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The Implementation Gap in Environmental Law

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Abstract

The gap between legislative expectations and actual outcomes is of central importance to the legal regime. Much of the work of environmental lawyers involves compliance or enforcement efforts, not rulemaking. Even in terms of the issuance of environmental rules, there can be substantial deviations between what the lawmaker expected and what actually takes place.

This Article discusses two types of gaps between the statutory design and actual implementation. In some situations, something that is legally mandated simply fails to happen. Deadlines are missed, standards are ignored or fudged, or enforcement efforts misfire. The result is incomplete implementation, falling short of the statutory mandate. For this reason, environmental laws often fail to fully achieve the intended outcome. Part II of the Article is devoted to understanding the scope of this implementation shortfall and considering possible ways of controlling it.

Part III turns to a different aspect of implementation: the ability of agencies and even regulated parties to devise new methods of achieving statutory goals that were not anticipated by the legislature. For instance, if the designated means of reducing emissions proves impractical, the agency may shift to an alternative mechanism. More boldly, the agency may use statutory language designed for one problem (conventional air pollution) to address another (climate change). This type of creative implementation is different in spirit than the implementation shortfalls discussed earlier. What they have in common is that both of them differ from the expectations by the statute.

Mismatches between implementation and statutes produce useful results, but risk doing damage to our concept of the rule of law. Widespread noncompliance with formally binding requirements undermines the concept that good citizens -- and even more so, governmental officials -- obey the law. For this reason, although it may be socially beneficial in some of its guises, creative implementation needs to be held within a reasonable interpretation of the statutory language.

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I. Introduction

Over fifteen years ago, I published an article on "slippage" in environmental law – a study of the ways in which the actual implementation of environmental law deviates from the legislative scheme.[1] The basic conceptual framework of that article remains valid, but there have been important further developments, both in the implementation of environmental law and in the available information base. Consequently, it seems appropriate to revisit the topic with an eye to those developments, including the expanded body of scholarship on implementation issues.[2]

As I explained in the earlier article, there are gaps between the "law on the books" and the "law in action" in all areas of law, but in environmental law the gap is particularly striking.[3] Although the discrepancy is surely no secret, the core focus of environmental scholarship in the U.S. has been on the federal standards governing pollution, hazardous waste, and preservation of wilderness and wildlife. The essential picture of regulation in much of the environmental literature is that Congress passes a law, the

1) Daniel A. Farber, *Taking Slippage Seriously*, 23 Harv. Env. L. Rev. 297 (1999). I am grateful for the invitation of the organizers of the Pathways conference to revisit the subject of that article.

2) Among the many important contributions to the recent literature, LeRoy C. Paddock and Jessia A. Wentz (eds.), Next Generation Environmental Compliance and Enforcement (2014), and David L. Markell & Robert L. Glicksman, *A Holistic Look at Agency Enforcement*, 93 N.C. L. Rev. 1 (2014), provide particularly useful overviews.

3) Thomas McGarity suggests that political polarization has also resulted in more overly political and aggressive efforts to manipulate the implementation process. See Thomas McGarity, *Administrative Law as Blood Sport: Policy Erosion in a Highly Partisan Age*, 61 Duke L.J. 1671 (2012). I will not address that issue in this paper, though his view does not seem implausible.

federal government implements the program (usually through rulemaking), and compliance follows in due course. Of course, it is common knowledge that this story is incomplete because of the unpredictability of the implementation process. Nevertheless, this does remain the dominant intellectual paradigm.

This picture undoubtedly contains much truth and deserves the serious attention it has received. Nevertheless, this conventional picture seriously distorts the realities of the present system. The gap between legislative expectations and actual outcomes is of central importance in the legal regime. Much of the work of environmental lawyers involves compliance or enforcement efforts, not rulemaking. Even in terms of the issuance of environmental rules, there can be substantial deviations between what Congress expected and what actually takes place.

