Land Development: A Super-Wicked Environmental Problem

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I. INTRODUCTION

Hurricane Harvey dropped fifty-two inches of rainfall in the Houston, Texas area over only a few days in the summer of 2017[1] (the average *annual* rainfall in Houston is forty-five inches[2]). This was a record for any single storm event in the United States.[3] At one point, a foot and a half of water covered seventy percent of Harris County, and one-third of the city of Houston was under water.[4] So much water covered the region that it depressed the earth's crust two centimeters.[5] Ten thousand people were rescued from their homes as the floodwaters rose.[6] Over 203,000 homes were damaged, with over 12,000 homes completely destroyed.[7] 2017 was the *third year in a row* that Houston had suffered a "500 year flood"—floods in 2015 and 2016 also damaged thousands of homes.[8] A few months *after* Hurricane Harvey, Houston's city council and mayor approved an 800-home development on a previously unpaved and undeveloped piece of property within the 100-year floodplain.[9]

Read the previous sentence once more. If it seems jolting in the context of the information that it follows, it should be. And it provides a glaring example

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1. Robert Morast, *Hurricane Harvey by the Numbers*, HOUS. CHRON. (Sept. 4, 2007), https://www.houstonchronicle.com/life/article/Hurricane-Harvey-by-the-numbers-12172287.php [https://perma.cc/62JP-J7CX].

2. *Climate Houston-Texas*, U.S. CLIMATE DATA, https://www.usclimatedata.com/climate/houston/texas/united-states/ustx0617 [https://perma.cc/3PYB-QU7X] (last visited Oct. 27, 2019).

3. Kimberly Amadeo, *Hurricane Harvey Facts, Damage and Costs*, BALANCE (Nov. 7, 2018), https://www.thebalance.com/hurricane-harvey-facts-damage-costs-4150087 [https://perma.cc/4PW8-Q9WS].

4. *Id.*

5. *Geophysicist: Weight of Harvey Rains Caused Houston To Sink*, NBCDFW (Sept. 10, 2017, 5:32 AM), https://www.nbcdfw.com/weather/stories/Geophysicist-Weight-of-Harvey-Rains-Caused-Houston-to-Sink-443057633.html [https://perma.cc/RE7Q-2WUZ].

6. Amadeo, *supra* note 3.

7. Robin Kundis Craig, *Harvey, Irma, and the NFIP: Did the 2017 Hurricane Season Matter to Flood Insurance Reauthorization?*, 40 U. ARK. LITTLE ROCK L. REV. 481, 494 (2018).

8. Christopher Ingraham, *Houston Is Experiencing Its Third '500-Year' Flood in 3 Years. How Is That Possible?*, WASH. POST (Aug. 29, 2017, 4:30 AM), https://www.washingtonpost.com/news/wonk/wp/2017/08/29/houston-is-experiencing-its-third-500-year-flood-in-3-years-how-is-that-possible/?noredirect=on&utm_term=.cfd3c782cc95 [https://perma.cc/BF4G-C32W]; *see also* Jessica Hamilton Young, *Remembering Houston's Memorial Day Floods*, HOUS. CHRON., (May 25, 2016, 12:28 PM), https://www.chron.com/houston/article/Remembering-Houston-s-Memorial-Day-floods-7944644.php [https://perma.cc/8ALJ-P2TC].

9. Blake Hudson, Opinion, *Hudson: Houston Must Stop Developing in the 100-Year Flood Plain*, HOUS. CHRON. (Nov. 17, 2017, 8:46 AM), https://www.houstonchronicle.com/opinion/outlook/article/Hudson-Houston-must-stop-developing-in-the-12364026.php [https://perma.cc/9JP5-TZVD].

of just how "wicked"[10] is the problem of land development in the United States. Houston is a blue city in a red state, and would supposedly be more amenable to climate-driven land use adaptation policies.[11] But its city council and mayor barely hesitated to approve the placement of even more homes, and more people, in the 100-year floodplain only months after the second-most costly disaster in national history.[12] Even if these homes are built on infill above a threshold flood level (as is planned), they may yet flood—particularly since climate change is affecting planners' ability to accurately model flood event location and severity. At the very least, homeowners downstream will now be more at risk of flooding because of more water running off the additional impervious rooftops, roadways, and newly elevated lands.

Numerous additional examples from both within Houston and around the country could illustrate how seemingly impossible it is to break free of the impulse to pave the landscape even in the face of great risk, whether it be visible risks like flooding and wildfires or "invisible" risks that are difficult to quantify, like those associated with habitat and biodiversity loss. Even so, the proposition that most people consider land development in and of itself a pressing environmental issue is dubious at best. Climate change is often cited as the most prominent "super-wicked" environmental problem faced by society.[13] I argue that land development is the *other* major super-wicked environmental problem of modern times and it should be both recognized and treated as such by citizens, scholars, and policy-makers alike. This essay argues that land development per se, and not merely its associated environmental ills analyzed in a disaggregated, isolated manner—as the literature treats the subject to date—should be prioritized as one of the greatest threats to humanity's environmental well-being. Part II explains the

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10. "Wicked" policy problems were first discussed in 1973 by Horst Rittel and Melvin Webber. *See* Horst W. J. Rittel & Melvin M. Webber, *Dilemmas in a General Theory of Planning*, 4 POL'Y SCI. 155, 156 (1973), https://web.archive.org/web/20070930021510/http://www.uctc.net/mwebber/Rittel+Webber+Dilemmas+General_Theory_of_Planning.pdf.

11. *See Climate Action Plan*, CITY HOUS., TEX., http://www.greenhoustontx.gov/climateactionplan/index.html [https://perma.cc/GN6W-RYZV] (last visited Oct. 27, 2019).

12. *See* Brian K Sullivan, *Hurricane Harvey Was Second Most Expensive Storm in U.S. History*, BLOOMBERG (Jan. 25, 2018, 11:09 AM), https://www.bloomberg.com/news/articles/2018-01-25/harvey-s-5-feet-of-rain-make-it-second-costliest-u-s-hurricane [https://perma.cc/VU5Y-9PWH].

13. *See* Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present To Liberate the Future*, 94 CORNELL L. REV. 1153, 1160 (2009); Kelly Levin et. al., *Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves To Ameliorate Global Climate Change*, 45 POL'Y SCI. 123, 123 (2012); Chris Riedy, *Climate Change Is a Super Wicked Problem*, PLANETCENTRIC (May 28, 2013), https://chrisriedy.me/climate-change-is-a-super-wicked-problem-b2e2b77d947d [https://perma.cc/GET4-QJHX].

implications of land development being a wicked problem by discussing the key role of land-based natural resources as proxies for some of the most important environmental issues society faces. Part III explains why land development is "wicked," framing it as presenting an environmental challenge rivaling the wickedness of climate change. Part IV presents a typology of factors contributing to land development wickedness. Part V concludes with some thoughts on tackling such a wicked problem, an endeavor that will be futile if society does not first acknowledge land development as one of the most pressing environmental challenges of our time.

II. THE IMPLICATIONS OF THE WICKED LAND DEVELOPMENT PROBLEM

A few years ago, an executive from Southwestern Energy guest spoke in my environmental law class. At the end of our question and answer session I asked him which two federal environmental statutes he would most like to see amended and why. One might assume he would have answered the Clean Air Act or the point source program under the Clean Water Act because, while obviously crucial to controlling pollution, these statutes are fairly intrusive into day-to-day industrial operations. They require installation, maintenance, and updating of costly technologies. Companies are responsible for constant monitoring and reporting obligations, and may be inspected at a moment's notice, as government officials come onto company property and demand to review procedures, protocols, and data. Overall, compliance with these complex statutes extracts a great deal of economic, human, and temporal capital from companies like Southwestern.

What was his answer? The Endangered Species Act and Section 404 of the Clean Water Act (the wetland fill program). While perhaps surprising, it makes a great deal of sense. Businesses know that they can innovate to improve pollution controls. They know that they can build the costs of technologies, monitoring, and overall regulatory compliance into projections of future operations. At the end of the day, industries know that they can continue to operate under the Clean Air Act (CAA) or Clean Water Act's (CWA) point source program, even if they face high costs associated with those regulatory regimes.

The Endangered Species Act (ESA) and Section 404 of the Clean Water Act, on the other hand, can completely shut down development or operational activities. These are the two federal regulatory regimes that most directly implicate land use and development—and there is only so much land. The Endangered Species Act is as close as the federal government gets to directly regulating private land use, severely restricting property rights and land uses

in the presence of an endangered or threatened species. The CWA's 404 wetland fill program is a close second, requiring federal permits and potentially costly wetland "offsets" before a landowner can fill a wetland for development. And indeed, the ESA is one of the most frequent targets of repeal and/or amendment by opponents,[14] while the "waters of the U.S." rule on wetland permitting is mired in continuous controversy.[15]

Land, of all resources, is a true zero-sum game. We can pollute some resources or cultivate others and still use or rehabilitate those resources in the future. But land, combined with the natural ecosystems upon it, is a truly finite resource. You can either pave a wetland or endangered species habitat, or you can leave it as is. There really is no in-between. And whereas a river or the air can become pollution-free once the polluter's actions are curbed or augmented, a wetland or unique ecological habitat can never truly return to its original form once paved, no matter the human engineering involved. If you really want to see pushback from a regulated community, tell them they cannot put a facility on a piece of property that they own and plan to develop or lease for development—and especially if it is the federal government implementing the restriction.

As I have argued before, however, better land use planning at the state and local government levels can reduce reliance on complex, unwieldy, and

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14. *See* Matthew Brown & Mathew Daly, *GOP Targets Landmark Endangered Species Act for Big Changes*, ASSOCIATED PRESS (Jan. 16, 2017), https://apnews.com/c4809b5e9f4641ffa45e09b390030293 [https://perma.cc/RKR7-4G3B]; Bobby Magill, *Congress Targets Species Act--and Its Climate Benefits*, SCI. AM. (Mar. 6, 2017), https://www.scientificamerican.com/article/congress-targets-species-act-and-its-climate-benefits/ [https://perma.cc/6LHB-ZV3F]; *Politics of Extinction: Attacks on the Endangered Species Act*, CTR. FOR BIOLOGICAL DIVERSITY, https://www.biologicaldiversity.org/campaigns/esa_attacks/table.html [https://perma.cc/2UWB-HCZS] (last visited Oct. 27, 2019).

15. Karma B. Brown & Brian R. Levey, *2015 "Waters of the US" Rule Enjoined in an Additional 11 States*, HUNTON ANDREWS KURTH: THE NICKEL REPORT (June 14, 2018), https://www.huntonnickelreportblog.com/2018/06/2015-waters-of-the-us-rule-enjoined-in-an-additional-11-states/#page=1 [https://perma.cc/LJ35-XPPP]; Anthony B. Cavender, *Seventh Circuit Remands "Waters of the United States" Case to Corps of Engineers to Determine Whether There Is a "Significant Nexus"*, PILLSBURY: GRAVEL2GAVEL (June 29, 2018), https://www.gravel2gavel.com/seventh-circuit-remands-waters-of-the-united-states-case-to-corps-of-engineers-to-determine-whether-there-is-a-significant-nexus/#page=1 [https://perma.cc/M93R-RYV9]; Coral Davenport, *E.P.A. Blocks Obama-Era Clean Water Rule*, N.Y. TIMES (Jan. 31, 2018), https://www.nytimes.com/2018/01/31/climate/trump-water-wotus.html [https://perma.cc/K746-AANC]; Ledyard King, *Trump EPA Takes Aim at Obama-era Clean Water Rules, Prompting Outcry from Environmentalists*, USA TODAY (Dec. 12, 2018, 10:50 AM), https://www.usatoday.com/story/news/politics/2018/12/10/clean-water-rollback-epas-new-rule-expected-revise-waters-us/2269060002/ [https://perma.cc/NH2V-5DFK].

costly federal environmental statutes.[16] This is because land development acts as a proxy for the regulatory targets of most major federal environmental statutes. Many federal statutes are aimed at the symptoms of environmental problems, rather than their drivers. And those drivers often have their source in land development. So, while we think of water and air quality, biodiversity, and climate change as some of the most pressing environmental concerns of our time, each has a driver—a driver that oftentimes directly implicates the way that we develop land.

