

This is Adaptation: The Elimination of Subsidies Under the National Flood Insurance Program

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INTRODUCTION

The oceans are rising. Amid any remaining debates about climate change and its relation to human activity, this fact appears unassailable. “Records and research show that sea level has been steadily rising at a rate of 1 to 2.5 millimeters (0.04 to 0.1 inches) per year since 1900,” and since 1992, new methods of measurement

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show a “rate of rise of 3 millimeters (0.12 inches) per year.”¹ Changing climatic conditions have led to an increase in the temperature of ocean water and consequent expansion in its volume. That rise in temperature has also led to the melting of polar ice caps, adding water to the ocean.² At the same time, the changing climate has resulted in more frequent extreme hurricanes. And higher sea levels increase the risk these storms pose to coastal communities at a time when such communities are growing rapidly in the United States.³ A series of powerful storms—and the costs they have exacted—have vividly demonstrated the consequences of this dangerous trifecta over the past decade.

Prior to Tropical Storm Allison in 2001, the National Flood Insurance Program (NFIP) had never experienced a storm resulting in over \$1 billion in damage.⁴ Since then, however, Hurricane Katrina imposed a death toll estimated to range from just under 1,000⁵ to nearly 2,000⁶ and caused an estimated \$148

1. *Is Sea Level Rising?*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <http://oceanservice.noaa.gov/facts/sealevel.html> (last updated Apr. 10, 2014) (“Sea level is rising at an increasing rate.”); *see also* J.A. CHURCH ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Sea Level Change*, ch. 13 in, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS 1137, 1140 (2013), *available at* http://www.climatechange2013.org/images/report/WG1AR5_Chapter13_FINAL.pdf (noting that “[i]t is very likely that the rate of global mean sea level rise during the 21st century will exceed the rate observed during 1971-2010 . . . due to increases in ocean warming and loss of mass from glaciers and ice sheets”); Peter J. Byrne, *The Cathedral Engulfed: Sea-Level Rise, Property Rights, and Time*, 73 LA. L. REV. 69, 69 (2013) (“Global climate change has and will lead to substantial rises in global sea levels.”).

2. *How Is Sea Level Rise Related to Climate Change?*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <http://oceanservice.noaa.gov/facts/sealevelclimate.html> (last updated Apr. 10, 2014) (“A warming climate can cause seawater to expand and ice over land to melt, both of which can cause a rise in sea level.”).

3. *See, e.g.*, TIMOTHY BEATLEY ET AL., AN INTRODUCTION TO COASTAL ZONE MANAGEMENT 66 (2d ed., 2002); *Climate Impacts on Coastal Areas*, ENVTL. PROT. AGENCY, <http://www.epa.gov/climatechange/impacts-adaptation/coasts.html> (last updated Sept. 9, 2013) (“Storm surges already flood low-lying areas, damage property, disrupt transportation systems, destroy habitat, and threaten human health and safety. Sea level rise could magnify the impacts of storms by raising the water level that storm surges affect.”).

4. THOMAS L. HAYES & D. ANDREW NEAL, FED. EMERGENCY MGMT. AGENCY, NAT'L FLOOD INS. PROGRAM, ACTUARIAL RATE REVIEW: IN SUPPORT OF THE RECOMMENDED OCTOBER 1, 2011, RATE AND RULE CHANGES 6 (2011), *available at* http://www.fema.gov/media-library-data/20130726-1809-25045-6893/actuarial_rate_review2011.pdf.

5. JOAN BRUNKARD ET AL., LA. DEP'T OF HEALTH & HOSPS., HURRICANE KATRINA DEATHS, LOUISIANA, 2005, (2008), *available at* http://www.dhh.louisiana.gov/assets/docs/katrina/deceasedreports/KatrinaDeaths_082008.pdf.

6. ALEX GAUMAN ET AL., NAT'L OCEANIC & ATMOSPHERIC ADMIN., NAT'L CLIMATIC DATA CTR., HURRICANE KATRINA: A CLIMATOLOGICAL PERSPECTIVE, PRELIMINARY REPORT,

billion⁷ in total damages and costs; Hurricane Irene in 2010 caused 45 deaths and \$10.1 billion in total damages and costs;⁸ and Superstorm Sandy in 2012 resulted in 159 deaths and \$65.7 billion in total damages and costs.⁹ There is no reason to think that these mounting damages from storms are aberrations. To the contrary, experts have already predicted that “[a]nthropogenic warming by the end of the 21st century will likely cause hurricanes globally to be more intense on average,” a change that would “imply an even larger percentage increase in the destructive potential per storm.”¹⁰ As President Obama acknowledged in his 2014 State of the Union address, “[a] changing climate is already harming . . . coastal communities dealing with floods.”¹¹

But attributing the devastation these storms have wrought solely to climate change obscures the reality that legal and policy choices created the conditions necessary for these natural disasters to become human catastrophes. Indeed, “[t]he coastal zone is hazardous because humans have made it so. Coastal storms have no power to create thousands or even millions of dollars in damage to property if no property is within the storm’s reach, nor can a storm kill people if no people are in its path.”¹² Coastal developments have proliferated over the past several decades, due in large part to policy frameworks that have purposely incentivized and subsidized development on coastlines and their corresponding

TECHNICAL REPORT NO. 2005-01, *available at* <http://www.ncdc.noaa.gov/oa/reports/tech-report-200501z.pdf>.

7. *Billion-Dollar Weather/Climate Disasters*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <http://www.ncdc.noaa.gov/billions/> (last visited July 2, 2014) (reporting 2012 dollars, calculated from an estimated \$125 billion at the time of the storm).

8. *Id.* (reporting in 2012 dollars, calculated from an estimated \$9.8 billion at the time of the storm)

9. *Id.* (reporting in 2012 dollars, calculated from an estimated \$65 billion at the time of the storm).

10. *Global Warming and Hurricanes: An Overview of Current Research Results*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., GEOPHYSICAL FLUID DYNAMICS LAB., <http://www.gfdl.noaa.gov/global-warming-and-hurricanes> (last updated Apr. 25, 2014).

11. President Barack Obama, State of the Union Address (Jan. 28, 2014), *available at* <http://www.whitehouse.gov/the-press-office/2014/01/28/president-barack-obamas-state-union-address>.

12. BEATLEY ET AL., *supra* note 3, at 7; *see also* Daniel D. Barnhizer, *Givings Recapture: Funding Public Acquisition of Private Property Interests on the Coasts*, 27 HARV. ENVTL. L. REV. 295, 296 (2003) (quoting statement by geographer Gilbert F. White that “floods are ‘acts of God,’ but flood losses are largely acts of man.”).

floodplains.¹³ The NFIP is the key federal program driving these developments.

The NFIP was established in 1968 to provide insurance for properties not otherwise insurable against flood loss. “The NFIP provides considerable benefits for participants: they receive insurance against flood losses at a reasonable price; communities are able to develop otherwise undevelopable land; and homeowners in the program enjoy increased housing prices.”¹⁴ But the NFIP also generates high costs for the federal government, mainly because premiums do not reflect actual flood risk and because many policyholders receive subsidized rates. These federal subsidies effectively underwrite the cost of coastal development, much of which is increasingly prone to flooding as a result of sea level rise. Sea level rise also impacts the coastal ecosystem, and “[b]y subsidizing private development in ecologically-sensitive floodplains, the [NFIP] risks generating environmental damage.”¹⁵ Perhaps most damning, through the NFIP, “the federal government has made it foolish . . . for local government[s] and individuals to take steps to avoid catastrophic losses in hurricanes.”¹⁶ And so the catastrophic losses accelerate.

The NFIP’s flaws have led to many reform attempts to break the sequence of events—recognized as “customary” in 1979, and continuing since—of “(1) flooding, (2) flood losses, (3) disaster relief, (4) flood control projects . . . , (5) renewed encroachment and development onto the floodplain and upstream watershed, (6) flooding, (7) flood losses, (8) disaster relief, (9) more projects, (10) more encroachment and development, *ad infinitum*.”¹⁷ The most recent among these efforts is the Biggert-Waters Flood Insurance Reform Act of 2012 (Biggert-Waters),¹⁸ which eliminated subsidized premiums and adjusted premium rates to reflect actual

13. See RUTHERFORD H. PLATT, *DISASTERS AND DEMOCRACY: THE POLITICS OF EXTREME NATURAL EVENTS* 291–92 (1999) (“The enormous losses experienced in hurricanes and the exposure to even more enormous losses in the future did not occur by accident.”).

14. J. SCOTT HOLLADAY & JASON A. SCHWARTZ, *FLOODING THE MARKET: THE DISTRIBUTIONAL CONSEQUENCES OF THE NFIP I*, N.Y. Univ. Sch. of Law, Inst. for Policy Integrity, Policy Brief No. 7 (2010), available at <http://policyintegrity.org/documents/FloodingtheMarket.pdf>.

15. HOLLADAY & SCHWARTZ, *supra* note 14, at 1.

16. PLATT, *supra* note 13, at 291–92.

17. Oliver A. Houck, *Rising Water: The National Flood Insurance Program and Louisiana*, 60 TUL. L. REV. 61, 64 (1986).

18. Moving Ahead for Progress in the 21st Century Act, Pub. L. No. 112-141, tit. II, subtit. A, §§ 100201–100253, 126 Stat. 405 (codified as amended at 42 U.S.C. §§ 4001–4129 (2006)).

flood risk, among other provisions. Those amendments necessarily led to a rise in flood insurance premiums for a large number of people and caused many to oppose or seek delay of the recent amendments to the NFIP. Opposition to the reforms culminated in the passage of the Homeowner Flood Insurance Affordability Act of 2014 (the Affordability Act) on March 21, 2014, which repealed many key provisions of Biggert-Waters.¹⁹

The controversy over flood insurance is at the heart of a larger that extends far beyond the NFIP—how to retreat from environmentally unsound planning decisions of the past. Numerous subsidies in addition to the NFIP provide government support for ultimately environmentally destructive land use patterns.²⁰ For example, federal crop insurance subsidies may have adverse environmental impacts by encouraging farming on land ill-suited for agriculture without incentivizing sustainable farming techniques.²¹ Various components of suburban development and sprawl such as roads and infrastructure have long been heavily subsidized as well.²² And the growth of communities in arid regions of the United States has been encouraged by federal programs that provide water at a subsidized rate to farmers and other landowners in places like Phoenix, Arizona.²³ These subsidies act as signaling

19. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020 (2014).

20. Barton H. Thompson, Jr., *Conservative Environmental Thought: The Bush Administration and Environmental Policy*, 32 *ECOLOGICAL Q.* 307, 325 (2005) (“a number of existing subsidies contribute toward environmental damage,” including subsidies for agriculture, water, and fisheries).

21. See JEFFREY T. LAFRANCE ET AL., *THE ENVIRONMENTAL IMPACTS OF SUBSIDIZED CROP INSURANCE: THE EXTENSIVE MARGIN* 15–16, available at <http://econweb.ucsd.edu/~carsonvs/papers/830.pdf> (last visited April 27, 2014) (“[A]ny large-scale policy that alters the margins of agricultural production is quite likely to impact the nation’s environmental quality.”); CLAIRE O’CONNOR, NATURAL RES. DEF. COUNCIL, *SOIL MATTERS: HOW THE FEDERAL CROP INSURANCE PROGRAM SHOULD BE REFORMED TO ENCOURAGE LOW-RISK FARMING METHODS WITH HIGH-REWARD ENVIRONMENTAL OUTCOMES*, ISSUE PAPER NO. 13-04-A (2013), available at <http://www.nrdc.org/water/soil-matters/files/soil-matters-ip.pdf>.

22. Suburban development made possible by cheap roads and gasoline “has adverse effects on the atmosphere, largely due to increased automobile emissions; emissions from increased vehicle miles traveled . . . contribute greatly to air pollution nationwide and are the primary cause of air pollution in many urban areas.” Daniel J. Hutch, *The Rationale for Including Disadvantaged Communities in the Smart Growth Metropolitan Framework*, 20 *YALE L. & POL’Y REV.* 353, 358–59, 361 (2002).

23. Jan C. Bush et al., *Examination of the Phoenix Regional Water Supply for Sustainable Yield and Carrying Capacity*, 46 *NAT. RESOURCES J.* 925, 955 (2006) (noting that various direct subsidies for water in the Phoenix region distort users’ choices about water by making the prices unrealistically cheap). Climate change is expected to change the availability of freshwater resources in the United States and to increase instances of drought, particularly in

mechanisms, providing information to the public about activities that the government wishes to promote.²⁴ For years, those signals have pointed primarily to growth and consumption, made possible by the creation of artificially cheap resources. But as climate change alters the availability of land and water and shifts baseline expectations for sea levels and weather patterns, policymakers will have to consider ending subsidies that ignore these changes. Eliminating such subsidies would be just one small part of a larger set of adaptation policies, or “efforts to moderate, cope with, and prepare for the current and anticipated impacts of climate change on human and natural systems.”²⁵

As climate change impacts become clearer, a robust public debate about suitable adaptation measures will develop. “Trillions of dollars have been invested in creating a built environment that assumes the continuation of recent sea levels, temperature ranges, and other features of the climate that are now moving away from historic conditions.”²⁶ Consequently, adaptation to climate change will impact many aspects of life, including water usage, energy systems, and others.²⁷ Effective adaptation measures may require changes to individual lifestyles in ways that prior environmental planning and regulation have not. For many communities, preparations for climate change remain largely conceptual. But as adaptation becomes a reality, proposed changes to land use laws, the appearance of communities, and daily life will likely spark considerable opposition from those who feel entitled to continue living exactly as they have done in the past. “[A]daptation to climate change is both a social and a political process,”²⁸ and the anticipated lack of social acceptance of change is likely to translate into very hard-won progress.²⁹

the American West. These changes will make subsidized water policies increasingly unsustainable. See, e.g., Benjamin Houston & Noah D. Hall, *Managing Demand for Water*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE: U.S. AND INTERNATIONAL ASPECTS* 95, 98, 109–111, (Michael B. Gerrard & Katrina Fischer Kuh, eds., 2012).

