra* note 10, at 1181–82 (describing value of federal role in providing information); *supra* note 78 and accompanying text (discussing federal support for sub-national adaptation efforts); see also USGCRP REPORT, *supra* note 1, at 107–52 (exploring regional climate impacts in the Northeast, Southeast, Midwest, Great Plains, Southwest, Northwest, Alaska, Islands, and Coasts).

335. See generally Camacho & Glicksman, *supra* note 134, at 83–85 (observing that the centralized scientific research and information dissemination often offer enhanced effectiveness and economies of scale); Esty, *supra* note 11, at 614–15 (describing economies of scale in federal data collection and analysis); Stewart, *supra* note 11, at 1212 (suggesting that national economies of scale in information gathering and analysis are a key value provided by centralized environmental controls).

336. See NAT'L RESEARCH COUNCIL, *supra* note 5, at 54–55.

337. See generally Esty, *supra* note 11, at 617 (noting that centralized expertise can be tailored to local circumstances).

338. See, e.g., *How ICLEI Can Help Your Local Government*, ICLEI USA, <http://www.icleiusa.org/about-iclei> (last visited June 27, 2014); see generally Judith Resnick, Joshua Civin & Joseph Frueh, *Ratifying Kyoto at the Local Level: Sovereignism, Federalism, and Translocal Organizations of Government Actors (TOGAS)*, 50 ARIZ. L. REV. 709 (2008) (describing role of translocal organizations in mobilizing around climate change).



## 2. Financial Resources

Local planning and implementation of adaptation resources could also be stymied by insufficient funds. A federal role in financing adaptation could provide necessary resources, and could help equalize access to adaptation resources for poorer communities.<sup>339</sup> That the federal government has greater resources does not, of course, resolve the question of whether the federal government *should* pay for local adaptation measures. As Professor Dan Farber has queried, should the beneficiary who benefits from the adaptation measures—the local governments in this case—pay? Or is it more appropriate for the public at large—the federal government—to pay?<sup>340</sup>

The arguments for spreading the cost nationally are strong. Given the insufficiency of local funds, national funding will be necessary if we as a nation believe that it is important to protect people from harm.<sup>341</sup> Although large and wealthy cities may be able to finance adaptation on their own, poorer cities cannot.<sup>342</sup> National funding provides a mechanism for distributing resources equitably.<sup>343</sup> Moreover, the victims of climate change do not deserve to pay as a matter of corrective justice: there is no connection between responsibility for climate change and vulnerability to its impacts. Responsibility is collective, but the impacts will fall unevenly, with more severe impacts along the coast and in areas subject to flooding, fire, heat, and other public health threats. National responsibility suggests that national adaptation financing is appropriate. On a local scale, poorer and racially marginalized citizens who live in physically vulnerable areas do not deserve their fate; their residential choices are often circumscribed by social and economic forces outside of their control.<sup>344</sup> It is also possible that federal funding will help establish the constitutional

339. See Camacho & Glicksman, *supra* note 133, at 84–85 (observing that centralized financing will often be needed given local disincentives and insufficient resources).

340. Farber, *supra* note 14, at 269–72.

341. See *id.* at 272 (suggesting that the “public pays” principle is premised on “the idea that climate change is a national problem” and “that society as a whole should protect individuals”).

342. See *id.* at 271.

343. See generally Davidson, *supra* note 131, at 1012 (suggesting that federal financing can be targeted to poorer communities to remedy existing inequities in available funds).

344. See Michele Alexandre, *Navigating the Topography of Inequality Post-Disaster: A Proposal for Remediating Past Geographic Segregation During Rebuilding*, in LAW AND RECOVERY FROM DISASTER: HURRICANE KATRINA 158–59 (2009).

basis for a federal role in land use, since at least one likely basis for federal authority over land use will be the Spending Clause, under which the federal government can impose conditions on programs it funds.<sup>345</sup>

There are downsides to national financing. As Professor Farber observes, one of the most significant risks is that federal financing could create a moral hazard if it induces local governments to continue to allow irresponsible development because they know the federal government will bail them out if climate impacts later require adaptation measures.<sup>346</sup> For example, a local government could be tempted to expand an airport in an area prone to flooding if it believed the federal government would help finance protective measures if and when they became necessary. The local government would likely be more cautious about its investments if it knew it would have to pay for future protective measures or post-disaster reconstruction. The moral hazard concern is an important caution in relation to government-funded protection and generous post-disaster compensation that allows rebuilding in disaster-prone areas. But the moral hazard concern does not emerge in many adaptation contexts, where federal financing is intended to improve pre-disaster hazard mitigation efforts like financing retreat from disaster-prone areas.