While, for example, the Clean Water Act's point source program has largely succeeded in cleaning the nation's waters from pollutants flowing through pipes from factories, consider its failure to address the single largest modern threat to the nation's waters in nonpoint-source water pollution.[17] Scientific research demonstrates the significant water quality gains of reducing impervious surface cover from the built environment.[18] Yet the reason the CWA does not address nonpoint water pollution is because such pollution has historically been viewed as a land use regulatory sphere reserved to state and local governments. The inability to forge political will to address land-use driven water pollution during the height of the push for federal environmental regulatory controls is further proof of the wicked nature of the land development problem.[19]

Consider also the ESA's primary focus on keeping species on life support rather than aggressively addressing the habitat loss and fragmentation that drives species decline in the first instance.[20] The empirical data underpinning

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16. *See* Blake Hudson, *Relative Administrability, Conservatives, and Environmental Regulatory Reform*, 68 FLA. L. REV. 1661, 1661 (2016). This article was selected by Vanderbilt Law and the Environmental Law Institute as one of the top five environmental law & policy articles published in 2016–2017. *See also* Linda Breggin, *Environmental Regulation That Even a Conservative Would Like?*, ENVTL. L. INST.: VIBRANT ENV'T BLOG (Aug. 1, 2018), https://www.eli.org/vibrant-environment-blog/environmental-regulation-even-conservative-would [https://perma.cc/6WSU-8Q2G].

17. *See* Robin Kundis Craig & Anna M. Roberts, *When Will Governments Regulate Nonpoint Source Pollution? A Comparative Perspective*, 42 B.C. ENVTL. AFF. L. REV. 1, 2 (2015); ENVTL. PROT. AGENCY, NONPOINT SOURCE POLLUTION: THE NATION'S LARGEST WATER QUALITY PROBLEM (1996), https://nepis.epa.gov/Exe/ZyPDF.cgi/20004PZG.PDF?Dockey=20004PZG.PDF [https://perma.cc/KB22-CGBD].

18. *See* Kristen M. Fletcher, *Managing Coastal Development*, *in* OCEAN AND COASTAL LAW AND POLICY 147–48 (Donald C. Baur et al. eds., 2008).

19. *See* Robin Kundis Craig, *Local or National? The Increasing Federalization of Nonpoint Source Pollution Regulation*, 15 J. ENVTL. L. & LITIG. 179, 181–83 (2000); Douglas R. Williams, *When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution*, 9 WASH. U. J.L. & POL'Y 21, 27 (2002).

20. *See, e.g.*, *Ecological Principles for Managing Land Use*, ECOLOGICAL SOC'Y AM., (April 2000) https://cfpub.epa.gov/watertrain/pdf/modules/landuseb.pdf [https://perma.cc/SLB3-U8XL].

the "species-area relationship" for biodiversity protection posits that the larger the habitat area preserved the more species are supported and the better their chances of survival.[21] As a result, there is a direct correlation between how state and local governments allow land and habitat to become fragmented through poor land use planning and federal taxpayer expenditures to pay for the ESA's regulatory program.

Also consider the attempts to—according to some—fit a square peg into a round hole by using the CAA to address climate change rather than having an independent, explicitly tailored climate statute.[22] Given that over recent decades an estimated 15–25%[23] of annual global carbon emissions has resulted from deforestation, simply not cutting down trees for development is the cheapest and most efficient way to avoid releasing CO_2 into the atmosphere (not to mention preserving a mechanism for drawing it back out of the atmosphere). And yet the southeastern U.S. is poised to lose up to 13% of its forests over the next forty years due primarily to urban development that is not the target of any federal regulatory regime.[24] The CAA also attempts to address pollution (including greenhouse gases) caused by mobile-source emissions (a symptom) rather than the driver of urban sprawl that leads to increased vehicle miles traveled.[25] We understand better than ever the increased impacts that mobile-source emissions have on air quality in sprawling cities with unchecked or uncontrolled land development.[26]

In short, even though we maintain massive federal regulatory programs aimed at curbing air, water, and biodiversity problems, one of the most

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21. JAMES RASBAND ET. AL., NATIONAL RESOURCES LAW AND POLICY 329–30 (Robert C. Clark et. al. eds., 2d ed. 2009).

22. *See* DANIEL A. FARBER & AMY SINDEN, CTR. FOR PROGRESSIVE REFORM, SIX MYTHS ABOUT CLIMATE CHANGE AND THE CLEAN AIR ACT 1–6 (2011). This Article does not assert that in the absence of federal legislation aimed specifically at carbon utilizing the CAA is in any way inappropriate, only that it would be preferable to address it directly through a statute designed for those purposes. It may be administratively inefficient to use the CAA to do so.

23. *See Deforestation and Climate Change*, EARTH DAY NETWORK, https://www.earthday.org/campaigns/reforestation/deforestation-climate-change/ [https://perma.cc/G8BB-RUS8] (last visited Aug. 23, 2019); *Deforestation and Its Extreme Effect on Global Warming*, SCI. AM. (Nov. 13, 2012), https://www.scientificamerican.com /article/deforestation-and-global-warming/ [https://perma.cc/83DH-QG5Q].

24. DAVID N. WEAR & JOHN G. GREIS, U.S. DEP'T OF AGRIC., FOREST SERV., THE SOUTHERN FOREST FUTURES PROJECT: SUMMARY REPORT 26–35 (2011), http://www.srs.fs.usda.gov/futures/reports/draft/summary_report.pdf [https://perma.cc/5PCE-T9MB]; *see also* Marci A. Hamilton, *Federalism and the Public Good: The True Story Behind the Religious Land Use and Institutionalized Persons Act*, 78 IND. L.J. 311, 335 (2003) ("Land use law has always been a creature of state and local law."); Blake Hudson, *Fail-Safe Federalism and Climate Change: The Case of U.S. and Canadian Forest Policy*, 44 CONN. L. REV. 925, 940–41 (2012).

25. HOWARD FRUMKIN ET AL., URBAN SPRAWL AND PUBLIC HEALTH 22–23, 67 (2004).

26. *Id.*

prominent drivers of those problems, land development, remains largely unchecked and uncontrolled in the U.S. Urban sprawl is gobbling up natural resources at a tremendous rate.[27] Agricultural land alone was lost at a rate of 175 acres per hour (three per minute) from 1992 to 2012.[28] Over 40% of that development occurred in rural areas, with the remaining 60% occurring due to urban expansion.[29] Nearly 40% of all the development that occurred between 1992 and 2012 replaced forested lands.[30] And as noted, the U.S. South may lose 13% of its remaining forests to development in the coming decades.

The inability of federal regulatory regimes to tackle the drivers of water, air, and biodiversity environmental ills is exacerbated by the fact that some of the land development problem is of a regional nature. For example, development sprawl is worse in the southeastern U.S. than any other region.[31] The United States' most sprawling small metro area is Hickory, North Carolina; its most sprawling medium-sized metro area is Baton Rouge, Louisiana; and its most sprawling large metro area is Atlanta, Georgia.[32] In fact, eight of the ten most sprawling metro areas nationally are in southern states, including seven of the top ten most sprawling large metro areas, all of the top ten most sprawling medium metro areas, and seven of the top ten most sprawling small metro areas.[33] Of the 221 metro areas analyzed in a recent report, thirty-eight of the forty-five most sprawling regions in the United States are in the South.[34]

Yet, even regions of the country held out as iconic examples of good land use planning, like Portland, Oregon, are witnessing land development sprawl. Though Oregon requires all metro areas to have an urban growth boundary,[35] and Portland has one of the most stringent, between 2000 and 2010 Portland

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27. Mark Swilling, *The Curse of Urban Sprawl: How Cities Grow, and Why This Has To Change*, GUARDIAN (July 12, 2016, 6:55 AM), https://www.theguardian.com/cities/2016/jul/12/urban-sprawl-how-cities-grow-change-sustainability-urban-age [https://perma.cc/SB5R-2WBL].

28. Dan Nosowitz, *10 Numbers that Show How Much Farmland We're Losing to Development*, MOD. FARMER (May 22, 2018), https://modernfarmer.com/2018/05/10-numbers-that-show-how-much-farmland-were-losing-to-development/ [https://perma.cc/2NJL-AJ6N].

29. *Id.*

30. *Id.*

31. SMART GROWTH AM., MEASURING SPRAWL 2014 4 (2014), https://www.smartgrowthamerica.org/app/legacy/documents/measuring-sprawl-2014.pdf [https://perma.cc/Z2DL-S8LE].

32. *Id.*

33. *Id.* at 6–8.

34. *Id.* at 19–20.

35. *See Urban Growth Boundary*, OR. METRO, https://www.oregonmetro.gov/urban-growth-boundary [https://perma.cc/6HV2-QYJ8] (last updated May 30, 2018).

sprawled outward an additional 50.4 square miles, primarily due to population growth.[36]

A greater use of land development restrictions would help internalize development externalities by forcing a more efficient use of developed space so that forests, wetlands, species habitat, waterways, and other natural resources are impacted as little as possible. By attacking the driver of environmental issues rather than seeking to remedy the symptoms, land use development restrictions act as a precautionary proxy for the environmental problems that many primary federal statutes seek to address—such as clean air, clean water, and endangered species—and also for environmental problems that federal statutes do not currently address, like climate change mitigation and adaptation. Yet, such policies are underutilized even though they have been available to policy makers, and validated by the U.S. Supreme Court, for at least a century.[37] Why? It is not that state and local governments do not have legal authority to address land development sprawl. They could certainly require re-development of urban infill spaces and greatly limit greenfield development (or at least the density of development on greenfields). They could force development to go up rather than out, and still foster economic growth. They could limit development sprawl by drawing lines around urban areas and implementing density mandates. Or, they could require integration of greenfield protections within individual development projects, thereby accepting some level of development sprawl but keeping ecosystem services in locations where they are most beneficial to society. Notwithstanding these policy options, there is simply no political will to utilize available land use control approaches to adequately protect environmental resources. Political will, in turn, is undermined by the wicked nature of land development, as discussed in the next part.

III. HOW LAND DEVELOPMENT IS A WICKED ENVIRONMENTAL PROBLEM

Recall another major tragedy in recent U.S. history, Hurricane Katrina. The extent of Katrina's destruction was due in no small part to the commercial development of floodplains that both destroyed natural wetland buffer systems and placed citizens on land at great risk of flooding. Floodwaters in Bay St. Louis, Mississippi actually "reached the overhead

36. LEON KOLANKIEWICZ ET AL., NUMBERSUSA, VANISHING OPEN SPACES: POPULATION GROWTH AND SPRAWL IN AMERICA 69 (2014), https://www.numbersusa.com/sites/default/files/public/assets/resources/files/vanishing-open-spaces-study.pdf [https://perma.cc/CW9K-HJTD].

37. *See* Vill. of Euclid, Ohio v. Ambler Realty Co., 272 U.S. 365, 397 (1926).

span where Interstate 10 crossed *over* another highway."[38] Not long after markers were placed at the site noting the floodwater high mark, city officials attempted to remove the markers.[39] One Bay St. Louis councilmember argued that "the markers are detrimental to attracting businesses that might want to relocate [in the area], especially on undeveloped property around the interstate . . . ."[40] In fact, "[s]ome city leaders envision the interstate property as a magnet that will pull in restaurants, motels, and big-box retailers."[41] Though these commercial establishments may very well be under water during the next major hurricane, requiring large expenditures of federal taxpayer dollars in disaster recovery, local government officials and economic development interests were politically predisposed to forego a needed land use adaptation policy for the sake of achieving the perceived short-term, local economic benefits of land development.