24. Andrew Green, *You Can't Pay Them Enough: Subsidies, Environmental Law, and Social Norms*, 30 HARV. ENVTL. L. REV. 407, 435–36 (2006).

25. Michael B. Gerrard, *Introduction and Overview*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE*, supra note 23, at 3.

26. *Id.* at 12.

27. *Id.* at 12–13.

28. W. Neil Adger et al., *Adaptation Now*, in *ADAPTING TO CLIMATE CHANGE: THRESHOLDS, VALUES, GOVERNANCE* 1, 1 (W. Neil Adger et al., eds., 2009) [hereinafter *ADAPTING TO CLIMATE CHANGE*].

29. See, e.g., Blake Hudson, *Coastal Land Loss and the Mitigation-Adaptation Dilemma: Between Scylla and Charybdis*, 73 LA. L. REV. 31, 63 (2012) (noting that, in Louisiana, one of

The elimination of subsidies may allow federal, state, and local governments to pursue adaptation goals without restricting land use or engaging in large public works. But, like other adaptation measures, “[e]liminating or reducing subsidies is not politically easy.”³⁰ Many lifestyle choices now known to be environmentally destructive were made based on the existence of subsidies. People were able to settle in sprawling suburbs because of the low cost of transportation, were enticed to move to the desert based on an artificially low price of water, and made choices to live in coastal communities because of guarantees provided by subsidized flood insurance. Those choices are likely to come with a sense of entitlement to the continuation of these subsidies in perpetuity, and shifts in policy that force changes in lifestyle are likely to be met with an emotional response. The attitude of entitlement to a subsidized way of life is perhaps best expressed in an anecdote from one Las Vegas Valley Water district investigator who confronted a homeowner about a sprinkler made illegal following restrictions on water use in response to the strain of an escalating population on sparse supplies.³¹ “‘He got so angry,’ the investigator said, ‘he poked me in the chest and said, ‘Man, with all these new rules, you people are trying to turn this place into a desert.’”³²

These kinds of reactions raise the question of what is owed to those who have long gained the benefits of government subsidies for environmentally harmful behavior. The answer may be nothing; ideally, the elimination of subsidies would simply adjust financial incentives so as to cause people to either alter their lifestyle in needed ways, or to pay more for the privilege of maintaining environmentally destructive behaviors. But where the loss of subsidy creates a decrease in property values or eliminates the ability of a community to function as it once did, the impacts may be dramatic. The reality of moving away from subsidies may therefore raise complicated social and legal issues. Reliance-based impacts, and any legal responsibilities that they create with regard to the elimination of subsidies, must be fleshed out and considered.

the states already severely impacted by sea level rise and attendant erosion, “‘people were not willing to give up on the coast, nor were they willing to write off areas at risk.’”) (citing Louisiana government polls concerning rebuilding proposals for the Gulf Coast).

30. Thompson, *supra* note 20, at 325.

31. JANINE SCHIPPER, *DISAPPEARING DESERT: THE GROWTH OF PHOENIX AND THE CULTURE OF SPRAWL* 77 (2008).

32. *Id.*

The controversy over recent amendments to the NFIP provides a helpful framework for this consideration. Many purchased homes in the floodplain in reliance on the availability of subsidies, and possible revocation of those subsidies was met with public outcry. But an analysis of potential government obligations based on contract law, regulatory takings doctrine, due process, or environmental justice shows that none of these frameworks obligate a government to continue its provision of subsidized flood insurance. As governments attempt to make up for poor decisions in the past, assessing how much change communities can be expected to take on at a time becomes enormously important. Clarifying that this question is one of policy choice rather than government obligation, however, may provide support to policymakers tasked with implementing needed changes. This struggle to reverse course from a subsidized way of life is just one of the hard first steps that policymakers and their constituents will increasingly confront in the face of a changing climate. This is adaptation.

I. THE HISTORY AND STRUCTURE OF THE NFIP

Many regions of the United States have long suffered from severe flooding.³³ In the first half of the twentieth century, federal officials generally responded to floods with structural solutions, such as dams and levees.³⁴ Congress formalized the federal role in flood management with the Flood Control Act of 1936, which authorized the construction of more than 200 specific flood control projects.³⁵ But flood losses escalated despite these projects, and it became clear that “the more flood control structures were

33. See, e.g., NANCY S. PHILIPPI, FLOODPLAIN MANAGEMENT—ECOLOGIC AND ECONOMIC PERSPECTIVES 18 (1996) (“Damaging floods occurred on the Mississippi River in 1849, 1850, 1862, 1865, 1869, 1874, 1912, and 1913. . . . When three more waves of flooding occurred again on the same river in 1927, 20,000 square miles were inundated with floodwater, over 200 people were killed, the homes of 700,000 residents destroyed. . . . Flooding in the Ohio River valley in 1913 killed more than 400 people and caused \$200 million in property losses. More disastrous flooding on that river occurred in 1935, when over 200 lives were lost, and again in 1937. . . . Flooding did terrible damage in Pittsburgh in 1907. In 1935 floods ravaged states from Washington to New York and from Texas north to Wisconsin. In 1936 there was flooding all along the eastern seaboard, [and] over 100 people drowned across the country. . . .”).

34. BOB FREITAG ET AL., FLOODPLAIN MANAGEMENT: A NEW APPROACH FOR A NEW ERA 198 (2009); PHILIPPI, *supra* note 33, at 2.

35. PHILIPPI, *supra* note 33, at 51.

built, the more damages” from flooding occurred.³⁶ Foreshadowing problems seen today as a result of the NFIP, flood control measures tended to exacerbate the problems that they were intended to solve by fostering misplaced confidence in the safety of living in the floodplain and tampering with the operation of the ecosystem.³⁷

Prior to the NFIP, floods devastated property owners, who generally could not purchase flood insurance.³⁸ Private insurers have historically declined to enter the flood insurance market.³⁹ The combination of high monetary losses associated with floods and inaccurate risk data makes flood insurance financially infeasible for many providers. Furthermore, those who purchase flood insurance tend to be those most at risk of flooding, and insurance companies are subjected to a large volume of claims from any given flood event.⁴⁰ Without private insurance coverage, local, state, and, especially, the federal government bore the burden of providing flood victims with disaster relief funds. These calls for disaster relief “placed an increasing burden on the Nation’s resources.”⁴¹

Faced with mounting expenditures and the failure of its structural projects, Congress sought new means of reducing damages from flooding. Following the devastation of Hurricane Betsy on the Gulf Coast in 1965,⁴² Congress passed the Southeast Hurricane Disaster Relief Act.⁴³ In addition to providing financial relief to flood victims, the act authorized an insurance feasibility study entitled “Insurance and Other Programs for Financial Assistance to Flood Victims.”⁴⁴ Finally, in 1968, Congress passed the National Flood Insurance Act,⁴⁵ creating the NFIP. The

36. *Id.* at 2–3.

37. *Id.* at 3.

38. See, e.g., Frank E. Maloney & Dennis C. Dambly, *The National Flood Insurance Program—A Model Ordinance for Implementation of Its Land Management Criteria*, 16 NAT. RESOURCES J. 665, 671–72 (1976).

39. *Id.*

40. James P. O’Brien, *The National Flood Insurance Program: Unattained Purposes, Liability in Contract, and Takings*, 35 WM. & MARY L. REV. 727, 732 (1994).

41. *Id.* (quoting 42 U.S.C. § 4001(a)(1) (1988)).

42. Hurricane Betsy “left 81 dead, injured more than 17,600, and caused 250,000 residents to flee to storm shelters.” Tarak Anada, Comment, *The Perfect Storm, an Imperfect Response, and a Sovereign Shield: Can Hurricane Katrina Victims Bring Negligence Claims Against the Government?*, 35 PEPP. L. REV. 279, 285 n.32 (2008).

43. Southeast Hurricane Disaster Relief Act, Pub. L. No. 89-339, 79 Stat. 1301–02 (1965).

44. FREITAG ET AL., *supra* note 34, at 199.

45. Pub. L. No. 90-448, 82 Stat. 476–525, 526–575, 576–611 (1968).

primary purposes of that Act were to “[b]etter indemnify individuals for flood losses through insurance; [r]educe future flood damages through State and community floodplain management regulations; and [r]educe Federal expenditures for disaster assistance and flood control.”⁴⁶ To achieve these outcomes, the NFIP would offer flood insurance, funded by participant premiums, thereby decreasing reliance on the public fisc in the event of a flood. To reduce the likelihood of flood damage and claims, the availability of insurance was coupled to communities’ implementation of flood control measures. The basic structure of the NFIP has not changed.

A. The Statutory Structure and Management of the NFIP

The NFIP is managed by the Federal Insurance and Mitigation Administration (FIMA), which operates under the direction of the Federal Emergency Management Agency (FEMA) within the Department of Homeland Security (DHS).⁴⁷ The Associate Administrator of FIMA reports to the FEMA Administrator and Deputy Administrator. Two Deputy Associate Administrators report to the FIMA Director and oversee FIMA’s insurance and mitigation efforts. NFIP management responsibilities include developing the flood hazard maps used to set premium rates and establishing NFIP regulations.⁴⁸

The NFIP has two major objectives: insurance and mitigation. In 2012, the federal government issued 5,629,396 flood insurance policies to homeowners in participating communities.⁴⁹ Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS) determine NFIP premiums. The FIS “use detailed hydrologic and hydraulic analyses to develop [Base Flood Elevations (BFE)] and designate floodways and risk zones for developed areas of the

46. FED. EMERGENCY MGMT. AGENCY, FED. INS. & MITIGATION ADMIN., NATIONAL FLOOD INSURANCE PROGRAM: PROGRAM DESCRIPTION 2 (2002) [hereinafter PROGRAM DESCRIPTION], available at http://www.fema.gov/media-library-data/20130726-1447-20490-2156/nfipdescrip_1_.pdf.

47. See *FEMA Organization Chart*, FED. EMERGENCY MGMT. AGENCY, http://www.fema.gov/media-library-data/1394467029511-17034c2a633bc9e0b5d1fd3f56a137cb/FEMA+Org+Chart+03-09-2014_508.pdf (last updated Mar. 9, 2014).

48. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-11-297, FEMA ACTION NEEDED TO IMPROVE ADMINISTRATION OF THE NATIONAL FLOOD INSURANCE PROGRAM 5 (2011), available at <http://www.gao.gov/products/GAO-11-297>.

49. *Total Policies in Force by Calendar Year*, FED. EMERGENCY MGMT. AGENCY, <http://www.fema.gov/policy-claim-statistics/flood-insurance/policy-claim-statistics-flood-insurance/policy-claim-13-14> (last updated May 30, 2014).

floodplain.”⁵⁰ The results of the FIS are incorporated into individual FIRM for floodplain communities, which designate flood zones in connection with the “base flood,” or “[t]he flood having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the ‘100-year flood.’”⁵¹ The NFIP and federal agencies use the base flood as the standard for requiring flood insurance and regulating new development.⁵² Properties located within the 100-year floodplain are known as special flood hazard areas (SFHA).⁵³

Mitigation measures form the second part of the NFIP policy framework. Eligibility for participation in the NFIP is determined at the community level. To participate, communities must complete an application, adopt a resolution of intent to participate and cooperate with FEMA, and adopt and submit a floodplain management ordinance that meets or exceeds the minimum NFIP criteria.⁵⁴ Only those communities that have agreed to adopt and enforce land use and control measures consistent with federal flood plain management regulations may access NFIP insurance.⁵⁵ NFIP communities that choose to engage in further mitigation efforts may participate in FEMA’s Community Rating System (CRS). The CRS is a voluntary incentive system that offers community-wide discounts on insurance premiums in exchange for additional flood mitigation measures. A community’s flood prevention efforts are rated according to the CRS scale, and communities may earn discounts of up to 45% for SFHA, or 10% for non-SFHA.⁵⁶

NFIP flood insurance is not available to residents of non-participating communities. And because federal funds are not available for construction in areas having special flood hazards

50. PROGRAM DESCRIPTION, *supra* note 46, at 6.

51. *Base Flood*, FED. EMERGENCY MGMT. AGENCY, <http://www.fema.gov/national-flood-insurance-program/base-flood#0> (last updated Aug. 9, 2013).

52. *Id.*

53. 42 U.S.C. § 4002(b)(4). SFHA are defined by regulation as “land in the flood plain within a community subject to a 1 percent or greater chance of flooding in any given year.” 44 C.F.R. § 59.1 (2009).

54. *Participation in the National Flood Insurance Program*, FED. EMERGENCY MGMT. AGENCY, <http://www.fema.gov/floodplain-management/participation-national-flood-insurance-program> (last updated Aug. 9, 2013); *see also* 44 C.F.R. § 59.22 (2009) (outlining specific procedures for application to the NFIP).

55. 42 U.S.C. § 4002(b)(3) (2012); 42 U.S.C. § 4012(c) (2012); 42 U.S.C. § 4022 (2012).