Rent-seeking is an additional risk of federal financing. Because federal adaptation funds could generate a significant financial flow into local coffers, local officials might exaggerate their adaptation needs in order to increase their share of federal money.<sup>347</sup> While an important concern whenever the federal government offers funds, the fear of rent-seeking suggests the importance of careful limits and conditions on federal funding for local adaptation, rather than an outright ban for fear of abuse.<sup>348</sup>

345. U.S. CONST., Art. I, § 8, cl. 1. As the Supreme Court has explained, the Spending Clause allows the federal government to spend money on the general welfare, a power that includes the power to establish conditions on state and local programs it funds. *See Nat'l Fed'n of Indep. Bus. v. Sebelius*, 132 S. Ct. 2566, 2601–02 (2012). Such conditions are permissible so long as they are not deemed to coerce state and local action. *Id.* at 2602–03. Determining how or when federal requirements are deemed coercive is a complex and somewhat uncertain question, *see* Ryan, *supra* note 138, and beyond the scope of this Article.

346. *See* Farber, *supra* note 14, at 270.

347. *See id.* at 271.

348. For example, to address the moral hazard concern, the federal government could condition adaptation assistance on local governments having addressed climate risks. Rent-seeking is likely unavoidable and will require the same careful criteria and assessment that is necessary whenever federal funds are offered.

### 3. Federal Coordination

The federal government could also create frameworks that coordinate the network of federal, state, regional, and local programs engaged in adaptation-related land use.<sup>349</sup> Rather than creating new requirements, such coordination would facilitate effective policy development and implementation by enhancing communication and providing opportunities for relevant players to allocate tasks efficiently. In addition to vertical coordination (from federal to local), horizontal coordination among the many agencies with adaptation-related work (including agencies that address disasters, housing, wetlands, stormwater, transportation, etc.) would be fruitful.

Some federal and sub-national initiatives are already underway. As discussed above, the federal Adaptation Task Force was conceived to coordinate federal agency responses.<sup>350</sup> Without waiting for a federal framework, many state and local agencies are already developing both horizontal and vertical networks to facilitate adaptation planning.<sup>351</sup> Nonetheless, such coordination is often lacking, and a more comprehensive assessment of coordination needs and active federal institutional support for coordination initiatives could enhance adaptation efforts.

### C. From Theory to Practice

The parameters outlined above provide a neat sketch. It is nonetheless important to recognize that a complex web of local, state, and federal measures already address adaptation-related land use; we are not working on a blank slate. The arguments for multilevel governance articulated here could influence the exercise

349. See FOURTH NATIONAL ASSESSMENT, *supra* note 1, at 430; Glicksman, *supra* note 10, at 1183 (suggesting federal role in coordinating state and local adaptation policy).

350. See *supra* note 76 and accompanying text.

351. Cross-state regional efforts include, for example: *Climate Change Collaboration in the Pacific Northwest (C3)*, U.S. FISH & WILDLIFE SERV., <http://www.c3.gov/> (last updated Nov. 14, 2012); *Gulf of Mexico Alliance*, <http://www.gulfofmexicoalliance.org/index.php> (last visited June 27, 2014); *Initiative on Weather and Climate Risk*, W. GOVERNORS' ASS'N, <http://www.westgov.org/> (last visited June 27, 2014). Intrastate initiatives to bring together local entities include the *Colorado Climate Network*, <http://www.coclimatenetwork.org/index.html>; *Green Cities California*, <http://greencitiescalifornia.org/> (last updated June 15, 2014); *Oregon Coastal Management Program*, <http://www.oregon.gov/LCD/OCMP/Pages/index.aspx> (last visited June 27, 2014); *Southeast Florida Regional Climate Change Compact*, <http://www.broward.org/NaturalResources/ClimateChange/Pages/SoutheastFloridaRegionalClimateCompact.aspx> (last visited June 27, 2014); and the *Wisconsin Initiative on Climate Change Impacts*, <http://www.wicci.wisc.edu/index.php> (last visited June 27, 2014).

of federal authority under existing programs, including coastal zone management, disaster programs, wetlands and levee management, the national flood insurance program, stormwater infrastructure programs, housing policies, and other infrastructure programs.<sup>352</sup> The federal government is already identifying principles and mechanisms for integrating climate change adaptation considerations into existing programs, including mechanisms that touch upon land use.<sup>353</sup> To the extent that fears about incursions on local control have chilled federal willingness to address land use under existing federal regulatory regimes,<sup>354</sup> this Article provides arguments for more aggressive federal measures.

While reliance on existing authorities is a good start, it is unlikely to lead to a sufficiently robust or coherent response to impending climate change. Notwithstanding numerous examples of robust state and local adaptation initiatives, viewed collectively, existing initiatives are insufficient, and new federal legislation could provide a structure that is more comprehensive than piecemeal local action or the piecemeal influence of existing federal programs.

If and when such new legislation is developed, that legislation must build upon, adjust, and be integrated with the multi-faceted and dynamic set of existing institutions, considering not only the vertical governance axis that is the subject of this paper but also the horizontal relationships across government agencies within a particular level of government.<sup>355</sup> This Article provides a theoretical justification for pursuing a greater federal role in adaptation-related land use and sets the stage for the additional

352. See *supra* notes 81–96 and accompanying text (describing existing federal laws that already have some impact on adaptation-related local land use decisions).