A wicked policy problem is "an issue highly resistant to resolution,"[42] or one "that is difficult or impossible to solve [because of] incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems."[43] Levin, et al. further define "super-wicked problems" as including additional elements: 1) time is running out; 2) there is no central authority; 3) those seeking to solve the problem are also causing it; and 4) policies discount the future irrationally.[44] Land development and its associated ills meet these definitions, given just how difficult the problem is to solve, the vast number of vested interests involved, the economic costs and benefits at stake, and the connection of land development to a host of other problems. Time is running out for resources affected by land development,

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38. BLAKE HUDSON, CONSTITUTIONS AND THE COMMONS: THE IMPACT OF FEDERAL GOVERNANCE ON LOCAL, NATIONAL, AND GLOBAL RESOURCE MANAGEMENT 49 (2014); *see also* Associated Press, *Bay St. Louis Officials Oppose Hurricane Katrina High-Water Markers on Highway*, NOLA.COM (July 23, 2011), https://web.archive.org/web/20120901210729/https:/www.nola.com/katrina/index.ssf/2011/07/bay_st_louis_officials_oppose.html [https://perma.cc/7BTA-HBWW].

39. Associated Press, *supra* note 38.

40. *Id.*

41. *Id.*

42. *Tackling Wicked Problems: A Public Policy Perspective*, AUSTL. PUB. SERV. COMM'N, https://www.apsc.gov.au/tackling-wicked-problems-public-policy-perspective (last visited Oct. 27, 2019), [https://perma.cc/BXB9-6VPU].

43. Jon Kolko, *Wicked Problems: Problems Worth Solving*, STAN. SOC. INNOVATION REV. (Mar. 6, 2012), https://ssir.org/articles/entry/wicked_problems_problems_worth_solving [https://perma.cc/Y8RK-JL5W] (emphasis omitted).

44. Levin et al., *supra* note 13, at 123.

as half of the U.S.'s wetlands have been lost,[45] half of the world's biodiversity has been lost[46] and extinction rates are accelerating,[47] and coastal areas—where over half of the U.S. population lives—will succumb to rising sea levels far sooner than once thought.[48] No central authority in the U.S. regulates land development, as land use regulation has been delegated (whether legally or merely politically) to the fifty states.[49] The states, in turn, most often decentralize that authority further down to the approximately 89,000 subnational governments that exist nationwide.[50] Those seeking to solve the problem—including me—are causing it, as we live, shop, drive, and actively participate in an economy that is heavily land development dependent.[51] Finally, policy-makers discount the future irrationally, as they protect a single current owner's financial investment in land at the expense of the countless future owners/users of that parcel of land that would otherwise be reliant on natural resources potentially displaced. Future

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45. *See* Darryl Fears, *Study Says U.S. Can't Keep up with Loss of Wetlands*, WASH. POST (Dec. 8, 2013), https://www.washingtonpost.com/national/health-science/study-says-us-cant-keep-up-with-loss-of-wetlands/2013/12/08/c4801be8-5d2e-11e3-95c2-13623eb2b0e1_story.html?noredirect=on&utm_term=.63f06fd150da [https://perma.cc/L4KC-WD54]; U.S. Dep't of Agric., *Wetlands*, NAT. RESOURCES CONSERVATION SERV., https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/wetlands/ [https://perma.cc/J4A8-AE8J] (last visited Sept. 3, 2018).

46. Eliene Augenbraun, *Half the World's Wildlife Gone over Last 40 Years*, CBS NEWS (Sept. 30, 2014, 6:00 AM), https://www.cbsnews.com/news/world-wildlife-fund-wwf-half-the-worlds-biodiversity-gone-over-last-40-years/ [https://perma.cc/KFK7-K7Y9].

47. David Hone, *Past Extinctions Point to a Current and Future Biodiversity Crisis*, GUARDIAN (July 19, 2017, 6:10 AM), https://www.theguardian.com/science/2017/jul/19/past-extinctions-point-to-a-current-and-future-biodiversity-crisis [https://perma.cc/Y7M3-JB6X].

48. Oliver Milman, *Flooding from Sea Level Rise Threatens over 300,000 US Coastal Homes–Study*, GUARDIAN, (June 18, 2018, 1:00 PM), https://www.theguardian.com/environment/2018/jun/17/sea-level-rise-impact-us-coastal-homes-study-climate-change [https://perma.cc/T72B-KU3N]; Ross Toro, *Half of US Population Lives in Coastal Areas (Infographic)*, LIVESCIENCE (Mar. 13, 2012), https://www.livescience.com/18997-population-coastal-areas-infographic.html [https://Perma.cc/6J6Z-68KT].

49. *See* John R. Nolon, *Historical Overview of the American Land Use System: A Diagnostic Approach To Evaluating Governmental Land Use Control*, 23 PACE ENVTL. L. REV. 821, 821–22 (2006).

50. PAUL GOLDSTEIN & BARTON H. THOMPSON, JR., PROPERTY LAW: OWNERSHIP, USE, AND CONSERVATION 969–70 (2006); STEFFEN W. SCHMIDT ET AL., AMERICAN GOVERNMENT AND POLITICS TODAY—TEXAS EDITION 89 (14th ed. 2010); *Census Bureau Reports There Are 89,004 Local Governments in the United States*, U.S. CENSUS BUREAU, (Aug. 30, 2012), https://www.census.gov/newsroom/releases/archives/governments/cb12-161.html [https://perma.cc/VG4K-G93M].

51. Blake Hudson, *Realigning Metrics of Economic Well-Being in Residential and Commercial Development Through Sustainable Land Use Planning*, 54 WASHBURN L.J. 575, 578–80 (2015).

generations will rely on that land and those resources not just for their well-being, but perhaps for their very existence.

Climate change is held out as the poster child of wicked environmental problems in the literature due to the complexity of both its drivers and its potential solutions. Yet to date, society has arguably been better at designing impactful policies to address climate change than it has at addressing rampant land development (whether climate change can be "addressed" quickly enough is unclear, however, given the amount of greenhouse gases already in the atmosphere and the relatively slow pace of policy formation). On the topic of climate change, we are at least starting to see both market and governmental inertia toward addressing the problem, as various sectors of the economy are seeking to reduce greenhouse gas emissions.[52]

In the most hyperbolic public discourse over climate change, the issue is framed as humanity's future against evil oil and gas. And yet, even energy companies are feeling the pressure of climate change's reality and their stakeholders are becoming ever aware of its implications. All five of the major oil and gas companies who were recently sued in public nuisance, while denying liability, recognized through those court proceedings that accelerated climate change is caused by humans burning fossil fuels, therefore demonstrating a response to scientific and public pressures to at least acknowledge the problem.[53] And investors are even applying pressure, as we saw with Exxon shareholders' vote requiring the company to report climate-related risks to its business.[54] Oil and gas companies have even gone so far as supporting a carbon tax (at least in word).[55] And it makes sense, because these companies presumably want to be around in perpetuity, and they face significant risk from ignoring the scientific findings regarding

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52. *See* Georgina Gustin, *Which U.S. Industries Are Setting the Strongest Climate Goals?*, INSIDE CLIMATE NEWS (Apr. 24, 2018), https://insideclimatenews.org/news/24042018/american-companies-leaders-greenhouse-gas-targets-renewable-energy-ceres-study [https://perma.cc/66M2-TA93].

53. Jay Michaelson, *Oil Companies Admit Climate Change Is Real, Say Don't Blame Us*, DAILY BEAST (Mar. 23, 2018, 9:18AM), https://www.thedailybeast.com/oil-companies-admit-climate-change-is-real-say-dont-blame-us [https://perma.cc/2PSP-JVEE]; Dana Nuccitelli, *In Court, Big Oil Rejected Climate Denial*, GUARDIAN (Mar. 23, 2018, 6:00 AM), https://www.theguardian.com/environment/climate-consensus-97-per-cent/2018/mar/23/in-court-big-oil-rejected-climate-denial [https://perma.cc/X8UK-QUHK].

54. Diane Cardwell, *Exxon Mobil Shareholders Demand Accounting of Climate Change Policy Risks*, N.Y. TIMES (May 31, 2017), https://www.nytimes.com/2017/05/31/business/energy-environment/exxon-shareholders-climate-change.html [https://perma.cc/P5WS-KT9U].

55. Oliver Milman, *Exxon, BP and Shell Back Carbon Tax Proposal to Curb Emissions*, GUARDIAN (June 20, 2017, 12:32 PM), https://www.theguardian.com/environment/2017/jun/20/exxon-bp-shell-oil-climate-change [https://perma.cc/Z36E-B8AJ].

climate change (especially with so much energy infrastructure in vulnerable coastal zones).

None of this is to absolve oil and gas companies of their efforts to hamstring climate policies to date, through disinformation campaigns or otherwise.[56] Rather, it demonstrates that with what society considers one of the most wicked environmental problems of our day, climate change, we at least see attitudes shifting and policy responses formulated. When the scope of the problem is fossil fuels being burned and greenhouse gases getting into the atmosphere, society can readily identify which companies facilitate those activities, and can exert pressure on the companies and others to both acknowledge the problem and hopefully do something about it. Even though the debate about what to do about climate change wages on, at least there is a debate. No one wants to purposefully wreck our climate system; there is just a large segment of the population that either does not *believe* we are wrecking it, or that accepts the science but believes that a strong regulatory response is not the appropriate way to address the problem. What people want is an affordable energy source—it just so happens that the energy source that we have been using for centuries is wrecking the climate.

While we see a pitched battle play out in the climate change "debate," with varying stakeholders choosing sides, people are far more laissez-faire about land development. While there are groups who focus on urban sprawl and combating the environmental problems it causes, it seems clear that not many beyond those groups consider land development per se (in its current form) as a serious problem. While no one supports harmful climate change, who supports land development in one form or another? Everybody! Everyone wants economic development and the growth that goes along with it—growth that is currently tied to land development in significant ways (as discussed in Part IV). The fact that we all contribute to, and benefit from, land development makes the wickedness of it perhaps more complex than even climate change.

Developers want expansive land development, paving greenfields as opposed to redeveloping brownfields to provide the consumer a cheaper product. It is cheaper for developers and homeowners to clear a forest and pave the land than to re-develop formerly developed property. Developers want to squeeze as many houses onto as little space as possible to maximize profits, and new communities with significant integrated green space and

56. Elliott Negin, *ExxonMobil's Climate Disinformation Campaign Is Still Alive and Well*, UNION CONCERNED SCIENTISTS BLOG (Feb. 12, 2018, 11:29 AM), https://blog.ucsusa.org/elliott-negin/exxonmobils-climate-disinformation-campaign-is-still-alive-and-well [https://perma.cc/FU7E-W3AJ].

habitat corridors—like where I live in Kingwood, Texas (developed in the 1970s)—are becoming increasingly rare.

Land development has the support of local governments, who most often hold the keys to land use planning, since states grant authority to them and rarely coordinate local government efforts.[57] Local governments want an increased tax base, revenues, and economic growth to support new jobs and draw in new residents, which may result in the paving of even more land.

Consumers want land development, because it provides them cheap housing. And our hyper-consumptive culture wants to consume a vast array of commercial goods and services. Private property owners like land development, looking to their land as an investment vehicle (and often their most significant investment). While they may enjoy their forested property during their lives, they want to preserve the option to subdivide their 100 acres for 400 homes on ¼ acre lots for the benefit of their descendants.[58]

Environmentalists even contribute to the problem at times, though perhaps unwittingly. Many environmental groups push for dense development, hoping that it will curb sprawl, even though what really happens quite often—even in the most green places of all, like Portland, Oregon—is that development continues to sprawl outward, only now it is far more dense and has far less green space (forests, habitat corridors, and wetlands) integrated into it.[59] Dense developments are environmentally preferable as long as the governments approving such developments are also stringently protecting adjacent areas rich in natural resources. At present, too few governments are doing so. In particular, local governments in regions like the U.S. South have heartily adopted new dense development models, but without providing corollary protections to surrounding environs.[60] As recent scholarship argues, given the seeming inevitability of sprawl it may be better to integrate less density into our developments to allow for at least semi-functional ecosystems in the places that we live, shop, and work.[61] But many environmentalists do not see it that way, hoping that if we develop densely, somehow outlying lands will be spared from dense developments 20 years hence—notwithstanding the fact that most local governments are not inclined to restrict such development now or in the future.