56. *National Flood Insurance Program Community Rating System*, Fed. Emergency Mgmt. Agency, <http://www.fema.gov/national-flood-insurance-program-community-rating-system> (last updated May 2, 2014).

without flood insurance, non-participating communities are ineligible for this funding.⁵⁷ Once a community becomes a participant in NFIP, flood insurance is mandatory for properties located in designated SFHA that receive assistance from federal programs or by federally supervised, regulated, or insured agencies or institutions.⁵⁸ Financial institutions may also require flood insurance for properties in participating communities located outside SFHA.⁵⁹

B. Impacts and Financial Health of the NFIP To Date

Theoretically, NFIP's two components of insurance and mitigation should work together to reduce the burden of flood insurance and disaster relief on the federal budget and to reduce overall flood losses. To date, however, the NFIP has had the opposite impact. The NFIP is designed to pay losses and operating expenses out of policyholder premiums.⁶⁰ But the premiums paid by NFIP policyholders have historically been insufficient to cover the program's losses from flood claims. This is primarily because to achieve the NFIP's objectives, many NFIP policyholders have long received heavily subsidized premium rates. Premium discounts have long been "given to any structure that was built before FEMA had mapped the flood risk in an area (referred to as pre-FIRM

57. 42 U.S.C. § 4106 (2012).

58. FED. EMERGENCY MGMT. AGENCY, NAT'L FLOOD INS. PROGRAM, FEMA F-084, ANSWERS TO QUESTIONS ABOUT THE NFIP 11 (2011), *available at* http://www.fema.gov/media-library-data/20130726-1438-20490-1905/f084_atq_11aug11.pdf. The rules governing loans to property located in SFHA were dramatically tightened by the National Flood Insurance Reform Act of 1994. Under the new rules, "It is a prerequisite that a designated loan have flood insurance as a condition of closing. If a borrower will not voluntarily obtain coverage and a lender is unable to force place coverage, the lender must deny the loan or exercise the sanction provisions of the loan document if the loan already has been made. A lender cannot accept a borrower's assurance that he or she will obtain insurance coverage in the future or grant the lender indemnity while seeking coverage. Closing a designated loan without flood insurance coverage in place constitutes a violation of the regulation implementing the Mandatory Purchase Requirement." FED. EMERGENCY MGMT. AGENCY, FED. INS. & MITIGATION ADMIN., NATIONAL FLOOD INSURANCE PROGRAM: PROGRAM DESCRIPTION 29-30 (2002), *available at* https://agents.floodsmart.gov/Agents/downloads/NFIP_Program_Description.txt;jsessionid=965D17669E83C9998C938390A93E2AC7 (last visited July 3, 2014).

59. *Id.* at 30 ("Lenders on their own initiative may require the purchase of flood insurance even if a structure is located outside the SFHA. A decision to require coverage under such circumstance is not compelled by statute. Lenders have this prerogative to require flood insurance to protect their investments.")

60. HAYES & NEAL, *supra* note 4, at 6.

structures),⁶¹ in addition to several other categories of homeowners. Even in SFHA—the areas most prone to damage from flooding—pre-FIRM structures have historically enjoyed grandfathered rates. Policymakers justified these discounts on the theory that lower rates would convince more communities to join the NFIP, that high premiums would deter insurance purchases, and that high rates could force the abandonment of economically viable buildings.⁶² In 2013, roughly twenty percent of flood insurance policies nationwide received discounts, typically worth fifty-five to sixty percent off the full-risk price.⁶³ FEMA’s 2011 Actuarial Rate Review noted that, because of discounted premium rates, “it is currently impractical for the NFIP to be actuarially sound in the aggregate.”⁶⁴

Compounding the actuarial instability of the NFIP, even unsubsidized premium rates do not reflect actual risk levels. Premium rates are set not based on NFIP’s actual loss experience, but on a hydrologic model.⁶⁵ Using that model, NFIP’s stated goal is to collect sufficient premiums to cover at least the historical average loss year. The devastating losses in the program’s recent history should have increased that average significantly, but this would have led to politically untenable rate increases. For example, after 2005, the losses generated by Hurricane Katrina should have increased the historic average loss year close to the estimated long-term average loss year.⁶⁶ The NFIP, however, awarded 2005 losses (including losses from Hurricanes Katrina, Rita, and Wilma) only a one percent weight to avoid triggering an increase in premiums or the elimination of subsidies.⁶⁷ Furthermore, NFIP flood maps have long depended solely on historic data, with no consideration of risks posed by future sea level rise.⁶⁸ Indeed, federal law “did not permit FEMA to take into

61. CAROLYN KOUSKY & HOWARD KUNREUTHER, RES. FOR THE FUTURE & WHARTON RISK MGMT. & DECISION PROCESSES CTR., ISSUE BRIEF 13-02, ADDRESSING AFFORDABILITY IN THE NATIONAL FLOOD INSURANCE PROGRAM 3 (2013), *available at* <http://www.rff.org/rff/documents/RFF-IB-13-02.pdf>.

62. HAYES & NEAL, *supra* note 4, at 4.

63. KOUSKY & KUNREUTHER, *supra* note 61, at 3.

64. HAYES & NEAL, *supra* note 4, at 5.

65. *Id.* at 10, 13 n.13.

66. *Id.* at 5.

67. *Id.* at 13.

68. Byrne, *supra* note 1, at 83.

account scientific models predicting increased future flooding due to climate change and other factors.⁶⁹

The systemic actuarial unsoundness of the NFIP has left it ill prepared for the billion-dollar loss years seen over the last decade. “The NFIP paid out more claims in 2005 [following Hurricane Katrina] than it had paid out over the entire life of the program to that point.”⁷⁰ FEMA had insufficient funds to cover the claims, and Congress had to increase NFIP’s borrowing authority to \$20.775 billion.⁷¹ Following Superstorm Sandy, that borrowing limit was increased again to \$30 billion.⁷²

The NFIP has therefore not achieved its goal of reducing federal expenditures for flood damage in any meaningful way. Although the impact of violent storms experienced over the past decade has been severe, these storms only highlighted weaknesses in the program structure that have been apparent for years. For instance, FEMA reported in 2002 that the NFIP was “fiscally sound,” but stressed that the term was used not in the traditional insurance sense. Instead, as noted, it meant that it received premiums sufficient to cover the historical average loss year.⁷³ Because the NFIP at that point had not experienced catastrophic loss years, the historical average—and the basis for FEMA’s assessment of fiscal soundness— “[wa]s less than what can be expected over the long term.”⁷⁴ Had the catastrophic loss years of recent decades never materialized, the NFIP may not be facing its current financial difficulties. But the potential for such troubles was a long-understood structural component of the NFIP, not a climate-change related ambush of a sound program.

The program has also failed to discourage development in the flood plain.⁷⁵ To the contrary, the one unqualified success of the NFIP appears to be the use of subsidized rates to entice participation in the program. The rise of the NFIP has coincided

69. *Id.*

70. KOUSKY & KUNREUTHER, *supra* note 61, at 4.

71. *Id.*

72. *Id.*

73. THOMAS L. HAYES & RANDALL A. JACOBSON, FED. EMERGENCY MGMT. AGENCY, FED. INS. & MITIGATION ADMIN., NAT’L FLOOD INS. PROGRAM, ACTUARIAL RATE REVIEW 3–4 (2002), available at http://www.fema.gov/media-library-data/20130726-1554-20490-4173/rate_rev02.pdf.

74. *Id.* at 4.

75. *Cf.* O’Brien, *supra* note 40, at 727 (“Congress passed the National Flood Insurance Act of 1968 . . . in an effort to avoid or reduce the public’s exposure to damages caused by flooding and to discourage development in floodplains.”).

with an unprecedented level of coastal development, with guaranteed protection from the federal government. Subsidized rates for flood insurance amount to a seal of federal approval for development and a safety net that is a “major plus in shoreline living.”⁷⁶ Because this encouragement of coastal development has increased the number of people and structures in the path of storms, the NFIP may also result in increased federal disaster relief spending. Government support for coastal development has had drastic impacts not only on the financial soundness of the NFIP, but on the coastal ecosystem as well.

II. COASTAL DEVELOPMENT AND SEA LEVEL RISE

A. The Coastline

“The coastal regions of planet Earth are amazing areas. The interface between land and sea, the coast is a unique geologic, ecological, and biological domain of vital importance to an astounding array of terrestrial and aquatic life forms, including humankind.”⁷⁷ Coastal ecosystems encompass both land and ocean, including the inner continental shelf sand banks, coastal barrier islands, dunes, coastal wetlands and estuaries, beaches, and uplands.⁷⁸ The interactions of these varied elements serve several crucial functions.

First, coastal ecosystems play a vital biological role. They offer a direct link to the ocean, and, therefore, to the health of the Earth’s water and oxygen cycles.⁷⁹ The unique makeup of the coastal ecosystem protects biodiversity. Estuaries,⁸⁰ for example, support

76. ORRIN PILKEY, SR. ET AL., *COASTAL DESIGN: A GUIDE FOR BUILDERS, PLANNERS, AND HOME OWNERS* 147 (1983).

77. BEATLEY ET AL., *supra* note 3, at 1.

78. Barnhizer, *supra* note 12, at 312; *see also* WALLACE KAUFMAN & ORRIN PILKEY, *THE BEACHES ARE MOVING: THE DROWNING OF AMERICA’S SHORELINE* 163 (1979) (“[B]eaches are not mere sand dunes existing at the mercy and whim of a cruel sea. They are part of a large and complex geological band that begins three or four miles out to sea and ends high and dry next to mainland proper. This entire beach system is married to the dynamic forces of the oceans and winds and melting glaciers. It survives only by unceasing motion.”).

79. WHITE HOUSE COUNCIL ON ENVTL. QUALITY, *FINAL RECOMMENDATIONS OF THE INTERAGENCY OCEAN POLICY TASK FORCE 11* (2010), *available at* http://www.whitehouse.gov/files/documents/OPTF_FinalRecs.pdf.

80. Estuaries are “bodies of water that receive freshwater and sediment influx from rivers and tidal influx from the oceans, thus providing transition zones between the fresh water of a river and the saline environment of the sea.” ENVTL. PROT. AGENCY, EPA-842-R-10-003, *NATIONAL COASTAL CONDITION REPORT IV 3* (2012), *available at* http://water.epa.gov/type/oceb/assessment/monitor/nccr/upload/0_NCCR_4_Report_508_bookmarks.pdf.

wildlife and fisheries by providing habitat and migration corridors,⁸¹ among other benefits. Wetlands, another main component of coastal ecosystems, provide the necessary conditions for “a unique ecosystem characterized by hydrology, soils, and vegetation.”⁸² These and other features of the coastal habitat offer spawning grounds, nurseries, shelter, and food for fish, shellfish, and other wildlife.⁸³ Coastal areas also provide “nesting, resting, feeding, and breeding habitat for 75% of U.S. waterfowl and other migratory birds.”⁸⁴ The interaction of land and sea produces a habitat for these and thousands of other plant and animal species that “cannot be duplicated elsewhere.”⁸⁵

Functioning coastal ecosystems are also enormously important for human development, both near and far from the coast. Coastal regions provide for the dietary needs of millions of people, serve as natural harbors for commerce, attract residents and tourists with their beaches and shorelines, and support wetlands and estuaries for fisheries and water resources.⁸⁶ Coasts have long played a role in our energy supply, from the transportation and processing of oil to the more recent interest in capturing energy from wind and waves.⁸⁷ And at the ecosystem services level, coasts “provide critical functions to cycle and move nutrients, store carbon, detoxify wastes, [] purify air and water,”⁸⁸ and generate fertile soils.⁸⁹

Finally, coasts play a crucial role as a safety mechanism for people living near the ocean. The beaches, dunes, cliffs, and barrier islands of coastal ecosystems act as direct buffers against the winds and waves of coastal storms.⁹⁰ Coastal ecosystems also protect

81. H. JOHN HEINZ III CTR. FOR SCI., ECON., & THE ENV'T, HUMAN LINKS TO COASTAL DISASTERS 21 (2002) [hereinafter HUMAN LINKS TO COASTAL DISASTERS], *available at* https://adapt.nd.edu/resources/462/download/Human_Links_to_Coastal_Disasters.pdf.

82. ENVTL. PROT. AGENCY, EPA 843-F-04-011A, WETLANDS OVERVIEW 1, *available at* http://water.epa.gov/type/wetlands/upload/2005_01_12_wetlands_overview.pdf.

83. *Id.*

84. *Id.*

85. BEATLEY ET AL., *supra* note 3, at 1.

86. *Id.* See generally VIRGINIA BURKETT & MARGARET DAVIDSON, COASTAL IMPACTS, ADAPTATION, AND VULNERABILITIES: A TECHNICAL INPUT TO THE 2013 NATIONAL CLIMATE ASSESSMENT (2012), *available at* http://downloads.usgcrp.gov/NCA/technicalinputreports/Burkett_Davidson_Coasts_Final_.pdf.

87. BURKETT & DAVIDSON, *supra* note 86, at 4.

88. *Id.* at xiv; see also WETLANDS OVERVIEW, *supra* note 82, at 1 (“Wetlands also absorb excess nutrients, sediment, and other pollutants before they reach rivers, lakes, and other waterbodies.”).