353. See INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE, FEDERAL ACTIONS FOR A CLIMATE RESILIENT NATION: PROGRESS REPORT (2011), available at [http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011\\_adaptation\\_progress\\_report.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011_adaptation_progress_report.pdf); see also CROSS-EPA WORK GRP. ON CLIMATE CHANGE ADAPTATION PLANNING, DRAFT U.S. ENVIRONMENTAL PROTECTION AGENCY CLIMATE CHANGE ADAPTATION PLAN 32–47 (2012) (discussing options for mainstreaming adaptation into current EPA programs), available at <http://www.epa.gov/climatechange/pdfs/EPA-climate-change-adaptation-plan-final-for-public-comment-2-7-13.pdf>.

354. In the National Flood Insurance Program context, Sean Hecht observes that “insurance regulators and other government officials have been reluctant to allow insurance to influence land use planning directly, because of political and socioeconomic factors, including local governments’ desire to exercise direct control over land use decisions . . . .” See Hecht, *supra* note 85, at 511, 517. Relatedly, Erin Ryan describes how concerns about federal intrusions into state and local prerogatives stalled federal disaster relief efforts in response to Hurricane Katrina, with tragic consequences. See Ryan, *supra* note 138, at 518–39.

355. See Camacho & Glicksman, *supra* note 153, for a typology of governance dimensions.

research needed to craft federal legislation structuring a multilevel governance adaptation response.

#### IV. CONCLUSION

The climate is already changing. Climate change adaptation is essential. Land-use planning and land-use control will be central to effective adaptation. The current political norm is that local governments control land use. But local governments often lack the will and the means to engage in comprehensive adaptation planning, including land-use planning. They are unlikely to address larger regional, state, and federal interests. To the extent that respect for local government control over land use has chilled efforts to implement existing federal programs or stands as an obstacle to new federal adaptation-related land-use measures, it is essential to debunk the assumption that federalism demands primary reliance on local control. The scale and extent of impending climate change create a new imperative for multilevel governance over adaptation-related land-use decision-making.

Shared governance can best serve the range of values informing governance structures. They demonstrate that, whatever the limitation of exclusive local control, a continued and substantial local role remains critical. As a practical matter, local governments will be motivated to address increasingly evident climate change harms and risks. Furthermore, they will always have more on-the-ground information to design plans that address locally-specific and potentially unique impacts and preferences. Encouraging a wide diversity of local strategies will provide the nation with laboratories of invention and protect it against the failure of a single, potentially misguided, federal approach. From a democratic theory perspective, land-use decisions implicate essential features of community life, entitling local residents to a meaningful and significant (though not exclusive) voice in shaping future conditions, weighing difficult tradeoffs, and preserving the range of choices that local diversity offers. Maintaining some degree of local power would also provide a brake on land-use initiatives that unsettle existing property rights.

But an exclusive reliance on local land-use controls will not achieve effective adaptation and could undercut larger regional, state, or national goals. Because many climate impacts will transcend local boundaries, planning and coordination with larger jurisdictional levels is necessary. Moreover, while information

about the implications of land-use measures is primarily local, federal and state entities are likely to have greater resources and expertise to assess likely future climate impacts. Some role for larger jurisdictional levels is also needed to overcome pervasive impediments to local action, like the race-to-the-bottom, free-riding, and inadequate information and resources. A role for larger jurisdictional levels would also prevent the externalities that could otherwise arise from purely local control, including massive federal financial liability for avoidable disasters. From a democratic theory perspective, local governments could prioritize local interests and fail to serve larger interests, such as the need for affordable housing. In some circumstances, marginalized populations might also benefit from federal planning parameters that help protect them from local power politics. Fundamental values, like ensuring that all citizens are protected against harm and that everyone gets a fair shake in the planning process, suggest that exclusive reliance on local control would be misguided. While there is no guarantee that the federal government will not be plagued by some of the same distortions that affect local governments, a federal role has the potential to offer unique advantages and benefits.

A multilevel governance approach provides inherent virtues by offering the benefits and avoiding the pitfalls of exclusive reliance on a single level. Multilevel governance creates a more dynamic and interactive regulatory environment that could spur more effective solutions and enhance cross-jurisdictional accountability, accountability that increases the likelihood that required programs will be implemented and provides a check on potential abuses of power. It also provides multiple entry points for political participation, allowing for the expression of views at multiple levels. Moreover, multilevel governance reduces the adverse consequences of interest group capture at any one level of government.

A multilevel governance approach that intrudes on local control will not be an easy sell.<sup>356</sup> Nonetheless, just as the inability of local governments to respond to the Great Depression drove federal legislation in the 1930s,<sup>357</sup> local governments' inability to respond effectively to worsening climate impacts could create the political

356. *See supra* notes 227–29 and accompanying text (noting scholarly skepticism about the pragmatic viability of proposals for a federal role in land use).

357. *See Ryan, supra* note 138, at 633–34.

space for a greater federal role in land use notwithstanding a long tradition of state and local control. At some point the risks posed by climate change could become so evident, and the inability of local governments to confront that risk on their own so tangible, that the political door will crack open. While local governments are unlikely to give up their autonomy easily, federal involvement could provide local governments with real benefits: coordination, financial and technical assistance, and even some alleviation of responsibility. If the benefits of federal assistance outweigh the loss of full autonomy, then federal adaptation legislation that guides and supports local land use could emerge.