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57. *See* Blake Hudson & Jonathan Rosenbloom, *Uncommon Approaches to Commons Problems: Nested Governance Commons and Climate Change*, 64 HASTINGS L.J. 1273, 1307–08 (2013).

58. *See Frontline: Poisoned Waters Documentary* at 1:25:50–1:27:02 (PBS Apr. 21, 2009), https://www.pbs.org/video/frontline-poisoned-waters/ [https://perma.cc/74MN-5NQ8].

59. Blake Hudson, *Curbing Dense Sprawl*, NAT. RESOURCES & ENV'T, Winter 2018, at 18, 19.

60. *Id.* at 18.

61. *Id.* at 20–21.

The list of parties who depend upon and therefore perpetuate land development in its current, environmentally suboptimal form could go on. Obviously, the actors described above do not always maintain the stated preferences, and there are citizens and locales that do not operate as described, developers who go against the grain, and local governments who make responsible decisions. And a certain threshold of land development is necessary for human survival and wellbeing. The problem is that modern land development occurs so recklessly, and without proper controls throughout far too much of the nation. We could have economic growth and better concentrate land development within boundaries so that it does not continue to consume important natural capital around the nation. But too many other complex phenomena have made that alternative a non-starter around most of the nation.

So, given this proclivity to continue developing green spaces, and knowing that stakeholders of all varieties often blindly contribute to the path dependency that defines how we develop land in the U.S., we need to better understand the drivers of this wicked problem. While others have alluded to wicked aspects of land use planning in narrow contexts, such as governing the wildland/urban interface for fire management[62] or when detailing legal regimes related to urban planning,[63] no scholar to date has presented a typology of factors that contribute to the complexity of the land development problem. The next Part details some of these factors and the drivers that undermine responsible land use planning around much of the nation.

IV. FACTORS CONTRIBUTING TO THE WICKEDNESS OF LAND DEVELOPMENT

This essay articulates a typology of factors that contribute to the super-wicked nature of the land development problem. This typology, though non-exhaustive, is an initial step toward assisting scholars, policy-makers, and citizens in better understanding the drivers of unchecked land development so that, first, they can better understand the complexity of the problem and, second, can focus more acutely and effectively on solutions. As will be evident in the following discussion, these factors overlap to a significant degree, with analysis of one factor being raised within the analysis of various other factors—a consequence of the complex interconnectedness of land development drivers.

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62. *See* Stephen R. Miller, *Planning for Wildfire in the Wildland-Urban Interface: A Guide for Western Communities*, 49 URB. LAW. 207, 215–21 (2017).

63. *See* DAWN JOURDAN & ERIC J. STRAUSS, PLANNING FOR WICKED PROBLEMS: A PLANNER'S GUIDE TO LAND USE LAW (2015).

A. Collective Action

I have written extensively about how land use, even in the presence of a private property rights system, remains a commons—with all the attendant potential tragedies.[64] Indeed collective action problems manifest along many fronts in the land development context. First, it is in each property owner's interest to maximize the economic value of their property, which under current economic conditions often requires that it be paved.[65] While the landowner bears the full benefit of their economic decision, it is society that collectively bears the incremental environmental harms caused by a collection of property owners converting their land from natural capital to the built environment over time. Importantly, this harm is diffused through time and not just geographical space, and is thereby foisted on future generations, which makes the collective action problem even more intractable.[66]

A second manifestation of collective action problems is that citizens have more diffuse interests in environmental protection, while developers and local governments have concentrated interests in development and the economic returns that it generates for the profit-maker (developer) and the tax collector (the government). This weights the market and policy spheres toward development over preservation.

Complicating collective action even further is the fact that, as detailed in Levin et al.'s definition of a super-wicked problem,[67] the very people who have an interest in environmental protection also maintain countervailing interests since they too want affordable housing, strong local economies, jobs, and goods and services facilitated by land development. When I shop at the local Costco Wholesale, or take my children to the laser tag facility—each developed within the 100-year floodplain along the banks of the San Jacinto River north of Houston (and both of which flooded during Hurricane Harvey)—I am contributing to the very problem I am interested in solving.

A third collective action issue arises when considering who exactly society should pressure to change the status quo. In the climate change context, as noted earlier, society can focus advocacy pressures on a few electricity producers who run coal-fired power plants, or a handful of household-name energy companies (Exxon, Chevron, Shell, etc.). It is simply easier to pin environmental impacts on these entities and associate them with the climate

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64. HUDSON, *supra* note 38; Blake Hudson, *Federal Constitutions: The Keystone of Nested Commons Governance*, 63 ALA. L. REV. 1007 (2012); Blake Hudson, *Commerce in the Commons: A Unified Theory of Natural Capital Regulation Under the Commerce Clause*, 35 HARV. ENVTL. L. REV. 375 (2011).

65. *See infra* Part IV.D.

66. *See infra* Part IV.H.

67. *See supra* text accompanying note 44.

change problem. But consider just how difficult it is to collectively focus social pressures on developers and their stakeholders. Developers (and real estate brokers and investors) are so numerous (numbering in the tens of thousands[68]), so diffuse, have so many investor sources, and are embedded within so many vertically integrated shell corporations,[69] that it is difficult to know who to target. Land developers are effectively the ninjas of the corporate world. They get in, pave, get out, and then any harms that result from their activities (natural resource impacts and pollution problems aggregated through both geographic space and time) cannot be empirically, causally attributed to them. And as discussed in the next subpart, developers are providing exactly the product they are in business to provide and that society demands. The very nature of the land development enterprise severely limits the ability to apply social pressure to negotiate solutions to land development problems and is the essence of a collective action problem.

B. Corporate Design

Consider for a moment what product it is that Exxon seeks to provide to its customers. Is it a changing climate? No, Exxon seeks to produce and provide energy resources. People demand and purchase energy; they do not demand climate change (at least explicitly). Two hundred years from now energy resources may be entirely renewable rather than fossil fuel-based. Harming the global climate is not a necessary aspect of the product energy companies provide. Exxon, after all, presumably wants to be an energy company forever, and will not be able to do that unless it shifts toward renewable sources that do not wreak havoc on our future climate.

What is the product that land developers seek to provide customers? A significant component of that product is a paved landscape—residential housing, commercial retail space, and industrial facilities. When they replace natural resources with human-built capital, land developers are providing exactly what consumers demand. While land developers could provide their product on already developed land, or they could build up rather than out,

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68. *See Real Estate Developers in the United States*, MANTA, https://www.manta.com/mb_35_A7228000_000/subdividers_and_developers_nec (last visited Sept. 20, 2019); Trunk Yeti, *List of All US Real Estate Developers and REITs*, WALL ST. OASIS, https://www.wallstreetoasis.com/forums/list-of-all-us-real-estate-developers-and-reits [https://perma.cc/R7Y9-E92V] (citing list at https://drive.google.com/file/d/0By4ERkd08v6sNEVmdzhaM2FWS00/view [https://perma.cc/P7JM-23PS]) (last visited Sept. 20, 2019).

69. *See, e.g.*, Ana Swanson, *How Secretive Shell Companies Shape the U.S. Real Estate Market*, WASH. POST (Apr. 12, 2016, 8:58 AM), https://www.washingtonpost.com/news/wonk/wp/2016/04/12/how-secretive-shell-companies-shape-the-u-s-real-estate-market/?utm_term=.6601df18bd29 [https://perma.cc/N9M2-4WTQ].

because their product has a spatial dimension it will invariably involve a trade-off between natural and human-built capital. Under current economic models and land use regulatory regimes across the fifty states, and to provide their product in a way that maximizes profits, developers tend to develop out instead of up, and are incentivized to pave over greenfields rather than redevelop brownfields.[70]

While the development product is what the shareholders want and expect from a land developer, when environmental harms are later realized the developer is long gone and out of the picture (again, like ninjas). Compare, again, with Exxon. As it becomes clearer that the product they provide is causing environmental harms, Exxon remains on the hook. Exxon now has a target on its back for those who would collectively act to exert social pressure for change. The people dealing with land development-driven flooding after a major hurricane, or nutrient pollution in waterways from impervious surface runoff, or the aggregated effects of habitat and species loss, are bearing the brunt of development decisions—not the developer and its shareholders. Developers move on, searching for the next opportunity to provide product and flip a piece of land from a natural landscape to a developed one, which results in more environmental harm. And we are all complicit. To be clear, it is not my intent to paint land developers as morally deficient. In fact, my complicity comment is acknowledgement of the fact that developers are only providing us (consumers) exactly what we are asking for. That said, developers should try to understand the environmental problems caused by their product and mitigate those problems voluntarily, even if there are corporate costs to doing so. While the role of the developer business model receives very little attention, it is critical to understanding why society continues to suffer the ills of environmental problems caused by land development.

C. Legal Institutions

Legal institutional dynamics affecting land development include at least two that arise out of the U.S. Constitution: federalism and the protection of private property rights.

Federalism, in both its legal and political forms, contributes to the wickedness of the land development problem. As noted earlier, there are over

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70. *See* Karin Bieback, *Housing Development on Brownfield Sites*, 4 ENVTL. L. REV. 225, 227 (2002); Alana Semuels, *Why Are Developers Still Building Sprawl?*, ATLANTIC (Feb. 24, 2015), https://www.theatlantic.com/business/archive/2015/02/why-are-people-still-building-sprawl/385741/ [https://perma.cc/W5YY-P4VA].

88,000 subnational governments in the United States.[71] Yet there is currently no judicial recognition of constitutional power for the federal government to directly regulate land use, because the Supreme Court has declared land use regulation to be the "quintessential state and local power."[72] While federal statutes like the Endangered Species Act or Clean Water Act may limit land uses under certain, narrow circumstances,[73] the federal government simply steers clear of testing the bounds of its constitutional authority (legal federalism) and has yet to engage in direct restrictions on land development (political federalism). As a result, the fifty states hold the land use regulatory keys, but there is no consistency in how states wield that authority as a political matter. While some require local governments to control outward growth, at least to a degree (see Oregon),[74] most do not. Some states might even preempt local government efforts to restrict land development activities, as was the case in Texas when the city of Denton attempted to ban natural gas fracking and development within the city limits, resulting in the state passing legislation prohibiting local governments from doing so.[75]

Federalism as a legal institutional driver of land development wickedness is closely related to the collective action problem outlined in Part IV.A. As I have written before, constitutional federalism legally entrenches a "natural capital commons."[76] With no central federal authority, states act as rational herders on the commons (that is, the environment that stretches from coast to coast).[77] As states decentralize further to local governments, local governments act as rational herders on state commons, and private property owners as rational herders on local government commons (since most local governments hesitate to place restrictions on private land developers).[78] The lack of a federal (or state) coordinating authority ultimately exacerbates collective action problems—if state governments are reticent to place limits on local government control of land development, then 88,000 local governments are roaming the natural environment "commons" in the U.S., appropriating resources in a manner that tends toward tragedy over the long

71. *See* GOLDSTEIN & THOMPSON, *supra* note 50, at 969–70; *Census Bureau Reports There Are 89,004 Local Governments in the United States*, *supra* note 50. .

72. Rapanos v. United States, 547 U.S. 715, 738 (2006) (citing FERC v. Mississippi, 456 U.S. 742, 767 n.30 (1982)).

73. *See* Blake Hudson, *Dynamic Forest Federalism*, 71 WASH. & LEE L. REV. 1643, 1670 (2014).

74. *See* Hudson, *supra* note 59, at 19.

75. *See* Aleem Maqbool, *The Texas Town That Banned Fracking (and Lost)*, BBC NEWS (June 16, 2015) https://www.bbc.com/news/world-us-canada-33140732 [https://perma.cc/5CVT-APZB].