89. HUMAN LINKS TO COASTAL DISASTERS, *supra* note 81, at 21.

90. BEATLEY ET AL., *supra* note 3, at 1; see also KAUFMAN & PILKEY, *supra* note 78, at 27 (“In nature’s endless interplay of force and material, the beach is a buffer zone, shock absorber,

against extreme weather and flooding through their influence on the “quantity, timing, location, and quality of water.”⁹¹ Coastal trees, vegetation, and soil absorb the impacts of storms by deflecting and absorbing precipitation, decreasing the speed of water flow, and stabilizing the soil.⁹² Smaller components of the ecosystem—vegetation, microbes, and soils—improve water quality by filtering and trapping contaminants, preventing erosion, and transforming nutrients and contaminants.⁹³ These unique qualities make the coastal ecosystem valuable, but also mean that damage to that ecosystem may harm animal, plant, and human life. And “the coastal ecosystem [is a] precisely balanced, fragile area [] susceptible to a variety of threats.”⁹⁴

B. The Coastline and Sea Level Rise

One of the primary threats to coastal ecosystems is sea level rise. Impacts on the ecosystem from sea level rise include land loss through submergence and erosion, migration of coastal landforms, increased frequency and extent of coastal flooding, loss of wetlands, and increased salinity in coastal freshwater sources.⁹⁵ Sea level rise therefore has the potential to permanently change coastal ecosystems. This is particularly true for coastal ecosystems in the United States, many of which are expected to experience sea rise more dramatically than in the rest of the world. Projections include a 1.02 meter to 1.46 meter rise in California and a 0.8 meter to 1.4 meter rise for the Gulf Coast.⁹⁶

The inundation of coastal land due to sea level rise is not inherently problematic. Under normal conditions, coastal ecosystems are able to adapt to rising sea levels. In nature,

and biological way station between the sea and the land The wastes that form the beaches are not only vital in the coastal environment but are the first line of defense for the mainland from whence they issue.”)

91. ROBERT W. ADLER ET AL., CTR. FOR PROGRESSIVE REFORM, WHITE PAPER NO. 1304, LETTING NATURE WORK IN THE PACIFIC NORTHWEST: A MANUAL FOR PROTECTING ECOSYSTEM SERVICES UNDER EXISTING LAW 15 (2013), *available at* http://www.progressivereform.org/articles/Ecosystem_Services_PacNW_1304.pdf.

92. *Id.*

93. *Id.*

94. BEATLEY ET AL., *supra* note 3, at 1.

95. JAMES G. TITUS, U.S. CLIMATE CHANGE SCI. PROGRAM, SYNTHESIS AND ANALYSIS PRODUCT 4.1, COASTAL SENSITIVITY TO SEA LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION 21 (2009), *available at* <http://downloads.globalchange.gov/sap/sap4-1/sap4-1-final-report-all.pdf>.

96. Byrne, *supra* note 1, at 75.

floodplains are constantly changing, a “dynamism [that] is key to functioning aquatic and floodplain ecosystems. The unpredictable nature of when and where disturbances will occur creates a vibrant and complex physical habitat for plants and animals that are adapted to this environment.”⁹⁷ Barrier islands and other components of the coastal ecosystem “naturally migrate in response to storm activity and sea-level rise”⁹⁸ and maintain the equilibrium necessary for the aforementioned ecosystem functions.⁹⁹ Although sea level rise is certain to alter coastal ecosystems from their current state, when left alone those ecosystems are capable of adaptation that will retain many of their essential elements.

C. The Coastline, Sea Level Rise, and Human Development

Human interference, however, severely impairs the adaptive ability of coastal ecosystems.¹⁰⁰ Even assuming constant sea levels, the coastal environment is negatively affected by human development. Development damages the coasts by destroying forests and wetlands and degrading water quality,¹⁰¹ and by “compromis[ing] the ability of the coasts . . . to provide a multitude of benefits including food, clean water, jobs, recreation, and protection from storms.”¹⁰² Land use practices may impact endangered species, including fish, amphibians, other animals, and plants.¹⁰³ And “alterations to land use and natural inlets impact nutrient runoff, stormwater management, and water quality,” while “shoreline hardening and dredging alters coastal circulation patterns, exacerbating shoreline erosion and the ability to attenuate flooding.”¹⁰⁴ Furthermore, the proliferation of impervious surfaces due to development “can have dramatic impacts upon drainage . . . and the ability of floodplain landforms to protect human development from flooding.”¹⁰⁵ Where development destroys the ability of coastal land to absorb water,

97. FREITAG ET AL., *supra* note 34, at 59.

98. BURKETT & DAVIDSON, *supra* note 86, at xxvi.

99. BEATLEY ET AL., *supra* note 3, at 1.

100. *Id.*

101. *Id.* at 57.

102. BURKETT & DAVIDSON, *supra* note 86, at xxiii.

103. FREITAG ET AL., *supra* note 34, at 34 (“A 2008 National Marine Fisheries Service biological opinion clearly tied the flood management practices supported by the NFIP to decreased fish habitat and decreased ability of watersheds to regulate floodwaters.”)

104. BURKETT & DAVIDSON, *supra* note 86, at 6.

105. Bamhizer, *supra* note 12, at 315.

water pushed on land by storms will have nowhere to go but on top of, into, and around coastal buildings.

The rising seas complicate this situation.¹⁰⁶ Most “ecosystems can migrate inland as sea level rises and inundates lands that were formerly dry . . . if the adjacent dry land is undeveloped and property owners allow the sea to advance.”¹⁰⁷ The dynamic nature of the coastlines, however, is incompatible with human-occupied areas that demand stability.¹⁰⁸ In an effort to tame natural processes and protect property, coastal communities have transformed much of the natural coastal environment into a “human-managed landscape” made up of seawalls, revetments, groins, jetties, dams, and other flood control projects.¹⁰⁹ As sea levels rise, the development of coastal land and use of barriers to hold back the sea will encroach further on wetlands and beaches and will impair the migration of barrier islands.¹¹⁰ These structures also eliminate the ability of coastal landforms to regenerate once destroyed.¹¹¹ And it is not only the natural environment that is put at risk by this loss of coastal landforms. Destroying the coastal ecosystem’s natural ability to absorb the impacts of storms endangers both human life and property, particularly in the face of

106. *Id.* at 65 (“As the natural resources of coastal systems respond to changing climatic conditions, human modification and management of these systems is a major factor in the character of the response. In many cases the capacity of coastal systems to reposition or reshape themselves in response to climate drivers is constrained by the physical modifications made to accommodate and sustain human uses. This adds an additional level of complexity to forecasts of ecosystem responses. It also highlights the need for system-level thinking as we work to adapt to the evolving conditions.”).

107. TITUS, *supra* note 95, at 718.

108. FREITAG ET AL., *supra* note 34, at 59.

109. BEATLEY ET AL., *supra* note 3, at 57 (“[T]he natural coastal environment has in many areas been replaced with a heavily human-managed landscape through the construction of seawalls and revetments, groins and jetties, and dams and other flood control projects.”); *see also* ORRIN H. PILKEY & MARY EDNA FRASER, A CELEBRATION OF THE WORLD’S BARRIER ISLANDS 4 (2003) (“In almost every developed country with barrier islands, seawalls, breakwaters, and jetties have been placed on shorelines, and hundreds of miles of beaches have been destroyed as a result.”).

110. *See* TITUS, *supra* note 95, at 718.

111. BURKETT & DAVIDSON, *supra* note 86, at xxvii, 6. Coastal Louisiana is already experiencing some of these impacts. In recent decades, that area has “lost 1,900 square miles of wetlands . . . due to human alterations of the Mississippi River’s sediment system and oil and water extraction that has caused land to sink.” These changes have cut off the supply of sediment to wetlands, meaning that they “[cannot] keep up with the rising seas and no longer function as natural buffers to flooding.” *Climate Impacts on Coastal Areas*, *supra* note 3. Dune construction on North Carolina’s Outer Banks has similarly exacerbated erosion and destroyed critical habitats for shorebird nesting. *See* PILKEY & FRASER, *supra* note 109, at 18–19.

a rising sea.¹¹² Thus, “[a]lthough sea-level rise and climate change have occurred in the past, the increasing human presence in the coastal zone will make the impacts different for the future”¹¹³ as coastal areas otherwise able to adjust to rising sea levels may no longer be able to migrate necessary functions due to development.¹¹⁴

The consequences of human impacts on coastal adaptation are magnified by unprecedented development on the coast. “Before the twentieth century, beachfront and coastal floodplain development was uncommon. And until the 1970s, landowners were reluctant to build on the coasts because of the high risk of hurricanes and storm-driven floods.”¹¹⁵ The latter part of the twentieth century, however, saw a significant shift. “From 1970 to 2010, population in the coastal watershed counties of the United States increased by 45 percent, or 50.9 million people.”¹¹⁶ As of 2010, a little more than 50 percent of the nation’s total population resided within these coastal watershed counties, and that percentage is predicted to increase from 50 percent to 144 percent under various IPCC models.¹¹⁷ Moreover, in 2011, 58% of the national Gross Domestic Product (GDP), valued at \$3.3 trillion, was generated in coastal watershed counties along the oceans and Great Lakes; economic activity in those counties was estimated to account for approximately 51 million jobs.¹¹⁸

This rise in coastal population is perhaps unsurprising. “Floodplains are very attractive places to build. They are typically level, close to water . . . , and deceptively dry much of the time.”¹¹⁹ Adding to the appeal of coastal properties, the availability of federally subsidized flood insurance has meant that coastal

112. Byrne, *supra* note 1, at 77 (“Societal impacts of sea-level rise largely stem from much of the United States population living near the coast.”); *see also* BEATLEY ET AL., *supra* note 3, at 66 (“The threat from hurricanes and other coastal storms has increased dramatically because the amount of development and number of people now in high-risk coastal zones have risen dramatically.”).

113. BURKETT & DAVIDSON, *supra* note 86, at xxvi.

114. *E.g., id.* at 61.

115. Barnhizer, *supra* note 12, at 308.

116. BURKETT & DAVIDSON, *supra* note 86, at 4.

117. *Id.* at 4–5.

118. *The Coast: Our Nation’s Economic Engine*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., available at http://stateofthecoast.noaa.gov/coastal_economy/welcome.html (last updated May 1, 2013).

119. FREITAG ET AL., *supra* note 34, at 58; *see also* Barnhizer, *supra* note 12, at 306 (“[F]loodplains—if one ignores their propensity for being flooded—are well-suited for many types of development.”).

property owners have no obligation or incentive to internalize the risk of flooding. Due to the NFIP and other government support for coastal development, coastal property values have “skyrocketed”¹²⁰ in the past few decades. In addition, the government spends hundreds of millions of dollars annually on repairs to public and private coastal properties, even for structures damaged repeatedly and foreseeably by storms.¹²¹ Far from deterring new construction, these policies “maintain development against rising sea levels, climate change, extreme weather phenomena, and erosion.”¹²²

The government-subsidized increase in coastal population has significantly altered land use patterns in affected areas.¹²³ And as discussed, these alterations have serious consequences for the ability of coastal ecosystems to adequately adapt to sea level rise. In this way, the surge in coastal population enabled by the NFIP has increased the vulnerabilities of the coastal ecosystems of the United States to harm from sea level rise. One study found that although “[t]he financial costs of the NFIP are considerable . . . they are likely dwarfed by the ecological damages that the program encourages.”¹²⁴ By “shifting the insurance risks to the taxpayers and reducing the long-term private costs of building in floodplains,” the NFIP encourages development that will “inevitably trigger environmental damage.”¹²⁵

Remarkably, despite declining mortality from natural catastrophes in the latter half of the twentieth century, deaths from floods increased.¹²⁶ In the past decade, storms such as Hurricane Katrina and Superstorm Sandy have demonstrated the deadly interactions of coastal flooding and the built environment. “Preventing or removing development in the zone at risk for sea-

120. BEATLEY ET AL., *supra* note 3, at 57.

121. Bamhizer, *supra* note 12, at 296.

122. *Id.*

123. *E.g.*, PILKEY & FRASER, *supra* note 109, at 272–73 (“Bulldozers flatten dunes and forests that might afford storm protection. Canals that provide paths for flooding storm surge waters are cut into islands to give everyone a view of a waterfront lot,” and seawalls are constructed “to protect buildings owned by the few, even though in the long run the seawalls with destroy the beaches owned by the many. . . . ‘The closer, the better,’ is the creed, and the better the view of the sea, the more costly the house.”).

124. HOLLADAY & SCHWARTZ, *supra* note 14, at 3.

125. *Id.*

126. Robert J. Rhee, *Participation and Disintermediation in a Risk Society*, in LAW AND RECOVERY AFTER DISASTER: HURRICANE KATRINA 3-20 (2008), available at http://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=1344&context=fac_pubs.

level rise [could] reduce public costs of defending or responding to crises and . . . permit natural landscape features providing valuable ecological services to migrate landward.”¹²⁷ As long as subsidies for the NFIP and other government programs remain in place, however, there will likely be a steady flow of people to the coasts, putting themselves and the ecosystem in danger and ensuring that the federal government will spend billions on insurance payments and disaster relief each time properties are flooded. “[T]he primary actors responsible for development—property owners and local governments—are behaving in an entirely rational way. Unless the rules of the game change, the coastlines will be consumed, and disaster costs will rise to unanticipated levels.”¹²⁸

III. THE BIGGERT-WATERS FLOOD INSURANCE REFORM ACT OF 2012 AND THE HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OF 2014

Finally recognizing the looming coastal crisis—impossible to ignore after the superstorms of the past decade—the federal government attempted to change the rules of the game. In 2012, Congress passed Biggert-Waters, which extended the NFIP for five years and revised NFIP premiums to more accurately reflect risk and to put the program’s finances on surer footing.¹²⁹ “Broad political support should exist for the abolition of public subsidies that exacerbate the risks of sea-level rise, [as] [r]eform of the [NFIP] . . . seems to be the most obvious and urgent legal step to adapt to sea-level rise.”¹³⁰ In reality, however, Biggert-Waters has led to considerable controversy because of the impacts of the increased premiums on property owners. This controversy led eventually to the repeal or alteration of many provisions of Biggert-Waters in the Homeowner Flood Insurance Affordability Act of 2014 (the Affordability Act).¹³¹

127. Byrne, *supra* note 1, at 96.

128. Bamhizer, *supra* note 12, at 342.

129. Moving Ahead for Progress in the 21st Century Act, Pub. L. No. 112-141, tit. II, subtit. A, §§ 100201–100253, 126 Stat. 405 (codified as amended at 42 U.S.C. § 4001–4129 (2006)) [hereinafter Biggert-Waters].