76. *See* HUDSON, *supra* note 38, at 6.

77. *See* Hudson & Rosenbloom, *supra* note 57, at 1302–03.

78. *See id.* at 1303.

term.[79] As a result, most local governments race to the bottom in the land development context, maintaining lower standards so as not to push out economic development that might otherwise take place in their jurisdiction.[80]

This is not to say that the U.S.'s chosen form of constitutional federalism is necessarily better or worse than other institutional arrangements. But because it disaggregates land use planning into the control of so many governmental entities, it decidedly complicates the control of land development and associated environmental ills. Contrast the institutional context for land use planning in the U.S. to that in Norway, which strictly controls land use development at the national level. Norway is a unitary system and is *legally* unconstrained when arranging the affairs of its political subdivisions (though it certainly may choose to decentralize decision-making to lower political units).[81] As a result, Norway has moved away from a model of urban sprawl, at least of the type we see in the United States.[82]

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79. *See id.* at 1315.

80. Political scientist Neal Woods' empirical study on an environmental race-to-the-bottom concluded that the stringency of state environmental standards is negatively impacted by the regulatory decisions of neighboring "competitor" governments because states "attempt to reduce the cost of doing business in the state in order to maintain current . . . production within the state and attract new production." Neal D. Woods, *Interstate Competition and Environmental Regulation: A Test of the Race-to-the-Bottom Thesi*s, 87 SOC. SCI. Q. 174, 175 (2006). Woods further argues that "political officials may be motivated to reduce regulatory stringency to gain a competitive advantage over their neighbors, thereby creating an aggregate movement toward the lowest common denominator." *Id.* at 174. Whether heightened restrictions *actually* cause economic development to move elsewhere is an entirely different question. Woods notes that:

> [s]ocial science research on interstate environmental policy competition thus presents something of a paradox. On one hand, there is little evidence that firms relocate on the basis of regulatory cost differentials. On the other, survey evidence suggests that regulators believe that they do, and this belief appears to affect state environmental policy. [There are] two possible explanations for this paradox: that states are unaware of the actual decision calculus facing firms in deciding where to locate, and that regulators face significant political pressures to reduce the regulatory burden facing industry, regardless of this calculus . . . [B]oth forces may, in fact, be at work.

Id. at 177.

81. *Norwegian Planning and Building Act*, GOVERNMENT.NO, https://www.regjeringen.no/en/dokumenter/planning-building-act/id570450/ [https://perma.cc/J5KE-B7MF] (last visited Sept. 22, 2019); *Norwegian Land Act*, GOVERNMENT.NO, https://www.regjeringen.no/en/dokumenter/The-Land-Act/id269774/ [https://perma.cc/3K29-L6QX] (last visited Sept. 22, 2019).

82. *Norwegian Planning and Building Act*, *supra* note 81; *Norwegian Land Act*, *supra* note 81; ERWIN HEPPERLE ET AL., CORE-THEMES OF LAND USE POLITICS: SUSTAINABILITY AND BALANCE OF INTERESTS 183 (European Faculty of Land Use and Dev. et al. eds., 2011) (stating that in Norway "planning control more frequently relies on objections, direct intervention by higher-level authorities, and direct central government involvement in order to align local plans

Another institutional factor (closely related to Part IV.F., below) is also embedded within the U.S. Constitution—the Fifth Amendment's Takings Clause, stating "[N]or shall private property be taken for public use without just compensation."[83] This stringent protection of property rights, embedded in constitutional concrete, is a unique feature of American law and complicates governmental efforts to restrict a property owner's development rights. It does so because, first, the government may indeed be legally constrained from too heavily regulating property rights (thus, going "too far").[84] Or, second, governments may be politically hesitant to restrict development rights for fear of legal challenge or simply because of the cultural predisposition to view property rights as off limits from needed regulatory controls in the absence of compensation.[85]

D. Economics

Economic considerations connect to virtually all other factors in this typology, and perhaps contribute the most to the wickedness of land development. News headlines increasingly include phrases like: "the American housing boom has no end in sight."[86] A common sentiment expressed in these stories is that "[a]s the value of people's homes increases, empty nesters and homeowners looking for bigger houses have more equity to work with . . . and Millennials will fuel demand for new homes in the coming years."[87] The ways we currently measure economic well-being,

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with regional and national policies and priorities."); Thomas Kalbro & August E. Røsnes, *Public Planning Monopoly – or Not?*, *in* LAND MANAGEMENT: POTENTIAL, PROBLEMS AND STUMBLING BLOCKS 49, 49–54 (Erwin Hepperle, Robert Dixon-Gough & Vida Maliene eds., 2012); Petter Næss, Teresa Næss & Arvid Strand, *Oslo's Farewell to Urban Sprawl*, 19 EUR. PLAN. STUD. 113, 114 (2011), http://www.vref.se/download/18.35652bf212dc7fcc17480003731/SP-2006-33+PN+Oslo's+farewell+to+urban+sprawl.pdf [https://perma.cc/TKN3-NNLZ].

83. U.S. CONST. amend. V; *See infra* Part IV.D.

84. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).

85. Daniel H. Cole, *Why Kelo Is Not Good News for Local Planners and Developers*, 22 GA. ST. U. L. REV. 803, 851 (2006) ("[B]oth political bodies and courts protect private property rights . . . . [T]he political process itself substantially protects private property rights.").

86. Paul R. La Monica, *Toll Brothers' Record Shows the American Housing Boom Has No End in Sight*, CNN BUS. (Aug. 21, 2018, 12:35 PM), https://money.cnn.com/2018/08/21/news/companies/toll-brothers-housing-market/index.html [https://perma.cc/EU8E-924U]; *see also* Lucia Mutikani, *U.S. New Home Sales Rebound, but Trend Weakening*, REUTERS (Sept. 26, 2018, 7:11 AM), https://www.reuters.com/article/us-usa-economy-housing/u-s-new-home-sales-rebound-in-august-but-trend-softening-idUSKCN1M61Y0 [https://perma.cc/Y6B6-HK9R].

87. La Monica, *supra* note 86.

through analysis of gross domestic product [GDP][88] and new home starts, for example, are heavily linked to land development, and particularly development of previously undeveloped lands.[89] New home starts are "indicators" and are issued as part of monthly "new residential construction reports."[90]

> The theory is that if people are building new homes then they are spending money on other consumer goods, which helps stimulate the economy…. New home starts certainly take place on urban infill lands or on brownfield redevelopment, but all too often it is the sprawling consumption of greenfields where new home starts occur.[91]

Experts estimate that an increasing U.S. population will result in the development of seventy million additional housing units by 2040, forty million of those being built on *new* residential lots.[92]

Indeed, there are strong economic incentives to rely on the permanent replacement of natural resources as a metric for assessing the strength of our economy. Consider a study published by researchers at Brown University, who determined that one of the most accurate mechanisms for determining GDP growth within countries is actually from outer space.[93] The researchers tracked, via satellite, nighttime changes in the intensity of artificial light over countries around the globe.[94] They found that increases in light parallel increases in countries' household incomes—thus signaling growth in GDP.[95] In other words, the clearing of evermore land and the subsequent increase in development, generation of electricity, and emission of climate changing greenhouse gases facilitate economically desirable outcomes (at least in the short term), even if at odds with the preservation of crucial global natural resources.

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88. DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 132 (Univ. Casebook Series et al eds., 4th ed. 2010).

89. Hudson, *supra* note 51, at 578.

90. Will Kenton, *Economic Indicators: Housing Starts*, INVESTOPEDIA (Apr. 30, 2018), https://www.investopedia.com/university/releases/housingstarts.asp [https://perma.cc/PE5E-3Z43]; *see also* UNITED STATES CENSUS BUREAU, *New Residential Construction*, http://www.census.gov/construction/nrc/ [https://perma.cc/WGM2-MCLY].

91. Hudson, *supra* note 51, at 579.

92. ARTHUR C. NELSON ET AL., AM. PLAN. ASS'N, THE NEXT 100 MILLION 1 (2007), http://law.du.edu/images/uploads/rmlui/conferencematerials/2008/thursday/Americaat400/TheNext100Million.pdf [https://perma.cc/66YU-WLKV].

93. *See* J. Vernon Henderson et al., *Measuring Economic Growth from Outer Space*, 102 AM. ECON. REV. 2, 994–1028 (2012).

94. *Id.* at 996.

95. *Id.*

The Brown GDP study vividly demonstrates society's reliance on the replacement of natural capital with human-made capital as a key indicator of a strong and growing economy. Consider the reverse urban sprawl—or expansion of the "urban prairie"[96]—that occurred in Detroit after its economic collapse, as Mother Nature reclaimed once paved landscapes (though a perversion of the natural landscape that once existed there). As long as promoting a growing economy is at odds with the use of land development controls and the protection of natural capital, critical natural resources will be seen as readily dispensable through most all cost-benefit analytical lenses.

There are several other ways in which economics impacts the land development problem. As referenced earlier, land is an investment vehicle for private property owners, and for many it may be their most valuable investment. Property owners on the fringe of development sprawl face enormous economic pressures to sell, as the value of their property—increasingly surrounded by new developments—skyrockets.[97] Thus, with limited supply of land and increased demand for it, orange groves in Florida are replaced by pavement and rooftops, as are other agricultural lands around the country and forests in the southeast.[98] Placing restrictions on such a potent investment vehicle is fraught with controversy, and so it is not surprising that politicians most often choose to steer clear.[99] Consider the sentiment espoused by one property owner in King County, Washington, discussing the household economic impacts of a county ordinance prohibiting the development of 65% of property parcels to protect forest, biodiversity, and water resources from Seattle's continued sprawl:

> First Property Owner: "What we originally planned in 1980 when we bought it was that we could subdivide and maybe give our kids a parcel of land to build a house on and/or sell off part of the property for the proceeds to be able to keep our house and retire."
>
> Interviewer: "How do you feel about [the government restrictions]?

96. *Rethinking Detroit*, NAT'L GEOGRAPHIC, https://www.nationalgeographic.com/taking-back-detroit/explore-detroit.html [https://perma.cc/649E-JB76] (last visited Sept. 16, 2019).

97. Brian Barth, *Forty Acres of Farm Land in America Is Lost to Development Every Hour*, MOD. FARMER (Dec. 10, 2018), https://modernfarmer.com/2018/12/forty-acres-of-farm-land-in-america-is-lost-to-development-every-hour/ [https://perma.cc/4SHK-STKM].

98. *See* Jeff Harrington, *Dying on the Vine? Florida's Shriveling Agriculture Industry Can't Shake the Fall of Citrus, Loss of Land*, TAMPA BAY TIMES (Dec. 9, 2016), https://www.tampabay.com/news/business/agriculture/dying-on-the-vine-floridas-shriveling-agriculture-industry-cant-shake-the/2305711 [https://perma.cc/SE9Y-ERET]; WEAR & GREIS, *supra* note 24, at 26.

99. *See supra* Part IV.C.

> Second Property Owner: "Very angry. It's our property. We have been paying taxes on this property since 1980 . . . we're getting the shaft. They are putting the burden on the small land owner. Not on everybody."[100]

So even though regulatory limitations like that passed in King County are typically constitutional and otherwise legal, without governments owing "just compensation," there will always be significant political resistance from property owners (and even non-owners) who consider land a primary investment vehicle.

Perhaps the most important way economics exacerbates development sprawl is that the solutions currently needed to protect the natural environment can create unintended and burdensome economic consequences, rooted in the supply of—and demand for—land. Take urban growth boundaries, like the one in Portland, Oregon, for example. Such boundaries can drive up the cost of housing within the boundary.[101] Property values outside the boundary are likely to drop, where development is restricted, while they are likely to go up within the boundary.[102] And it is not just growth boundaries that can have this effect. Any type of land use restriction that mandates more density in some areas to protect open spaces and environmental amenities in others can have a similar impact, especially if development models insist on horizontal developments over vertical ones (discussed more below).[103] In fact, scholars have highlighted a "regulatory" tax homeowners can face resulting from local land use regulations.[104] Limiting the horizontal geographic scope of land development means that to keep housing affordable developers would have to begin incorporating a significant vertical component to new developments for supply of housing and retail to keep up with steady or increasing demand.

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100. *Frontline: Poisoned Waters Documentary*, *supra* note 58.

101. *See* Melody Finnemore, *A Place to Call Home: Legal Professionals Address Oregon's Affordable Housing Shortage*, 77 OR. ST. B. BULL. 25 (2017).

102. *See* Seong Hoon Cho et al., *Urban Growth Boundary and Housing Prices: The Case of Knox County, Tennessee*, 38 REV. REGIONAL STUD. 29 (2008); Daniel P. Bigelow & Andrew J. Plantinga, *Town Mouse and Country Mouse: Effects of Urban Growth Controls on Equilibrium Sorting and Land Prices*, 65 REGIONAL SCI. & URB. ECON. 104 (2017).

103. See Blake Hudson, Institutional Preconditions for Policy Success, 89 TUL. L. REV. 669, 711 (2015).

104. Edward Glaeser, Joseph Gyourko, & Raven Saks, *Why is Manhattan So Expensive? Regulation and the Rise in House Prices* 6 (Nat'l Bureau of Econ. Research, 2003), https://www.nber.org/papers/w10124.pdf [https://perma.cc/AK3T-EVQC]; *see also* Chang-Tai Hsieh & Enrico Moretti, *Housing Constraints and Spatial Misallocation*, 11(2) AM. J. OF MACROECONOMICS 1, 1–39 (2019), https://faculty.chicagobooth.edu/chang-tai.hsieh/research/growth.pdf [https://perma.cc/5MZX-BRB3].

Additionally, property owners in areas where more dense developments are needed to avoid sprawl (so development can go up rather than out) may use environmental protection to prevent the development of (vertical) housing stock that could keep housing affordable. Their environmental concerns may be legitimate (increased traffic, parking, etc.), or they may simply be a ruse so that dense, vertical developments do not ruin their low density landscape. Indeed, to avoid this problem there would need to be a dramatic shift in the American housing paradigm, whereby people are content living in condos reaching to the heavens rather than demanding single family homes on a lot of a certain size. This is an incredibly hard sell in the U.S., however, which is path dependent on sprawling horizontally into the natural landscape. As discussed in Part IV.A., even in the presence of political will in a handful of jurisdictions, 88,000 subnational governments in the U.S. face a severe collective action problem in coordinating land use planning efforts to mitigate the adverse, unintended economic consequences of development restrictions on housing prices.[105]

E. Intersecting Policies

Land development regulatory policies may also be undercut or rendered more difficult to implement by intersecting federal (or other) government policies. Take the National Flood Insurance Program (NFIP),[106] for example. Though its explicit intention was (ironically) to prevent development in high risk areas,[107] it actually has had the opposite effect.[108] It has facilitated the development of homes in areas most at risk of flooding.[109] Since its inception, the NFIP has acted as a massive market distortion: if you own a house in the 100-year floodplain, rather than paying actuarial insurance rates—which would price homeowners out of the development given the high risk of insuring housing—the federal government subsidizes the difference between an affordable rate and the actuarial rate.[110] Following on the previous subpart,

105. *See* Hudson, & Rosenbloom, *supra* note 57, at 1315.

106. 42. U.S.C. §§ 4001–4131 (2018).

107. 42 U.S.C. § 4001(e)(1) (1994) (the legislature seeks to "encourage State and local governments to make appropriate land use adjustments to constrict the development of land which is exposed to flood damage and minimize damage caused by flood losses.").

108. David Hunn et. al., *Developing Storm: Part 2, Build, Flood, Rebuild: Flood Insurance's Expensive Cycle*, HOUS. CHRON., https://www.houstonchronicle.com/news/houston-texas/houston/article/Build-flood-rebuild-flood-insurance-s-12413056.php (last visited Sept. 7, 2019) [https://perma.cc/DEC9-GDCD].

109. Hudson, *supra* note 16, at 1688.

110. Hudson, *supra* note 16, at 1688.

this provides a perverse economic incentive to continue developing high risk areas containing critical natural resources, like wetlands.[111]

When I lived in Baton Rouge, Louisiana, my home was located just east of the levee running along the Mississippi River. We lived on the elevated Highland escarpment, which was the natural border of the Mississippi River floodplain. In between "Highland Road" and the levee was a watershed. Prior to the construction of the levee, residents who did not want their houses to flood built on the Highland Road ridge or beyond (it was called "high land" for a reason). Mother Nature's free market informed people where to develop. Now, thanks to the NFIP, the valley between the river and Highland Road is increasingly filled with dense residential (and other) developments—developments that have maddeningly ironic names like "Wildwood" and the "Woodlands," even though the built environment has now replaced the natural forests and wetlands that had previously provided critical ecosystem services (such as flood control).[112] So, when floods occur in developments in the 100-year flood plain, federal taxpayers take a double hit, first paying to subsidize insurance rates that would otherwise be unaffordable for home or business owners, and second paying to provide disaster relief after a flood.[113] Recent efforts to reduce the subsidy and move toward actuarial rates[114] are too little, too late for wide swaths of the natural landscape.

Consider also state and local tax policies that spur development.[115] In Texas, schools are funded by local property tax revenues, incentivizing expanded development to support local schools.[116] Why leave a developable forest property forested when it could be turned into a car wash or Walmart that could help raise the local tax base and generate education funding? These and other types of tax policies can stack the deck against protecting natural resources on land in favor of development that spurs jobs and tax revenues.

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111. Hudson, *supra* note 16, at 1688–89.

112. Hudson, *supra* note 59, at 18.

113. Laurel Adams, *Government-Subsidized Flood Insurance Premiums Are About Half of Full-Risk Price*, PUB. INTEGRITY (Oct. 19, 2019), https://www.publicintegrity.org/2011/06/23/5006/government-subsidized-flood-insurance-premiums-are-about-half-full-risk-price [https://perma.cc/G3AQ-8S6G].

114. Hunn et. al., *supra* note 108.

115. *See supra* Part IV.D.

116. Paula Moore, *Robin Hood: To Not Be or How To Be, That Is the Question—An Analysis of the Problems with Texas School Financing Today and a Proposal for a Better Tomorrow*, 38 TEX. TECH L. REV. 455, 472 (2006) ("Local . . . property taxes have been and continue to be the main source of revenue for funding Texas schools.").

F. Politics, Culture, and Private Property

While development sprawl is a problem all over the country, certain regions of the country are more antagonistic toward regulatory controls than others. Consider the lax land use regulations in the South, where notions of unassailable private property rights and political resistance to regulatory controls are more acute.[117] Recall from Part II that the vast majority of the most sprawling metro areas nationally are in southern states.[118] There is a decided lack of land use policy controlling land development that is poised to wreak havoc on the Southern landscape, one of the most biodiverse and resource rich in the nation.[119]

Resistance to regulatory controls on private property rights in the South has deep historical and cultural roots. Author Colin Woodard's "eleven Americas" typology supports the notion that dominant cultures explain our voting behaviors and attitudes toward everything from social issues to the role of government.[120] The two regions that make up most of the South are "Greater Appalachia" and "the Deep South."[121] Woodard describes Greater Appalachia as maintaining "a warrior ethic and a commitment to personal sovereignty and individual liberty. Intensely suspicious of lowland aristocrats and Yankee social engineers alike, Greater Appalachia . . . has joined with Deep South to counter federal overrides of local preference."[122] Woodard describes the Deep South as continuing to "fight against expanded federal powers, taxes on capital and the wealthy, and environmental, labor, and consumer regulations."[123] Controls on land development face an uphill battle given the tendency toward staunch individualism, personal sovereignty, suspicion of outsiders, and resistance to taxes and government regulation in the South. These attributes are hallmarks of the ethos of a majority of citizens

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117. For a more detailed analysis of this phenomena, see Blake Hudson, *The Natural Capital Crisis in Southern U.S. Cities*, 92 CHI.-KENT L. REV. 529 (2017). For more detail on the cultural attributes of the U.S. South that drive regulatory resistance see Blake Hudson & Evan Spencer, *Denying Disaster: A Modest Proposal for Transitioning from Climate Change Denial Culture in the Southeastern United States*, 40 U. ARK. LITTLE ROCK L. REV. 545 (2018).

118. *See supra* text accompanying notes 31–34.

119. WEAR & GREIS, *supra* note 24 at 5–6.

120. Reid Wilson, *Which of the 11 American Nations Do You Live In?*, WASH. POST (Nov. 8, 2013), https://www.washingtonpost.com/blogs/govbeat/wp/2013/11/08/which-of-the-11-american-nations-do-you-live-in/?noredirect=on [https://perma.cc/H8F5-RY3L] (quoting Colin Woodard, *Up in Arms*, TUFTS (Jan. 27, 2014), https://now.tufts.edu/articles/arms [https://perma.cc/6NKP-8YRR]).

121. *Id.*

122. Colin Woodard, *Up in Arms*, TUFTS (Jan. 27, 2014), https://now.tufts.edu/articles/arms [https://perma.cc/6NKP-8YRR] (last visited Sept. 7, 2019).

123. *Id.*

in the region and, by electoral proxy, the legislators they put into office and their policy preferences.

While the U.S. South is the most biodiverse region of the United States[124] and its most productive forested area,[125] most of those resources are contained on private lands. For example, eighty-six percent of forests are privately owned in the South.[126] Not only do southerners more readily resist government regulation of private property, it is even more difficult to *pay* southern landowners to *voluntarily* restrict the use of their property than in other areas of the country.[127] The prevalence of conservation easement use in the region is illustrative. After comparing the total acreage of private lands under conservation easement agreements[128] with total land area in each state, more than three times more private property is placed in conservation easements in northeastern states[129] than in southeastern states.[130] While conservation-easement-type policies would seem to offer an attractive, voluntary conservation regime in a region that readily resists government regulation, strong notions of private property rights and suspicion of governmental policy complicate the use of even contractual restrictions on the use of private property relative to other parts of the country. Indeed, data demonstrates that southern property owners maintain several misgivings and misunderstandings about what a conservation easement is, and the degree to which it might limit the use of their property.[131]

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124. Clinton N. Jenkins et al., *US Protected Lands Mismatch Biodiversity Priorities*, 112 PROC. OF NAT'L ACAD. SCI. 5081, 5085 fig.4 (April 21, 2015), http://www.pnas.org/content/pnas/112/16/5081.full.pdf [https://perma.cc/CY3P-SLQY]; *Ecosystems in the Southeastern U.S. Are Vulnerable to Climate Change*, USGS (Aug. 11, 2016), https://www.usgs.gov/news/ecosystems-southeastern-us-are-vulnerable-climate-change [https://perma.cc/92FL-2V2D].

125. *See* Hudson, *supra* note 73, at 1699.

126. WEAR & GREIS, *supra* note 24, at 103.

127. Hudson & Spencer, *supra* note 117, at 559.

128. *Complete U.S. NCED Dataset*, NAT'L CONSERVATION EASEMENT DATABASE (2018), https://www.conservationeasement.us/downloads/ [https://perma.cc/2EQS-42EH] (last visited Oct. 26, 2019). To compare regional usage of conservation easements for a given land area, the number of all known easements per state from the National Conservation Easement Database (including permanent, temporary, and unknown duration) was compared with the total land area per state as determined by the U.S. Census. [(GIS acres per NCED)/(total land area per U.S. Census)=(% land in conservation easements)]).