130. Byrne, *supra* note 1, at 83.

131. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020 (2014).

Biggert-Waters focused on the phase-out of subsidies and discounts on flood insurance premiums. It achieved those goals by updating flood mapping, increasing premium rates, and eliminating premium discounts. First, to ensure that rates more accurately reflected risk, Biggert-Waters required the FEMA Administrator, together with the Technical Mapping Advisory Council (TMAC), to establish meaningful standards for updating and maintaining FIRMs, and authorized additional funding for mapping.¹³² The TMAC's mandate included making recommendations on how to ensure that FIRMs incorporate the best available climate science and risk of sea level rise.¹³³ Biggert-Waters also established a National Flood Mapping Program (NFMP), designed to be an "ongoing program under which the Administrator shall review, update, and maintain" FIRMs.¹³⁴ The NFMP was intended to result in updated FIRMs for "all populated areas and areas of possible population growth."¹³⁵ Updated FIRMs based on more recent data would have placed large swaths of the population in flood zones reflecting higher risk. These new maps would likely have caused premium rates to rise based on this more accurate risk assessment.

Notably, Biggert-Waters phased out the practice of grandfathering. Grandfathering previously allowed homeowners to keep their old premiums when a new map reclassified them into a higher-risk zone. Under Biggert-Waters, new rates for reclassified properties were phased in by increasing premiums 20 percent per year until they matched full-risk premiums.¹³⁶ Homeowners were able to offset this rise in premiums by implementing mitigation activities that lower the risk of flooding, such as elevating a home

132. Biggert-Waters § 100216.

133. Biggert-Waters § 100215(c-d).

134. Biggert-Waters § 100216(a).

135. Biggert-Waters § 100216(b)(1)(A)(i). These updated FIRMs are required to incorporate the "best available science regarding future changes in sea levels, precipitation, and intensity of hurricanes." Biggert-Waters § 100216(b)(3)(D). The NFMP provisions do not, however, affect the definition of SFHAs, which are designated using historic floodplain data. Consequently, while the NFMP may result in updated FIRMs that reflect the potential for climate change-induced sea level rise and other impacts, it does not appear that such future projections would trigger additional mandatory insurance purchase requirements. JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., ANALYSIS OF HOW THE FLOOD INSURANCE REFORM ACT OF 2012 (H.R. 4348) MAY AFFECT STATE AND LOCAL ADAPTATION EFFORTS 9 (2012), available at <http://www.georgetownclimate.org/sites/default/files/Analysis%20of%20the%20Flood%20Insurance%20Reform%20Act%20of%202012.pdf>.

136. KOUSKY & KUNREUTHER, *supra* note 61, at 5.

above the Base Flood Elevation (BFE).¹³⁷ Properties above the BFE qualified for lower premium rates. Although such measures have the potential to save money even in a relatively short period of time,¹³⁸ they may require significant upfront investment that is beyond the reach of many homeowners.¹³⁹ Other hazard mitigation activities, such as the erection of barriers, yard improvements, and floodproofing,¹⁴⁰ may lower the risk of flood damage, but these would not result in a reduction in premiums.

In addition to the mapping requirements, Biggert-Waters clarified that FEMA's calculation of average losses must include catastrophic loss years—a provision that gave legislative cover to the kind of increases that would already have been put in place but for FEMA's reluctance to increase rates following Hurricane Katrina.¹⁴¹ The bill also increased the annual limitation on premium increases, long capped at ten percent, to twenty percent.¹⁴² Biggert-Waters fulfilled its goal of phasing out subsidies by mandating annual increases in premium rates until the premiums reflected full risk rates. Second residences and other specified categories of

137. The BFE is the “computed elevation to which floodwater is anticipated to rise during the base flood. BFEs are shown on [FIRM] and on the flood profiles. The BFE is the regulatory requirement for the elevation or floodproofing of structures. The relationship between the BFE and a structure's elevation determines the flood insurance premium.” *Base Flood Elevation*, FED. EMERGENCY MGMT. AGENCY, <http://www.fema.gov/national-flood-insurance-program/base-flood-elevation#0> (last updated Aug. 16, 2013).

138. *See, e.g.*, KOUSKY & KUNREUTHER, *supra* note 61, at 12 (noting that raising a house so that it is above BFE “could save thousands, if not tens of thousands, of dollars in annual flood insurance costs.”).

139. Various government funding streams could supplement the resources of homeowners facing new obligations to elevate their homes. Some potential sources of such funding include: 1) subsidized disaster assistance loans from the Small Business Administration, the amount of which can be increased by up to 20 percent to finance mitigation activities such as elevating; 2) increased cost-of-compliance payments for properties covered under a NFIP policy, which provide up to \$30,000 to bring a property into compliance with regulations; 3) Hazard Mitigation Grant Program funds that are made available to states after a disaster declaration, and for which communities may apply and distribute to residents; and 4) Community Development Block Grants (CDBG), although use of CDBG for elevating may require the approval of the Department of Housing and Urban Development. *Id.* at 13–14.

140. *See* FED. EMERGENCY MGMT. AGENCY, FEMA 511, REDUCING DAMAGES FROM LOCALIZED FLOODING: A GUIDE FOR COMMUNITIES 10-1-10-13 (2005), *available at* <http://www.fema.gov/media-library-data/20130726-1446-20490-0539/FEMA511-complete.pdf>; *see also* KOUSKY & KUNREUTHER, *supra* note 61, at 13 n.11 (“The NFIP currently gives reductions in premiums when homes are elevated. There are other hazard mitigation options that may be cost-effective for reducing flood damages, but for which the homeowner would not receive a discount on their NFIP premium.”).

141. Biggert-Waters § 100211.

142. Biggert-Waters § 100205.

homes were subject to a twenty¹⁴³ or twenty-five¹⁴⁴ percent increase in premium rates each year. Those uninsured as of the date of enactment of Biggert-Waters, owners of property with a lapsed NFIP policy, and owners of property purchased after the date of enactment of Biggert-Waters faced an immediate increase to the full-risk rate as of October 1, 2013. Under the original timeline, all property owners would begin to be affected by late 2014.¹⁴⁵ Biggert-Waters also eliminated premium discounts for single-family households “when a policy lapses, a property is sold, the property sustains substantial flood damage (defined as damage greater than 50 percent of the home’s value), the property is substantially improved, or a new policy is purchased.”¹⁴⁶

The elimination of subsidies and implementation of updated risk assessments under Biggert-Waters resulted in significant premium increases for many policyholders. This rise in premiums led to allegations of unfairness and calls for relief from the new law. Homeowners raised the specter of being unable to afford either the mitigation measures required to lower their rates or the higher insurance premiums imposed if they did not take such measures. Federally-backed mortgages require the purchase of flood insurance in designated zones, leading some to fear that those unable to afford the increased premiums would face the loss of their home. Some also speculated that the rise in insurance rates would cause a drop in property values, leaving homeowners owing more on their mortgages than the value of their homes.¹⁴⁷ Others

143. Imposed on other property owners, including non-subsidized policyholders. The effective date is late 2014. *See* Biggert-Waters § 100207.

144. For homeowners with subsidized insurance rates on non-primary residences, the effective date was January 1, 2013; for owners of business properties with subsidized premiums, owners of severe repetitive loss properties consisting of 1–4 residences with subsidized premiums, and owners of any property that has incurred flood-related damage in which the cumulative amounts of claims payments exceeded the fair market value of such property, the effective date was October 1, 2013. Biggert-Waters § 100205.

145. Due to ongoing attempts to slow the implementation of Biggert-Waters, the current date upon which property owners will be affected is uncertain. *See infra* notes 152–158 and accompanying text.

146. KOUSKY & KUNREUTHER, *supra* note 61, at 4.

147. Klaus Jacob, *The Case Against Rebuilding the Coastline After Superstorm Sandy*, THE ATLANTIC CITYLAB (Sept. 12, 2013), <http://www.citylab.com/design/2013/09/case-against-rebuilding-shoreline-after-superstorm-sandy/6869/> (“For individual homeowners, the options are bleak. The cost to accommodate, to raise a structure—if that’s even technically possible—normally far exceeds insurance claims. But to not raise it or otherwise adapt means increasing insurance premiums by factors of five or more, making flood insurance simply unaffordable for many (though it is mandatory for mortgage holders). Selling is not a viable option either, since many home prices have plummeted below half the original cost.”)

had previously expressed concern that a rise in rates would cause property owners to cancel their flood insurance policies, placing a greater burden on federal disaster relief.¹⁴⁸

These projected impacts have induced numerous legal and legislative initiatives to curtail Biggert-Waters. In 2013, the Mississippi Insurance Department filed a suit in federal court under the Administrative Procedure Act (APA), 5 U.S.C. §§ 701-706 (2012), seeking to bar or delay the increases in premiums on the basis that FEMA's failure to complete an affordability study, along with a few other items, prior to raising rates met the standard for delayed or withheld action under the statute.¹⁴⁹ The suit was joined by Florida, Alabama, Massachusetts, South Carolina, Louisiana, a local Mississippi county, and the Mississippi Windstorm Underwriting Association.¹⁵⁰ Multiple bills were also introduced in Congress in 2013 to roll back the portions of Biggert-Waters responsible for increased premiums.¹⁵¹

Efforts to amend Biggert-Waters culminated on March 21, 2014, when President Obama signed into law the Affordability Act.¹⁵² The Affordability Act amends numerous provisions of Biggert-Waters. First, it repeals rate increases for 1) Pre-FIRM properties not insured when Biggert Waters was enacted; 2) Pre-FIRM properties sold after Biggert Waters was enacted; and 3) policies for Pre-FIRM properties rated full-risk under Biggert Waters due to a lapse in coverage.¹⁵³ The Affordability Act restores grandfathered

Owners can become trapped with foreclosure as the only option—which is why government needs to take a leading role in developing other, more feasible options.”).

148. Bamhizer, *supra* note 12, at 347.

149. Biggert-Waters provides for the completion of an affordability study in conjunction with the National Academy of Sciences, for a maximum cost of \$750,000. Biggert-Waters § 100236(a). The study was originally due to Congress 270 days after the passage of Biggert-Waters. Biggert-Waters § 100236(c). NAS was unable to comply with those timing and budget constraints and proposed a two-phase plan for the study, with the first phase to be completed in 2015. Niki Pace, *Can Miss. Hold Back the Flood Insurance Rate Hikes?*, LAW360 (Dec. 19, 2013), <http://www.law360.com/articles/495638/can-miss-hold-back-the-flood-insurance-rate-hikes>.

150. *Miss. Ins. Dep't v. U.S. Dep't of Homeland Sec.*, No. 1:13CV379 LG-JMR (S.D. Miss. closed Apr. 14, 2014). On April 17, 2014, the Mississippi Insurance Department announced that it was withdrawing its lawsuit in light of changes to rate increases made under the Homeowner Flood Insurance Affordability Act, described below.

151. *Bills Attempting to Roll Back Biggert-Waters National Flood Insurance Program Reforms*, GEORGETOWN CLIMATE CTR. (June 17, 2013), <http://www.georgetownclimate.org/bills-attempting-to-roll-back-biggert-waters-national-flood-insurance-program-reforms#6>.

152. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020 (2014) [hereinafter Affordability Act].

153. *Id.* at § 3(a).

rates for pre-FIRM properties,¹⁵⁴ and it reduces the permissible annual premium rate increase for many properties.¹⁵⁵ To help fund the cost of the subsidies, the Affordability Act imposes premium surcharges, due annually until premiums are restored to full-risk rates.¹⁵⁶ The Affordability Act provides greater guidance on the desired affordability study and additional funding for its completion.¹⁵⁷ It also requires the FEMA Administrator to designate a Flood Insurance Advocate to “to advocate for the fair treatment of policy holders under the National Flood Insurance Program and property owners.”¹⁵⁸ These and other provisions reverse or delay many of the reforms planned in Biggert-Waters. Moreover, the successful opposition to Biggert-Waters demonstrates the challenges likely to face any proposal to adapt to climate change by eliminating subsidies.

IV. THE CONTINUED OBLIGATION TO SUBSIDIZE FLOOD INSURANCE

Mississippi Insurance Commissioner Mike Chaney, the driving force behind the states’ lawsuit over Biggert-Waters, argued when initiating his suit that the burden of closing NFIP’s budgetary shortfall should not fall on homeowners who “simply followed the rules.”¹⁵⁹ And in the context of the debate over Biggert-Waters, Senator Mary Landrieu of Louisiana noted, with regard to an affordability amendment she hoped to offer, that Louisiana residents have a “right to live and have been living for generations near the coast.”¹⁶⁰ Such comments are indicative of an expectation that federally subsidized flood insurance will continue in perpetuity for those currently relying on it. “Coastal property owners often feel entitled to federal subsidies . . . that allow them to continue to live in vulnerable areas and they strongly oppose any measures that

154. *Id.* at § 4.

155. *Id.* at § 5.

156. *Id.* at § 8(b). The surcharges are \$25 for primary residences and \$250 for non-residential properties and non-primary residences,

157. *Id.* at §§ 9, 16.

158. *Id.* at § 24(a).