129. Northeastern states include Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, and Vermont.

130. Southeastern states include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

131. *See Southern Woodland Owners & Conservation Agreements: What They Think and What to Say: A Guide for Land Trusts and Resource Professionals,* AM. FOREST FOUND. (2010), https://www.treefarmsystem.org/stuff/contentmgr/files/1/e87c10ae501b96584727faebed3bac5f/

If southerners resist voluntary market instruments aimed at protecting natural capital, how much more might they resist prescriptive land use controls? Take, for example, private forest regulation, a prototypical example of land use control. The South has the least prescriptive private forest policies of virtually any national or subnational government in the world.[132] The U.S. Forest Service has concluded that the lack of forest protections in the Southeast may result in the loss of up to thirteen percent of its forests over the next half-century due primarily to urban sprawl and land development.[133] The high proportion of privately owned forests in the region (86%)[134] plays a role in this lax regulatory environment. Research demonstrates that in forest-rich states with a high proportion of publicly owned forest, state legislatures are more likely to place greater regulatory requirements on the management of privately owned forest resources within the state.[135] This is because a higher proportion of the electorate in those states includes citizens with a collective interest in having their resources managed for public benefit, in contrast to the South where a far higher percentage of the electorate has a vested interest in resisting restrictions targeting their private lands.[136]

And it is not just forest policy. As noted in Part II, southeastern state and local governments also maintain some of the least prescriptive land use regulations in the general land development context.[137] Sprawl is decidedly worse in the South than in any other region of the country, consuming forests, wetlands, and other natural resources at an alarming rate.[138] This has dire implications not only for the sustainability of natural resources, but also for citizens vulnerable to the ever-apparent effects of climate change. The flooding precipitated by Hurricane Harvey provides but one example. Consider that

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misc/southern_woodland_owners_and_conservation_agreements.pdf [https://perma.cc/B9ZD-XWB7]. Other factors beyond devotion to property rights may certainly affect southerner views of conservation easements. Southern areas may rely more heavily on direct economic returns from property, given the economic opportunities present in the South. Natural regional characteristics may play a role as well, as longer growing seasons cause forests to grow faster and for longer periods. This can alter economic incentives so that pure preservation receives less preference. Furthermore, there may simply be more market players interested in paying for conservation easements. Nonetheless, the research here cited regarding southerner suspicion of the conservation easement instrument supports the general notion that southern cultural views of policy tools like conservation easements differ from other regions of the nation.

132. *See* Hudson, *supra* note 73.

133. WEAR & GREIS, *supra* note 24.

134. Hudson, *supra* note 73, at 1671.

135. *See* CONSTANCE L. MCDERMOTT ET AL., GLOBAL ENVIRONMENTAL FOREST POLICIES: AN INTERNATIONAL COMPARISON 346 (2010).

136. *See* Hudson, *supra* note 24, at 44.

137. *See* Hudson, *supra* note 59, at 18.

138. *See id.*

> [d]espite the hazards, states like Texas have taken few steps to reduce risk. Although Texas leads the U.S. in terms of dollars paid for flood claims, it ranks among the worst in flood-control spending . . . . Suburban sprawl has led to new houses and developments being built on flood plains, and complicated emergency response.[139]

Texas's lack of land use planning—though necessary to protect people and critical natural resources—is typical of that present throughout most of the Southeast.

While the Southeast is only one region of the United States, it is large and resource rich. The high percentage of private property in the region, combined with a culture and political worldview that places a premium on private property rights, demonstrates how these factors contribute to land development wickedness and efforts to control it.

G. Political Economy

Economic and political incentives driving state and local government decision-making processes further complicate land use planning efforts. Take Louisiana's Coastal Master Plan (CMP) as an example.[140] The CMP is an approximately $50 billion plan to save Louisiana's coast from its rapid decline. The coast is disappearing due to a combination of subsidence and sea level rise, resulting in Louisiana having the highest rate of relative sea level rise in the world.[141] The leveeing and channelization of the Mississippi River has long prevented sediment deposition needed to keep the coast intact.[142] It is human engineering that is responsible for the river only having one outlet rather than meandering back and forth along the coast creating land. The CMP aims to "save" Louisiana's coast by reopening certain coastal areas to sediment deposition through diversion, restoring and rebuilding barrier islands, and undertaking related projects over the next fifty years. The CMP

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139. Seth Cline, *Climate Change's Southern Salvo*, U.S. NEWS & WORLD REP. (Sept. 22, 2017, 3:06 PM), https://www.usnews.com/news/best-states/articles/2017-09-22/what-harvey-revealed-about-climate-change-in-the-south [https://perma.cc/JC8B-576X].

140. *See* COASTAL PROT. AND RESTORATION AUTH. OF LA., LOUISIANA'S COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST (June 2, 2017), http://coastal.la.gov/wp-content/uploads/2017/04/2017-Coastal-Master-Plan_Web-Book_CFinal-with-Effective-Date-06092017.pdf [https://perma.cc/5U4R-AS4W].

141. Bob Marshall, *New Research: Louisiana Coast Faces Highest Rate of Sea-Level Rise Worldwide*, LENS (Feb. 21, 2013), https://thelensnola.org/2013/02/21/new-research-louisiana-coast-faces-highest-rate-of-sea-level-rise-on-the-planet/ [https://perma.cc/TV73-W6ZD].

142. COASTAL PROT. AND RESTORATION AUTH. OF LA., *supra* note 139, at ES-6.

has the support of a full eighty-eight percent of Louisianans.[143] Having lived in Louisiana, I am confident that eighty-eight percent of its citizens are not card-carrying members of the Sierra Club. But Louisianans want to "save" their coast, even if it involves environmental restoration projects funded by taxpayers (at least in part).

Even so, many critics of the CMP fear it is destined to throw good money after bad, with concerns ranging from an inability to build coastal land at a rate that can keep pace with sea level rise, to concerns that diversions and similar projects might actually hasten coastal erosion in unanticipated ways.[144] Restoration plans like the CMP often have the support of environmental groups. Critics have argued that environmental groups supporting many projects like those outlined in the CMP are effectively denying climate change, unwilling to face the reality that human engineering will be unable to save these areas from succumbing to sea level rise, no matter the amount of money invested.[145]

Given this state of affairs, imagine two politicians. Politician A says to the Louisiana citizenry: "we are going to invest $50 billion into saving your coast over the next fifty years." Politician B says to those same constituents: "we are unlikely to save the coast, so we are going to invest instead in climate adaptation and engage in a planned retreat from the coast over time." In a jurisdiction where eighty-eight percent of the citizenry believe that the coast can and should be saved, Politician A will win every time—even though Politician A will be long gone in fifty years if those projects fail and the coast is underwater anyway.

Land use planning is a state responsibility, but state legislatures are merely a collection of representatives deeply invested in local economic well-being. How can they be expected to overcome such strong political and economic forces? How can we expect state and local governments not to make politically expeditious or self-interest-driven calculations to benefit their local economy at the expense of the greater good? Recall the discussion of the race to the bottom in Part IV.C, and of the council members in Bay St. Louis, Mississippi (in Part II) who wanted to actively hide Hurricane Katrina flood level designations because they did not want to discourage development

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143. *New Poll Shows 88 Percent of Louisianians Support the 2017 Coastal Master Plan*, RESTORE MISS. RIVER DELTA (Apr. 3, 2017), http://mississippiriverdelta.org/new-poll-shows-88-percent-louisianians-support-2017-coastal-master-plan/ [https://perma.cc/7ZHU-NR9N].

144. *See* R. Eugene Turner, *Doubt and the Values of an Ignorance-Based World View for Restoration: Coastal Louisiana Wetlands*, 32 ESTUARIES & COASTS 1054 (2009); R. Eugene Turner, Michael S. Kearney & Randall W. Parkinson, *Sea-Level Rise Tipping Point of Delta Survival*, 34 J. OF COASTAL RES. 470 (2018).

145. Edward P. Richards, *Applying Life Insurance Principles to Coastal Property Insurance To Incentivize Adaptation to Climate Change*, 43 B.C. ENV. AFFAIRS L. REV. 427, 430 (2016).

within the floodplain. The political and economic motivations of state and local government officials are tremendously difficult to overcome to achieve adequate land development policies. This problem is one of collective action, since state and local governments operate as rational herders on the commons, acting in self-interest at the expense of the whole.[146] The problem is rooted in, and institutionalized by, our federal system of government,[147] and economics is what drives the political calculus.[148] The political economy problem also overlaps to a great degree with the next subpart, since today's political actors make decisions in the best interests of those living in the present, while future generations' economic and environmental interests remain unrepresented.

H. Time and Behavioral Science

The factor of time and its intersection with human behavior is perhaps the most difficult to articulate and analyze. Somewhat like the grandfather paradox of time travel, it can be difficult to wrap one's mind around all the ways in which today's use of resources impacts the ability of others to use those resources in the future. A helpful start is to consider Jared Diamond's description of the destruction of resources on Easter Island. The first European to visit Easter Island in the Eighteenth century discovered a starving, cannibalistic society, with only scrubby trees sparsely scattered across the island and makeshift boats good only for limited transportation.[149] But as evidenced by the iconic Easter Island Moai, at one point Easter Island had been home to a culture advanced and wealthy enough to erect nearly 1000 artistic statues measuring thirty feet high and weighing eighty tons.[150] Easter Island had once been heavily vegetated with a palm forest, but "[o]ver time, the islanders cleared the vegetation, providing wood to cook their meat, timber to build their ocean-going canoes, and logs to transport and erect their massive statues . . . By the Fifteenth Century, however, the island had been cleared, the last palms chopped down."[151] Native birds and critical pollinators went extinct due to loss of forest cover, while soil erosion and leaching of nutrients reduced crop yields.[152] The timber shortage prevented the construction of wooden houses, and islanders were forced to retreat to

146. *See supra* Part IV.A for discussion of the commons.
147. *See supra* Part IV.C for discussion of this problem.
148. *See supra* Part IV.D for discussion of economics and political calculus.
149. RASBAND ET AL., *supra* note 21, at 41.
150. *Id.*
151. *Id.* at 42.
152. *Id.*

caves.[153] There was no wood to burn or for building canoes. Without canoes, there could be no fishing, which meant the loss of a key protein in islander diets.[154] Ultimately, "the Easter Islanders were unable to escape the consequences of their self-inflicted environmental collapse. Destruction of their natural environment presaged the destruction of their flourishing society and economy, leaving in its place the pathetic settlement of undernourished cave dwellers."[155]

Jared Diamond's speculation of the Easter Island collapse has everything to do with how humans relate to the passage of time in the resource management context:

> [A]ny islander who tried to warn about the dangers of progressive deforestation would have been overridden by vested interests of carvers, bureaucrats, and chiefs, whose jobs depended on continued deforestation . . . The changes in forest cover from year to year would have been hard to detect . . . Only older people, recollecting their childhoods decades earlier, could have recognized a difference.[156]

In other words, time—and people's inability (or unwillingness) to perceive incremental resource damage through time—contributed to the collapse. The most difficult aspect of time and resource management is shifting baselines. Each generation only quantifies the resources before its own eyes, without the benefit of understanding how much more abundant resources had been for past generations. At present, a generation might think forest resources are vast, or fish are abundant, when in reality the amount of forests and fish pales in comparison to a baseline from fifty years before. The baseline has shifted. As was the case with Easter Island, in the context of modern land use regulation, "[c]orrective action is blocked by vested interests, by well-intentioned political and business leaders, and by their electorates, all of whom are perfectly correct in not noticing big changes from year to year. Instead, each year there are just somewhat more people, and somewhat fewer resources, on Earth."[157]

The problem is ultimately a temporal commons problem. Present generations have an acute, concentrated interest in using resources now, and only a diffuse interest in ensuring that those resources are available for future generations. The harms of natural resource loss are also diffused through

153. *Id.*
154. *Id.*
155. *Id.*
156. Jared Diamond, *Easter's End*, DISCOVER MAG. (Aug. 1, 1995), http://discovermagazine.com/1995/aug/eastersend543 [https://perma.cc/4XAH-4W76].
157. *Id.*

time, since no one generation can fully discern how those harms will aggregate to cause a resource management tragedy.[158] Return to the introductory example of the Houston development approved after Hurricane Harvey.[159] The 800 homes developed in the golf course may not flood, because they will be higher than the surrounding area. But the additional impervious surface—rooftops and roadways—will put more water into floodways and will send it there faster during extreme weather events than would the golf course if it remained in place (since it acted as a natural reservoir).[160] Of course, we cannot calculate exactly how much worse a particular development makes flooding downstream (or in the vicinity). But we know that when combined with both past and future developments, more flooding occurs in the aggregate.[161]

Time makes it difficult if not impossible to assess the aggregated harm caused by individual developments. No one development may cause a species to go extinct, or a downstream neighborhood to flood, and most all developments can be justified over a certain time frame—"clearing *this* forty acre plot of land will not cause a significant amount of additional flooding or reduce habitat by enough to threaten a species." But what about thirty years from now, when other, also individually justifiable developments combine with today's development to cause an aggregated increase in flooding or threat to species habitat? As time passes, so does our ability to perceive and understand the implications of resource loss when aggregated with both past developments and future ones over a period of years. As with other wicked problems, like climate change, land development is the quintessential example of the frog in the boiling pot.[162] Except that unlike the frog, we have plenty of signs of the dangers we face—we simply do not maintain an adequate mechanism for calculating and internalizing the totality of that danger.[163]

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158. *See* Part IV.A for a full discussion on the commons problem.