159. Laura Vecsey, *Coastal Area Residents Stunned by Flood Insurance Rate Hikes*, FORBES (Oct. 22, 2013, 6:05 PM), <http://www.forbes.com/sites/zillow/2013/10/22/coastal-area-residents-stunned-by-flood-insurance-rate-hikes/>.

160. 158 CONG. REC. S. 4689-06 (statement of Sen. Landrieu), *available at* 2012 WL 2469763.

would curtail those subsidies.”¹⁶¹ Feelings of entitlement may account for the strong backlash to Biggert-Waters and the changes in the Affordability Act. Those feelings are also evidence of reliance, of homes purchased and communities built around the promise that federal funds will be available to shield property owners from the worst of coastal storms.

At the same time, however, the NFIP is an environmentally damaging program, the harms from which are likely to accelerate in the face of rising sea levels. “The widespread availability of inexpensive, subsidized flood insurance allows many homeowners to build on flood-prone land. More actuarially sound rates would help NFIP’s long-term viability and also help dissuade development in and purchase of flood-prone property.”¹⁶² There is, therefore, ample environmental and financial justification to discontinue NFIP subsidies in their current form.

Between reliance of property owners on the one hand and policy concerns on the other, the controversy over Biggert-Waters raises an important question: What does the government owe those who purchased homes in reliance on subsidized flood insurance? The predictability of the kind of opposition that led to the Affordability Act calls into doubt the government’s ability to reverse course from poor planning decisions of the past. “Congress can change federal policy, but it cannot write on a blank slate[;]” therefore, “[w]hen Congress changes course, its flexibility is limited by those interests created under the old policies which enjoy legal protection. Fairness toward those who relied on continuation of past policies cuts toward protection. Flexibility, so that government can adapt to changing conditions and changing majority preferences, cuts against.”¹⁶³ The parameters of both fairness and flexibility in the age of adaptation are important to define. Determining which interests created by past policies enjoy legal protection, and what, if any, extralegal considerations should be part of the discussion, is a necessary step when making the kinds of policy choices that climate change is likely to require. The NFIP provides a lens through

161. J. Peter Byrne & Jessica Grannis, *Coastal Retreat Measures*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE*, *supra* note 23 at 270; *see also* O’Brien, *supra* note 40, at 743 (“[C]ommunities have viewed the combination of flood insurance and disaster relief as an entitlement rather than a privilege.”); PLATT, *supra* note 13, at 292 (“Flood insurance under the NFIP in particular is viewed by property owners as a vested right of critical importance to the value of oceanfront structures . . .”).

162. ADLER ET AL., *supra* note 91, at 32.

163. *Madera Irrigation Dist. v. Hancock*, 985 F.2d 1397, 1400 (9th Cir. 1993).

which to understand the potential for elimination of environmentally harmful subsidies in the name of adaptation.

A. Contractual or Statutory Obligations

First, a government's conduct may tie it to certain subsidies through the creation of an express or an implied contract.¹⁶⁴ "A government contract supported by consideration to pay a subsidy is legitimate and enforceable."¹⁶⁵ An explicit contractual obligation to provide a subsidy may be created either by statute or through a more traditional contract between two parties. Where a contractual obligation exists, the scope of any obligation to subsidize will be determined using traditional contract analysis, and any obligation lasts only for the length of the contract period.¹⁶⁶ The existence of a contract to subsidize therefore does not necessarily prevent its modification or cancellation.

For instance, in *Madera Irrigation District v. Hancock*, the United States Court of Appeals for the Ninth Circuit found enforceable a 40-year contract under which an irrigation district was entitled to purchase water from the federal government at a guaranteed subsidized rate.¹⁶⁷ The *Hancock* court held, however, that once the 40-year contract period was over, the government was free to alter the terms of the subsidy. Similarly, in *Cisneros v. Alpine Ridge Group*, the Supreme Court interpreted the obligations of the Department of Housing and Urban Development (HUD) under a contract to provide subsidies for Section 8 housing.¹⁶⁸ At issue in *Cisneros* was HUD's ability to change its method of calculating the subsidy in question. Because such modifications were within the express language of the statute, the Court held that HUD's modifications to the subsidies provided did not violate the plaintiffs' contractual rights under Section 8.¹⁶⁹

Thus, rights created by explicit contract are unlikely to prevent modification of subsidies in the long term, barring explicit contractual or statutory language committing to provide a subsidy unchanged in perpetuity. In the flood insurance context, the most prevalent explicit contracts at issue are the insurance policies

164. *Cf. Aycock-Lindsay Corp. v. United States*, 171 F.2d 518, 521 (5th Cir. 1948).

165. *Hancock*, 985 F.2d at 1402.

166. *Id.* at 1403.

167. *Id.* at 1402-03.

168. *Cisneros v. Alpine Ridge Grp.*, 508 U.S. 10 (1993).

169. *Id.* at 17-21.

themselves. These policies are generally renewed annually and do not contain commitments as to their availability over time. Although changes to NFIP subsidies must likely wait until the end of a policy term, these short-term contracts are unlikely to pose any serious barrier to changes in subsidy allocations under the NFIP. Governments planning to reduce subsidies should ensure that the explicit language of any statute or contract allows them to do so.

A course of action by a governmental entity may also create an enforceable implied contract to provide a subsidy. The mere fact that a government has offered a subsidy in the past, however, does not create an implied contract that it will be provided in the future.¹⁷⁰ Thus, in the flood insurance context, purchasing a home in a coastal area based on the mere belief that insurance would always be available at a subsidized rate will not, without more, give rise to an actionable implied contract upon elimination of the subsidy.

The CRS, by contrast, is an example of the type of program that may present more complex reliance issues under the NFIP or other statutes. As described above, communities participating in the CRS engage in flood mitigation projects in exchange for lower flood insurance rates.¹⁷¹ Participation in the CRS is voluntary, and communities must apply for recertification each year. The Administrator is required by statute to carry out a community rating system program that “provide[s] incentives in the form of credits on premium rates for flood insurance coverage in communities that the Administrator determines have adopted and enforced measures that reduce the risk of flood and erosion damage that exceed the criteria set forth in section 4102 of this title.”¹⁷² FEMA appears to discourage communities from engaging in mitigation projects solely in reliance on the availability of CRS credits; its CRS Coordinator’s Manual cautions that “[i]n considering whether to undertake a new floodplain management activity, a community must consider all of the benefits the activity will provide (not just the insurance premium reductions) in order

170. See, e.g., *Sacramento Cnty. Retired Emps. Ass’n v. County of Sacramento*, 975 F. Supp. 2d 1150, 1158–61 (E.D. Cal. 2013); *Gateway Rehab & Wellness Ctr., Inc. v. Aetna Health of Cal., Inc.*, No. SACV 13-0087-DOC (MLGx), 2013 WL 1518240, at *3 (C.D. Cal. Apr. 10, 2013) (“the assumption, intention or expectation of either party alone, not made known to the other, can give rise to no inference of an implied contract.” (quoting *Travelers Fire Ins. Co. v. Brock & Co.*, 118 P.2d 25 (Cal. Ct. App. 1941))).

171. See *supra* notes 54–59 and accompanying text.

172. 42 U.S.C. § 4022(b)(1), (2).

to decide whether it is worth implementing.”¹⁷³ Nevertheless, communities may undertake flood control measures in reliance on the promise of these credits. Cancelling the CRS incentive structure could potentially give rise to claims of a violation of an implied contract if the ability to receive reduced rates were rescinded.¹⁷⁴ Although courts would lack jurisdiction over any contract claim under the NFIP,¹⁷⁵ the existence of an express or implied contract to subsidize may provide the basis for claims based in contract law or substantive due process.¹⁷⁶ The CRS provides an example of reliance of which governments should be aware when eliminating subsidies.

Statutes may also create government obligations regarding subsidies outside of the contract framework. For example, the Mississippi action initiated against FEMA prior to passage of the Affordability Act alleged a violation of the agency’s statutory obligations under the Administrative Procedure Act.¹⁷⁷ The state plaintiffs alleged that the failure of FEMA to complete and review the results of the affordability study prior to implementation of the increase in rates meant that FEMA “failed to take a discrete agency

173. FED. EMERGENCY MGMT. AGENCY, FIA-15/2013, NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY RATING SYSTEM COORDINATOR’S MANUAL 110-10 (2013), *available at* http://www.fema.gov/media-library-data/20130726-1557-20490-9922/crs_manual_508_ok_5_10_13_bookmarked.pdf. This manual expired on September 30, 2013; FEMA has not yet made available a newer edition.

174. Because the CRS is focused on promoting adaptation in coastal properties, such an elimination is unlikely under any reforms

175. The NFIP statute is not money-mandating for purposes of creating jurisdiction over contract claims against the federal government under the Tucker Act. *See, e.g., Salt River Pima-Maricopa Indian Cmty. v. United States*, 86 Fed. Cl. 607, 610 (Fed. Cl. 2009) (“As interpreted by the United States Supreme Court, [the Tucker] Act waives sovereign immunity to allow jurisdiction over claims (1) founded on an express or implied contract with the United States, (2) seeking a refund from a prior payment made to the government or (3) based on federal constitutional, statutory, or regulatory law mandating compensation by the federal government for damages sustained. . . .

“Not every claim invoking the Constitution, a federal statute, or a regulation is cognizable under the Tucker Act. The claim must be one for money damages against the United States. . . . To prove that a statute or regulation is money mandating, plaintiff must demonstrate that an independent source of substantive law relied upon can fairly be interpreted as mandating compensation by the Federal Government for the damages sustained.”) (internal quotations and citations omitted).

176. *See, e.g., Alpine Ridge Grp. v. Kemp*, 955 F.2d 1382, 1386 (9th Cir. 1992), *rev’d on other grounds* *Cisneros v. Alpine Ridge Grp.*, 508 U.S. 10, 21 (1993).

177. *Mississippi Ins. Dep’t v. U.S. Dep’t of Homeland Sec.*, No. 1:13CV379 LG-JMR (S.D. Miss. closed Apr. 14, 2014).

action that it was required to take.”¹⁷⁸ FEMA argued that the affordability study and pricing provisions of Biggert-Waters operate independently and that the plain language of the statute mandates implementation of the latter without regard to completion of the former.¹⁷⁹ In light of the Affordability Act, the Mississippi plaintiffs withdrew their suit, leaving undecided the specific question of whether Biggert-Waters created enforceable obligations.

In sum, although obligations created by explicit or implicit contracts or other statutory provisions may alter the means by which a subsidy can be eliminated, they are unlikely to pose a barrier to elimination of a subsidy in the long term.

B. Takings

Environmental regulations and land use policies regularly implicate the Takings Clause.¹⁸⁰ The Takings Clause states that private property may not be taken for public use without just compensation.¹⁸¹ Government responses to sea level rise may raise takings issues in a variety of ways,¹⁸² and at least one commentator has questioned whether the elimination of subsidies under the NFIP could constitute a regulatory taking.¹⁸³ Although the regulatory takings arena has long been notorious for its lack of

178. Amended Complaint, *Mississippi Ins. Dep't v. U.S. Dep't of Homeland Sec.*, No. 1:13CV379 LG-JMR (S.D. Miss. closed Apr. 14, 2014).

179. See Memorandum Brief in Support of Defendants' Motion to Dismiss, *Miss. Ins. Dep't v. U.S. Dep't of Homeland Sec'y*, No. No. 1:13CV379 LG-JMR (S.D. Miss. Nov. 18, 2013), ECF No. 48. FEMA also sought dismissal of the lawsuit for lack of standing, jurisdiction, and agency action. *Id.* at 2-3.

180. Saul Jay Singer, *Flooding the Fifth Amendment: The National Flood Insurance Program and the 'Takings' Clause*, 17B.C. ENVTL. AFF. L. REV. 323, 338 (1990) (“It can be argued that not a single environmental statute has ever been enacted that has not evoked the standard, familiar arguments between those asserting the public's interest in preserving critical, scarce, natural resources and those defending the strong interest of individual private citizens to reap the maximum benefit out of their private ownership of property, which, arguably, constitutes the very theoretical underpinnings of American capitalistic society.”).

181. U.S. CONST. amend. V.

182. See generally Byrne, *supra* note 1 (discussing takings in the context of defense and retreat responses to sea level rise); Travis Martay Brennan, Comment, *Redefining the American Coastline: Can the Government Withdraw Basic Services from the Coast and Avoid Takings Claims?*, 14 OCEAN & COASTAL L.J. 101 (2008) (discussing takings claims in the context of discontinuation of government services on the coast).

183. Sean B. Hecht, *Insurance*, in THE LAW OF ADAPTATION TO CLIMATE CHANGE, *supra* note 23, at 518 (“[A] government requirement for risk-based pricing might conceivably also open up the possibility of takings claims against the government if the requirement were to deprive the land of all economic value to the owner, even though such a requirement would be aimed at restoring the functioning of the insurance market.”).

clarity,¹⁸⁴ the factors established in *Penn Central Transportation Co. v. New York*¹⁸⁵ still appear to be the Supreme Court's primary guide for evaluating alleged regulatory takings.¹⁸⁶ In *Penn Central*, the Court noted that it had been unable to develop a formula for determining when a regulatory taking had occurred, and instead had to rely on "essentially ad hoc, factual inquiries" for each case. The Court, however, highlighted several important factors for assessing an alleged regulatory taking: 1) the "economic impact of the action;" 2) the extent to which the regulation "interfered with distinct investment-backed expectations;" and 3) the "character" of the action, or whether the government physically invaded the property or had merely enacted "some public program adjusting the benefits and burdens of economic life to promote the common good."¹⁸⁷

Removal of a subsidy is a fundamentally different form of government action than direct restrictions on property development, and expectations of a continuous subsidy are unlikely to be considered an interest that entitles a property owner to compensation. Although few courts have issued decisions on the subject, the Ninth Circuit Court of Appeals considered a somewhat similar claim in *Madera Irrigation Dist. v. Hancock*.¹⁸⁸ At issue in *Hancock* was the renewal of a contract for the purchase and sale of water between an irrigation district and the federal government. The two parties had previously entered into a 40-year contract, under which the irrigation district was entitled to purchase water from the federal government at a guaranteed rate. Upon the expiration of the contract, the government insisted on several renewal terms, including one that would allow it to recoup millions of dollars in operation and maintenance costs from the prior 40-year period. The irrigation district challenged the ability of the government to alter the price agreement in place and, through the imposition of operation and maintenance costs, to increase the amount charged for water.¹⁸⁹

184. See, e.g., John Echeverria, *From a Darkling Plan to What?: The Regulatory Takings Issue in U.S. Law and Policy*, 30 VT. L. REV. 969, 970–71 (2005).

185. *Penn Cent. Transp. Co. v. City of New York*, 438 U.S. 104, 123–24 (1978).

186. See Richard Lazarus, Lucas *Unspun*, 16 SOUTHEASTERN ENVTL. L.J. 13, 27–28 (2007).

187. *Penn Central*, 438 U.S. at 124; see also John D. Echeverria, *Making Sense of Penn Central*, 23 UCLAJ. ENVTL. L. & POL'Y 171, 171 (2005).

188. *Madera Irrigation Dist. v. Hancock*, 985 F.2d 1397 (9th Cir. 1993).

189. *Id.* at 1399.

The *Hancock* court considered the claim but found that the government's changes to the price provisions were permissible. Because the court found that the government had fulfilled all of its obligations under the initial contract, any increase in price upon renewal, although resulting in a "sharp policy shift, arguably disruptive of well-founded expectations," was not improper.¹⁹⁰ Finding that a violation of "reasonable expectations arising out of past policy but without a basis in cognizable property rights . . . cannot give rise to a Fifth Amendment claim," the court determined that the irrigation district was not entitled to a judgment against the government.¹⁹¹ The Ninth Circuit cited *Hancock* in support for its similar conclusion in *United States v. 42.13 Acres of Land*.¹⁹² In that case, the plaintiff utility company argued that its award for a physical taking should be calculated to include the value of an expected renewal of its license to use federal land to operate an electric plant.¹⁹³ The court disagreed, noting that plaintiff's expectation of a license renewal "confuses a political prediction with a property right."¹⁹⁴ It found that, pursuant to the terms of an agreement between the parties, the plaintiff's property interest regarding the license ended upon the expiration of a previous contract term.¹⁹⁵ For actions beyond that point, the government was not obligated to compensate the plaintiff for expectations supported by no cognizable property interest.¹⁹⁶ Because the expectation that a subsidy will continue in perpetuity is not a protected property interest or expectation, elimination of a subsidy likely would not be a taking under a *Penn Central* analysis.

An exception to the need for engaging in discussion of the *Penn Central* factors is made for regulations that effect a total diminution in property value. *Lucas v. South Carolina Coastal Council* established that such regulations constitute a *per se* taking, without need for balancing.¹⁹⁷ In *Lucas*, the plaintiff, David Lucas, purchased coastal property in South Carolina with the intention of building

190. *Id.*

191. *Id.*

192. *United States v. 42.13 Acres of Land*, 73 F.3d 953, 955-57 (9th Cir. 1996).

193. *Id.* at 954, 956.

194. *Id.* at 957.

195. *Id.* at 956-57.

196. *Id.* at 957.

197. *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1020-32 (1992). Although phrased as a *per se* rule, the Court included an exception to its holding that deprivation of all economic value constituted a taking for "background principles of property and tort law (including nuisance law)." *Id.* at 1029; see also Lazarus, *supra* note 186, at 23.

residential homes on the land.¹⁹⁸ Subsequent to his purchase of the land, but prior to its development, the state legislature passed a law prohibiting coastal development beyond a fixed baseline, which was landward of Lucas's parcels.¹⁹⁹ Lucas sued, contending that the law's total elimination of the value of his property entitled him to compensation.²⁰⁰ The Court agreed that a regulation depriving Lucas's land of all economically viable use entitled him to compensation.²⁰¹ Cases post-*Lucas* have confirmed that a partial²⁰² or temporary²⁰³ taking of property does not entitle a property owner to compensation, and there have been very few instances where courts have found that a regulation resulted in total deprivation of a property's economic value.²⁰⁴

Any takings claim in the flood insurance context could potentially argue that changes to the NFIP effect a total elimination of property value. Impacted homeowners may claim that they are unable to pay the new insurance premiums, which are required to retain their home under a federal mortgage. They could also argue that, under *Biggert-Waters*, the sale of their home may trigger even greater increases in rates, making it impossible to attract buyers. Moreover, property owners could potentially argue that *Biggert-Waters* has decimated the market for coastal housing, making it impossible for them to sell. Despite these arguments, the *Lucas* framework does not appear to fit the elimination of a subsidy. Although revocation of subsidized flood insurance may impact the value of a property and require the landowner to bear the full risk of damage, it would strain credibility to argue that it denies the landowner of all economically viable use.

Moreover, the *Lucas* Court noted that “[w]here the State seeks to sustain regulation that deprives land of all economically beneficial use, . . . it may resist compensation only if . . . the proscribed use interests were not part of his title to begin with.”²⁰⁵ Where certain

198. *Lucas*, 505 U.S. at 1006–08.

199. *Id.* at 1008–09.

200. *Id.* at 1009.

201. *Id.* at 1020–32.

202. *Palazzolo v. Rhode Island*, 533 U.S. 606, 630–32 (2001) (rejecting regulatory taking claim where greater than nominal portion of parcel for which plaintiff sought compensation retained value).

203. *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Reg'l Planning Agency*, 535 U.S. 302, 340–42 (2002) (rejecting regulatory taking claim for imposition of a temporary moratorium on development).

204. See *Lazarus*, *supra* note 186, at 28.

205. *Lucas*, 505 U.S. at 1027.

uses were not the right of the landowner to begin with, their prohibition cannot require compensation. Similarly, where there was no obligation for the federal government to subsidize flood insurance in the first place, the elimination of that subsidy arguably cannot constitute a taking. *Lucas* and its progeny therefore do not prevent the government from “disallowing further development in the floodplain.”²⁰⁶ Although the elimination of subsidies may result in the loss of property use or value, courts are unlikely to find a property interest in continued government subsidies that would give rise to a takings claim.²⁰⁷

C. Due process

The elimination of subsidies in a statute is similarly unlikely to run afoul of either substantive or procedural due process requirements. Although the concept of substantive due process has long escaped easy definition, the core of the doctrine looks to “whether the government’s deprivation of a person’s life, liberty[,] or property is justified by a sufficient purpose,” or whether there is a “good enough reason for such a deprivation.”²⁰⁸ For challenges based on substantive due process, “congressional legislation ‘adjusting the burdens and benefits of economic life come to the Court with a presumption of constitutionality, and . . . the burden is on one complaining of a due process violation to establish that the legislature has acted in an arbitrary and irrational way.’”²⁰⁹ “[S]tatutes may be invalidated on due process grounds only under the most egregious of circumstances,” and “[s]o long as congressional legislation ‘is supported by a legitimate legislative

206. O’Brien, *supra* note 40, at 762.

207. Relatedly, one commentator has argued that any assessment of how much coastal land value is decreased by government action combating sea level rise should arguably be subject to a more complex analysis, as much of the value in the land in the first place was created by the very government subsidies now being eliminated. See Barnhizer, *supra* note 12, at 302–04 (“David Lucas himself acknowledged the role of government givings in supporting floodplain property owners. ‘The flood insurance program was the keystone. . . . You have to look at what the program has accomplished: jobs, economic development. Because of the federal flood insurance program, we now have tourism and a healthy economy.’”); see also Byrne, *supra* note 1, at 81 (“As the rate of sea-level rise becomes clearer and more broadly understood, it will affect littoral land’s market price, generally lowering it. Such land may become uninsurable. In assessing whether a regulation reduces the economic value of littoral land, the economic effects of the regulation must be distinguished from the economic effects of sea-level rise itself.”).

208. Erwin Chemerinsky, *Substantive Due Process*, 15 *TOURO L. REV.* 1501, 1501 (1998).

209. *Swisher Int’l, Inc. v. Schafer*, 550 F.3d 1046, 1059 (11th Cir. 2008) (quoting *Usery v. Turner Elkhorn Mining Co.*, 428 U.S. 1, 15 (1976)).

purpose furthered by rational means, judgments about the wisdom of such legislation remain within the exclusive province of the legislative and executive branches.’”²¹⁰

Even assuming that a valid property interest was impaired by the elimination of a subsidy,²¹¹ that loss is unlikely to constitute a due process violation. In *Swisher International, Inc. v. Schafer*, for example, the court considered the elimination of a subsidy in the tobacco grower industry.²¹² Congress had previously established a system of quotas and price supports for the industry. Over time, however, the regulatory body managing the system began to sustain losses, and Congress decided to dismantle the system.²¹³ The act dismantling the price support system was designed to help the industry transition to a free market system through buyouts financed by assessments on tobacco manufacturers and importers.²¹⁴ *Swisher*, who owed an assessment, challenged the constitutionality of the new law on the basis that it constituted a taking of private property and violated the due process clause. In consideration of the due process claim, the court found that Congressional perception of problems in the industry and the need to eliminate the old subsidy system constituted a legitimate legislative purpose and a rational means to address the issue.²¹⁵ The court therefore held that the act imposing the assessments was constitutional as applied to the plaintiff.²¹⁶

The same reasoning is likely to apply to any challenges regarding elimination of a subsidy. Where a subsidy is contributing to environmental harms, the need to eliminate the subsidy will likely constitute a legitimate legislative purpose.²¹⁷ And as the court found in *Swisher*, the elimination of a subsidy is a rational means to address a market problem. It is therefore unlikely that Biggert-

210. *Id.* (quoting *Pension Benefit Guar. Corp. v. R.A. Gray & Co.*, 467 U.S. 717, 729 (1984)).

211. Such a finding appears unlikely. Where an asserted right “is a benefit gratuitously conferred by statute, . . . the repeal or amendment of that statute is not subject to a substantive due process challenge.” *Alpine Ridge Grp. v. Kemp*, 955 F.2d 1382, 1386 (9th Cir. 1992), *rev’d on other grounds* *Cisneros v. Alpine Ridge Grp.*, 508 U.S. 10 (1993).

212. *Schafer*, 550 F.3d at 1049.

213. *Id.*

214. *Id.* at 1049–50.

215. *Id.* at 1058–59.

216. *Id.*

217. *See, e.g.*, *United States v. Ne. Pharm. & Chem. Co.*, 810 F.2d 726, 734 (8th Cir. 1986) (“Cleaning up inactive and abandoned hazardous waste disposal sites is a legitimate legislative purpose . . .”).

Waters, or the elimination of subsidies by statutes in other contexts, would result in successful substantive due process challenges.

The elimination of subsidies is similarly unlikely to generate successful procedural due process claims. Procedural due process “asks whether the government has followed the proper procedures when it takes away life, liberty, or property.”²¹⁸ In general, procedural due process protections are limited to adjudicatory contexts.²¹⁹ As opposed to rules, which are “governmental actions affecting relatively large groups of people,” adjudications are “applications of the law or determinations of fact concerning specific individuals.”²²⁰ Thus, where the government intends to revoke one person’s right to a benefit, that person is entitled to a hearing prior to termination of the benefit. One explanation for this requirement may be the interests independent of the government that develop based on receipt of a benefit, such as assets, relationships, and other social networks.²²¹ Were the government to revoke any one individual’s right to participate in the NFIP based on individual reasons, that person would likely be entitled to a hearing prior to revocation.

The same requirements do not apply, however, to rules, or broad legislative enactments that affect entire classes of people.²²² This is because, theoretically, “[p]rocesses of representation are a sufficient guarantee of legitimacy,” and “it would be impracticable to require a hearing for determinations that affect large numbers of people.”²²³ Thus, where the government enacts a rule “uniformly affecting all citizens,” no advance notice is required “before such a rule of law may operate.”²²⁴ “Congress may, for example, reduce the welfare benefits of a class of people without offering anything in the way of procedure.”²²⁵ Biggert-Waters, or other legislative determinations regarding changes to subsidies, are therefore unlikely to raise procedural due process concerns.

218. Chemerinsky, *supra* note 208, at 1501.

219. See Edward L. Rubin, *Due Process and the Administrative State*, 72 CAL. L. REV. 1044, 1116 (1984).

220. *Id.* at 1117.

221. See *id.* at 1052.

222. See GEOFFREY R. STONE ET AL., CONSTITUTIONAL LAW 988 (5th ed. 2005).

223. *Id.*

224. Rubin, *supra* note 219, at 1120 (quoting *Texaco, Inc. v. Short*, 454 U.S. 516, 536–37 (1982)).

225. STONE ET AL., *supra* note 200, at 988.

D. Environmental Justice

Environmental justice describes another, more nebulous set of challenges to environmental policymaking. “Environmental justice at its bottom challenges the assumption historically made . . . that environmental law is about allocational efficiency only[,]”²²⁶ and calls for “more privileged communities to assume their fair share of the burdens of industrialization.”²²⁷ In this way, challenges to policymaking on the grounds of environmental justice attempt to correct for societal imbalances that impose greater environmental harms and regulatory burdens on minorities, the poor, and other underrepresented groups. Environmental justice advocacy generally focuses on the lack of adequate substantive environmental protections for minorities and the poor, “inequality and disproportionality in the distribution of burdens and benefits of regulations,” and lack of participation by minority groups and the poor in environmental decision-making processes.²²⁸

Adaptation will require substantial changes in lifestyle across all segments of the population. Those changes will be experienced differently, however, as the capacity to cope with change “is a function of such factors as a community’s financial and social resources, access to health care, and geographic mobility.”²²⁹ Consequently, discussions of adaptation have been accompanied by calls for policy that acknowledges those who are most vulnerable to the changes it requires,²³⁰ and for thoughtful judgments about the rapidity of change it is reasonable to expect of people.²³¹

The elimination of subsidies may have a disproportionately negative impact on low-income communities that have relied upon

226. Richard Lazarus, *Environmental Justice and the Teaching of Environmental Law*, 96 W. VA. L. REV. 1025, 1026 (1993).