159. *See* Hudson, *supra* note 9.

160. *See id.*

161. *See id.*

162. Never mind that the metaphor is a myth, debunked by science. James Fallows, *The Boiled-Frog Myth: Stop the Lying Now!*, ATLANTIC (Sept. 16, 2006), https://www.theatlantic.com/technology/archive/2006/09/the-boiled-frog-myth-stop-the-lying-now/7446/ [https://perma.cc/8HEF-DAUT].

163. Signs come in the form of the environmental problems that federal statutory regimes seek to address, endangered species due to habitat loss, dirty water, and dirty air—not to mention a number of environmental problems not addressed by federal law, like the loss of carbon sinks due to forest destruction.

I. The Natural Environment

Changes in the natural environment—and in our understanding of the natural environment—also complicate society's ability to better regulate land to protect critical resources. Consider that climate change is causing what were once "100-year floods" to occur far more frequently.[164] Flood maps in many locations, dictating where development is most at risk, were never very reliable[165] and are increasingly becoming less so. Maps are not being redrawn quickly enough to keep pace with a sea that is rising more quickly and with storms that are dropping more precipitation than before.[166] Meanwhile, as discussed in the introduction, society continues to develop *within* currently designated 100-year flood plains.[167] If we continue to develop places that we are fairly confident will flood, how will we possibly adapt to a changing environment and restrict development in areas likely to flood in the next few decades?

There is also uncertainty regarding the rate of sea level rise, which complicates planning efforts. We do know that over certain time frames retreat from the coast is inevitable.[168] The question is will that retreat be planned, moving infrastructure and development back from the coast over specified time periods (fifty to seventy-five years), while also building in buffer zones to protect development from risks along the next coastline? Or will it be unplanned and far more economically disruptive? Either way, it becomes harder to plan in a rapidly changing environment and in the face of uncertainty about how rapidly it is changing.

As seen in recent years in the western U.S., climate change is also causing a rapid, unpredictable increase in wildfires.[169] As the climate warms,

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164. Chris D'Angelo, *Climate Change Has 'Loaded The Dice' on the Frequency of 100-Year Floods*, HUFFINGTON POST (Aug. 30, 2017, 9:08 PM), https://www.huffingtonpost.com/entry/100-year-flood-climate-change_us_59a6eaa3e4b084581a14ea14 [https://perma.cc/8GCY-AJXG].

165. Maggie Koerth-Baker, *It's Time To Ditch the Concept of '100-Year Floods,'* FIVETHIRTYEIGHT (Aug. 30, 2017) https://fivethirtyeight.com/features/its-time-to-ditch-the-concept-of-100-year-floods/ [https://perma.cc/M9FZ-ZZTA].

166. Craig Welch, *Hurricanes Are Moving Slower—And That's a Huge Problem*, NAT'L GEOGRAPHIC (June 6, 2018), https://news.nationalgeographic.com/2018/06/hurricanes-cyclones-move-slower-drop-more-rain-climate-change-science/ [https://perma.cc/D8RZ-E5F2].

167. *See, e.g.*, Hudson, *supra* note 7.

168. *See* Brandon Specktor, *We'd Better Retreat from the Coasts While We Still Can, Scientists Urge Amid Climate Crisis*, LIVE SCI. (Aug. 22, 2019), https://www.livescience.com/we-should-retreat-from-coastal-cities-now.html [https://perma.cc/QAP4-XZWZ].

169. Kendra Pierre-Louis & Nadja Popovich, *Climate Change Is Fueling Wildfires Nationwide, New Report Warns*, N.Y. TIMES (Nov. 27, 2018), https://www.nytimes.com/interactive/2018/11/27/climate/wildfire-global-warming.html [https://perma.cc/Q99D-CFGM].

evapotransporation increases, the environment dries out more quickly, and is more likely to burn.[170] Will we utilize land use planning to "retreat" from areas at risk from wildfire? If we decide to do so, how do we make those decisions? How do we make choices about where to develop when we are just beginning to understand and attempt to model a rapidly warming world and its relationship to wildfire risk?

So not only is the environment changing, but what we know about the environment is changing as well. Scientific inquiry has much to discover about the importance of rapidly disappearing natural resources and habitats. Whether it is a cure for cancer hidden in the enzymes of an undiscovered scorpion[171] or information about how to make a more efficient wind turbine from a whale fin,[172] preserving resources benefits humanity in ways that are difficult to anticipate at present. If a person is not interested in saving a habitat from development for some individual scorpion species' sake, then perhaps they would be interested in saving it because of its potential to cure a close relative's cancer. In fact, an entire research regime has arisen around the interconnection of biodiversity and cancer.[173] This new knowledge should affect society's interest in utilizing land use regulations to preserve habitat to, if nothing else, preserve options to benefit humanity in the future.

Consider also a recent study finding that approximately two-thirds of megacities around the globe depend on what are called "precipitationsheds" for a full one-third of their water supply.[174] So one-third of these cities' water supply depends upon evapotransporation occurring in the forested green spaces and ecosystems within and surrounding cities.[175] Removing those resources and paving those spaces therefore threatens supply of critical water resources within those locations. What other discoveries may remain hidden or may be made too late if we continue to replace natural capital with human capital in an outward expansion of development uncontrolled by widely available policy tools?

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170. *Id.*

171. Ding J, Chua PJ, Bay BH & Gopalakrishnakone P., *Scorpion Venoms as a Potential Source of Novel Cancer Therapeutic Compounds*, 239 EXPERIMENTAL BIOLOGY & MED. 387 (2014), https://www.ncbi.nlm.nih.gov/pubmed/24599885 [https://perma.cc/ZP8X-MMNP].

172. Tyler Hamilton, *Whale-Inspired Wind Turbines*, MIT TECH. REV. (Mar. 6, 2008), https://www.technologyreview.com/s/409710/whale-inspired-wind-turbines/ [https://perma.cc/L5YM-G5PD].

173. *See* BIODIVERSITY, NATURAL PRODUCTS AND CANCER TREATMENT (Victor Kuete & Thomas Efferth eds., 2014).

174. Patrick W. Keys, Lan Wang-Erlandsson & Line J. Gordon, *Megacity Precipitationsheds Reveal Tele-Connected Water Security Challenges*, PLOS ONE (Mar. 13, 2018), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194311 [https://perma.cc/5XGL-QZLC].

175. *Id.*

The examples could go on. But it is becoming clear that the natural environment, and our understanding of how it works, is changing in a way that complicates our ability to anticipate and properly prioritize the types of land use policies needed to protect both the natural environment and human habitations existing within that environment.

V. WHAT TO DO ABOUT WICKED LAND DEVELOPMENT?

Society must face the reality that, like climate change, unchecked, horizontal land development is a slow moving, perpetual disaster.[176] The purposes of this Article are to draw attention to that fact and to delineate some of the factors that make addressing this complex problem so difficult. Forthcoming research will build upon this Article by detailing potential ways to address wicked land development. But a few observations can here be made about how to target the nature and scope of those solutions.

A first step is to focus more acutely on the low hanging fruit. So, for example, halting development in 100-year floodplains or in coastal areas subject to rapid sea-level rise. Low hanging, intersecting policies should be addressed as well, such as removing national flood insurance protections for new developments in high risk areas so that Mother Nature's free market can once again provide the best information about where human developments should (or most importantly should not) occur.

Relatedly, advocates and policy-makers should target areas of natural resource preservation and restoration that do not present the entirety of complex conflicts detailed above. For example, a current project on which I am working analyzes how reforesting currently unforested medians along the interstate highway system could combat climate change by sequestering large amounts of greenhouse gases. The interstate highway system is publicly owned, therefore it does not present the same collective action or private property complications as privately-owned lands. And while state departments of transportation help manage these spaces, interstates are ultimately subject to federal oversight and control, reducing legal institutional conflicts. The land also does not face competition from agriculture or other forms of development, mitigating the economics, corporate design, and political economy factors. Ultimately, creatively engaging in natural resource restoration in places that do not present many of the complications described above will be critical to restoring important natural resources across the U.S. landscape.

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176. *See* Blake Hudson, *Reconstituting Land-Use Federalism to Address Transitory and Perpetual Disasters: The Bimodal Federalism Framework*, 2011 B.Y.U. L. REV. 1991 (2011).

Third, advocates should promote a more precautionary approach to how we develop land. In the absence of reliable information—which we do not have in the case of aggregated harms through time or in a rapidly changing natural environment—there are only two options: either we develop with abandon, running the risk of losing option values that might otherwise be extracted from the natural environment in the future, or we adopt a precautionary approach and conserve as much natural capital as possible to maximize future option values. A precautionary model would also change the economic calculus faced by local governments, private landowners, and others because it would require adjusting the discount rate applied to future generations, acknowledging that the future interests of many potential landowners in a parcel of property carry more weight when weighed with the interests of one property owner living and using the land today. While the precautionary principle has worked its way into many environmental and health law discussions, such as which products are approved as safe by the Food and Drug Administration (FDA), rarely is in invoked in land use policy discussions.

A fourth step involves more effectively appealing to anthropocentrism to capture support of people politically predisposed to resist land use regulation. We must do a better job of communicating how protecting the environment through land use controls protects humans. This may sound obvious, but while organizations have been established to improve such communication on climate change,[177] there has been no concerted effort in the context of land development. Whether the message is preserving future cancer medicines, protecting water supplies, reducing federal tax payer expenditures under the NFIP or through dispensing disaster relief, or reducing wildfire and a host of other risks, we must begin to appeal more directly to the economic and human health benefits of land development controls.

Fifth, we must look at land developers with the same critical eye that we do Exxon and related companies in the context of climate change. This is not to say developers are the enemies, but, given the path dependency of their current corporate design toward paving natural landscapes, they must be engaged as critical components to any solution. Right now, the plethora of developers that exist are engaged only on an ad hoc, case-by-case basis as particular developments are critiqued by vested interests concerned with only one locality. We must engage with the development community more holistically to address the wickedness of land development.

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177. *See Yale Program on Climate Change Communication*, YALE, http://climatecommunication.yale.edu/ [https://perma.cc/6RTV-U7ES] (last visited Sept. 8, 2019).

Though subsequent projects will more thoroughly articulate additional changes, a final needed adjustment will be advocating for a paradigm shift in how residential and retail development proceeds. In a world of billions more people, everyone owning a single-family home on a half-acre lot is not sustainable. We must start to critically reconsider the ways in which we integrate into the natural landscape if we are to have any hope of adequately addressing the land development problem.

We only have one earth and a finite amount of land. Meanwhile, populations are increasing and the planet is warming at an unprecedented rate. While we can own land and resources, no one who spends a mere eighty years on the planet has a right to use land and resources in a way that threatens society centuries or even millennia from now. Yet all too often we treat land development as an assumed and unassailable right. Land use planning and other innovative policy approaches can correct the balance between private rights and public benefits, but only if we first understand that land development is a wicked, wicked problem to solve.