227. Kary L. Moss, *Environmental Justice at the Crossroads*, 24 WM. & MARY ENVTL. L. & POLY REV. 35, 39 (2000).

228. Patrice Lumumba Simms, *On Diversity and Public Policymaking: An Environmental Justice Perspective*, 13 SUSTAINABLE DEV. L. & POL’Y 14, 15 (2012) (quoting Tseming Yang, *Environmental Regulation, Tort Law and Environmental Justice: What Could Have Been*, 41 WASHBURN L.J. 607, 610 (2002)).

229. Alice Kaswan, *Seven Principles for Equitable Adaptation*, 13 SUSTAINABLE DEV. L. & POLY 41, 42 (2012).

230. See, e.g., Adger, *supra* note 28, at 11.

231. Karen O’Brien, *Do Values Subjectively Define the Limits to Climate Change Adaptation?*, in ADAPTING TO CLIMATE CHANGE, *supra* note 28, at 164–65 (noting that the “interior or subjective ability of human actors to adapt can be very different from the objective ability, and these differences can contribute to the underestimation or overestimation of adaptive capacity.”).

them. Those communities may have fewer financial and social resources to draw upon, and consequently less capability to absorb increased costs or to relocate. Even so, eliminating subsidies does not fit neatly into an environmental justice analysis. Senator Mark Udall has noted that, “at its core, environmental justice is really about how we mitigate the negative impacts associated with the way we produce goods and services, and how we run our economy.”²³² Reducing harmful side effects associated with the way we produce goods and services, and other aspects of how we live, is precisely the goal of the elimination of environmentally damaging subsidies. As opposed to some other forms of environmental policymaking, those negatively impacted by termination of environmentally damaging subsidies are those engaging in environmentally damaging behaviors. Although the impacts of the elimination of subsidies may be experienced disproportionately, lower-income groups are not targeted out of proportion with their behaviors. The elimination of subsidies as a signaling mechanism may also serve a helpful role in lower-income communities. Policies that fail to reflect the realities of climate change are unlikely to produce an adequate adaptation response because they “fail[] to protect those without the knowledge or means to act, systematically disadvantaging poor and isolated communities.”²³³ The vulnerability of particular populations calls for attention during the adaptation process, but it should not be used as a shield against the need to modify environmentally harmful behaviors.

Instead, governments should consider the implications of subsidy removal on communities, and pair the elimination of subsidies with limited financial support to facilitate compliance or relocation. In the flood insurance realm, studies have raised concerns regarding the affordability of unsubsidized premium rates for middle-income and low-income communities in places like parts of New Jersey, Boston, the Outer Banks of North Carolina, southern Mississippi, southern Louisiana, and New York City.²³⁴ For those communities, two elements are key to eliminate subsidies as effectively and undisruptively as possible. First, financial aid should be available on the basis of need to assist homeowners with the payment of higher premiums. Kousky and Kunreuther suggest a means-tested

232. Rep. Mark Udall, Remarks at the Climate of Environmental Justice: Taking Stock Conference, in 78 UNIV. OF COLO. L. REV. 1553, 1554 (2007).

233. Kaswan, *supra* note 229, at 43.

234. See KOUSKY & KUNREUTHER, *supra* note 61, at 5.

voucher system, where risk-based premium pricing would be in place, but vouchers based on the household's income are used to cover a portion of the increased insurance premium.²³⁵ Under their plan, the voucher would also cover the "costs of the loan for mitigating damage to the residential property."²³⁶ In turn, eligibility for the voucher would be conditioned on mitigation activities, reducing "future disaster losses . . . both for the NFIP and for low- and moderate-income families."²³⁷ The government should also put in place a robust buyout program for those individuals interested in leaving their homes due to the increased flood premiums and risk of flooding, but who lack the resources or the market to do so.

Although providing funding for premium payments and mitigation may encourage people to remain in flood-prone communities rather than to relocate, it will help to slow the likelihood of further damage and will provide lower-income communities in the floodplain some cushion in transitioning to the changes to come. These measures will provide long-term savings as fewer people are impacted by coastal storms and those structures that remain are better protected. By restricting voucher eligibility to current property owners, the government can limit its commitment at the outset and ensure that vouchers do not become another subsidy for coastal development in perpetuity. And developing a parallel system for buyouts would allow the government to channel some of the money it may have spent to help people stay in place into acquiring property and limiting further development.

The far more important, and far more difficult, piece of effective aid with regard to the elimination of flood insurance subsidies will be greater restrictions on disaster relief. Communities in the United States have long been accustomed to an influx of federal disaster relief following natural disasters.²³⁸ But flood insurance

235. *See id.* at 14. A voucher system is also included as one of the possible relief measures to be considered in the much-contested Affordability Study of Biggert-Waters. *See* Biggert-Waters § 100236(a)(3) ("The Administrator shall conduct a study of . . . methods for establishing an affordability framework for the National Flood Insurance Program, including methods to aid individuals to afford risk-based premiums under the National Flood Insurance Program through targeted assistance rather than generally subsidized rates, including means-tested vouchers.").

236. KOUSKY & KUNREUTHER, *supra* note 61, at 14.

237. *Id.*

238. *See* Barnhizer, *supra* note 12, at 331 ("Disaster aid has become an implied promise that the federal government will always provide states, communities, and individual property

requirements, and their financial incentives for smarter building and siting, are meaningless if billions of dollars are available for rebuilding in the wake of each big storm. “The guarantee of recovery is perhaps the biggest obstacle to a sensible response to sea level rise.”²³⁹ And “[i]f the anticipated availability of federal aid induces (more) individuals to locate social or economic activities in hazard-prone areas, then the total annual economic costs are higher with an aid program than without one.”²⁴⁰ Consequently, in the wake of future flooding, the federal government should limit disbursement of relief funds for rebuilding and should instead have buyout funds immediately available for those who wish to relocate to less flood-prone areas.

Any reduction in aid for rebuilding will be politically unpopular. Disaster relief in the United States has long been premised on the idea of lack of fault, and natural disasters leave thousands of blameless victims in their paths.²⁴¹ After any given disaster, rebuilding is frequently perceived to be synonymous with strength. American flags hang from damaged structures, and communities adopt slogans, such as New Jersey’s post-Sandy “Stronger than the Storm,” as a seeming challenge to natural forces.²⁴² But as the consequences of coastal development become more evident, our knowledge of sea level rise and climate change continues, and funding is provided to either prepare for storms or leave, the narrative of strength in rebuilding and blamelessness for the harm becomes increasingly less persuasive. Relief should be provided to

owners with a disaster safety net.”); PLATT, *supra* note 13, at xvii, 22–23 (stating that the “federal government is called upon to assume a major share of state, local, and private economic costs of disasters through grants, subsidized loans, and government-backed insurance programs,” and noting that “even though very large disasters seem to have increased in frequency and cost, it appears that federal largesse is also broadening to include a variety of smaller disasters,” and that federal spending on disaster relief has “soar[ed]” since its inception in the 1950s.”).

239. ORRIN H. PILKEY & ROB YOUNG, *THE RISING SEA* 179 (2009).

240. *Id.* at 21 (quoting U.S. SENATE BIPARTISAN TASKFORCE ON FUNDING DISASTER RELIEF, *FEDERAL DISASTER ASSISTANCE* 70 (1995)).

241. See, e.g., Michele Landis Dauber, *The Real Third Rail*, in *CATASTROPHE: LAW, POLITICS, AND THE HUMANITARIAN IMPULSE* 66 (Austin Sarat & Javier Lezaun, eds. 2009) (describing history of petitions for disaster aid and noting that the “need to fit new claims within a set of precedents required successful appeals to describe events in a particular narrative form: sudden, unforeseeable events for which the petitioner was blameless and that caused losses implicating the federal government.”); Michele L. Landis, *Fate, Responsibility, and “Natural” Disaster Relief: Narrating the American Welfare State*, 33 *LAW & SOCIETY REV.* 257, 261–64 (1999).

242. See generally Heather Haddon, *New Jersey’s ‘Stronger than the Storm’ Ads End, Replaced by ‘Going Strong’*, *WALL ST. J.* (Apr. 9, 2014, 2:53 PM), <http://blogs.wsj.com/metropolis/2014/04/09/new-jerseys-stronger-than-the-storm-ads-end-replaced-by-going-strong/>.

those impacted by storms. But that relief should focus on preventing individual suffering, not on rebuilding structures incompatible with a rising sea.²⁴³ In that way, vulnerable communities will be assisted in making the changes that adaptation requires, and the elimination of subsidies will have its needed effects. The provision of subsidies in the past does not impose an obligation to continue providing them in the future.

V. CONCLUSION

As communities begin to adapt to the impacts of climate change, the elimination of environmentally harmful subsidies is likely to force changes in lifestyle. Where the cost of living has been heavily subsidized, this may have enormous impacts on the social structure. Even in the name of net environmental gain and smart planning, these impacts may be severe. Although “the term ‘adaptation’ contains the promise that problems can be addressed . . . [t]hat perspective cannot match up with the view of [those affected] that [the impacts of climate change] will bring an epochal shift, or with the concern . . . that their basic way of life is under serious threat.”²⁴⁴ The legacy of decades of poor environmental planning spurred by subsidies is that many have built their lives, homes, and communities in ultimately unsustainable ways.

The fight over the elimination of subsidies for the NFIP foreshadows a larger debate over how best to correct bad planning decisions of the past. It is now well documented that providing subsidized flood insurance for coastal development places people and structures in increasing danger from sea levels and coastal storms, and that, as long as it continues, it will result in increased costs in lives and property. Moreover, development is frequently at odds with the process of natural adaptation to sea level rise, and the resulting damage is irreparable. But lives have been structured around the availability of subsidies for flood insurance; properties have been acquired, and communities have been built. Not only

243. See PLATT, *supra* note 13, at 286–88 (proposing a reduction in disaster relief funds available for public assistance, which are given to state and local governments and used primarily for repair or replacement of public infrastructure, while administering individual assistance, which provides benefits to disaster victims on the basis of income, on a more liberal basis. This could be achieved by altering the ways that those funds are disbursed under the federal emergency relief statutes.).

244. Ben Orlove, *The Past, the Present and Some Possible Futures of Adaptation*, in ADAPTING TO CLIMATE CHANGE 161, *supra* note 28.

will changes to NFIP policies impact those relying upon insurance, but in the elimination of those subsidies, in efforts to adapt, and in concessions to a changing climate and environment, we will appear to “give up the American dream . . .” in the eyes of many.²⁴⁵ Because of the strong interest of many living along the coastline in retaining not only their lifestyle but also this more abstract dream, support for continuing NFIP subsidies will always be more vocal and motivated than support for its elimination. Attitudes of entitlement to subsidies that enable unsustainable lifestyles are deeply entrenched, and their elimination will be a hard-won battle.

But as discussed, legal frameworks in the United States do not provide a basis for such an entitlement. Subsidies do not create an implied contract on the part of the government, nor do they constitute a property interest that can be taken, and their broad elimination does not deprive affected individuals of process. And although the impacts of subsidy elimination on vulnerable communities must be factored in to any policy response, environmental justice concerns do not provide a barrier to the elimination of subsidies. Thus, the provision of a subsidy in the past will in most cases create no legal or extralegal obligations on the part of the government.

The elimination of environmentally damaging subsidies without fear of legal repercussions is a crucial component of the ability of governments at all levels to correct for past policy decisions that are no longer sustainable or advisable. And the recent repeal of reforms to the NFIP demonstrate why it is necessary to establish and recognize this ability of governments to eliminate subsidies in the name of adaptation. The elimination of subsidized rates for flood insurance is one of the first ways in which the realities of adaptation have been felt by a large percentage of the population, and, in that context, the backlash against Biggert-Waters was to be expected. But the receipt of subsidies in the past does not create an entitlement to any particular lifestyle in the future. It is time for government action to reflect the realities of a changing climate, and for communities to internalize the corresponding change in behaviors that may be required in the process of adaptation.

As the oceans rise, temperatures change, and communities around the world feel the impacts of a changing climate, “[e]ach

245. Robert H. Freilich & Neil M. Popowitz, *The Umbrella of Sustainability: Smart Growth, New Urbanism, Renewable Energy and Green Development in the 21st Century*, 42 URB. LAW 1, 37 (2010).

person in our overconsumptive society must participate in the change of attitude [or, at least, change in behavior] necessary to achieve development that is truly sustainable.”²⁴⁶ Acknowledging climate change and the need for adaptation is not so difficult, but accepting that this may require changes in individual decisions about where and how to live will require a paradigm shift many magnitudes greater. Because this shift is unlikely to occur independently, the challenge facing governments at all levels is to create forward-looking adaptation policies that help to prepare for the future, even when those policies alter expectations of the past and therefore engender heavy opposition in the present.

246. BEATLEY ET AL., *supra* note 3, at 10.