It is not clear whether the implementation challenge is greater in environmental law than other areas of government regulation, but there are some plausible reasons why that could be true. To begin with, the federal statutes set high goals in a period when environmental protection was widely seen by the public as a high priority. Some of those goals were unrealistic even at the time. Furthermore, the political consensus did not last, and beginning with Reagan's election in 1980, environmental regulation has been sharply adversarial. Enforcement and rulemaking efforts have been attractive for opponents who were unable to roll back the statutes themselves. Moreover, the increasing gridlock since 1980 has largely blocked new legislation, leaving the Environmental Protection Agency (EPA) with the task of adapting existing statutes to new challenges such as climate change through the administrative process. Finally, environmental laws rely heavily on cooperation between state and federal agencies, and states have differed widely in their willingness to support implementation of federal law. State pushback has become stronger over time due to political polarization. Whatever the reason, the "disconnect" between the statutes and the reality of implementation has been substantial and persistent.

In this article, I will discuss two types of gaps between the statutory design and actual implementation. In some situations, something that is legally mandated simply fails to happen. Deadlines are missed, standards

are ignored or fudged, or enforcement efforts misfire.[4] Perhaps this phenomenon escapes notice because we are more likely to focus our attention on what *is* happening than on what *is not*. Part II is devoted to understanding the scope of this implementation shortfall and considering possible ways of controlling it.[5]

Part III turns to a different aspect of implementation: the ability of agencies and even regulated parties to devise new methods of achieving statutory goals that were not anticipated by the legislature. This type of creative implementation is different in spirit than the implementation shortfalls discussed earlier. In practice, however, the difference is not necessarily clear-cut. In some cases, the statutory goals may be subject to debate or it may not be clear whether a program in fact has a positive or negative impact on achieving those goals. Still, the difference is between failed implementation and what one might call creative implementation. What they have in common is that both of them differ from the expectations of the legislature.

The implementation gap should not be exaggerated, and we should not overlook the substantial extent to which the system operates as planned. Genuine compliance and straightforward implementation are also important parts of the picture. Yet, we also seriously misunderstand the regulatory system if we ignore the pervasive effect of implementation issues on the system as a whole. The problem of obtaining compliance with environmental mandates is pervasive. So is the problem of achieving statutory goals when unexpected difficulties arise. Although scholarly attention to such implementation issues has increased in recent years, they still receive less attention than they deserve.

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4) One reason is budgetary. As Joel Mintz puts it, "[o]ne area in which… the U.S. approach to environmental enforcement has been consistently inadequate is Congress's allocation of staff and financial resources for EPA's enforcement program." Joel A. Mintz, *Assessing National Environmental Enforcement: Some Lessons from the United States' Experience*, 26 Geo. Int'l Env. L. Rev. 1, 7 (2013).

5) The implicit assumption, of course, is that environmental regulations are socially beneficial and that greater compliance is socially desirable, a point on which not everyone might agree.

II. Implementation Shortfalls

As we will see in this section, there are conspicuous shortfalls in compliance with environmental statutes. It is important, however, to keep these shortfalls in perspective. U.S. environmental regulations have resulted in notable advances in environmental quality.[6] At the same time, however, there have been unanticipated delays and areas of weak implementation, resulting in slower and more erratic progress than we might otherwise have seen. These problems are so widespread that they cannot be considered aberrational.

1. Failures and Delays in Implementation

According to an old saying, "there is many a slip between cup and lip." In this section, we consider two ways that implementation can go awry: either through failure by the regulatory bodies themselves to comply with statutory mandates or failure by the regulated firms to do so.

1) Deadline Violations

Congressional regulatory mandates sometimes follow a notorious pattern. New statutes or amendments are passed, with much fanfare. EPA or some other regulator is directed to issue new rules before some deadline, often less than a year away. Time comes and goes, but no agency action is forthcoming. Often the agency is unable to comply because of insufficient information or budget shortfalls; sometimes it simply chooses not to comply for political reasons or because it believes the mandate is unworkable. For instance, under the 1972 Clean Water Act, EPA was supposed to issue certain water pollution regulations within a year,[7] but

6) For a vivid illustration, see the graph showing the substantial decrease in air pollution from 1980 to 2014 in https://www3.epa.gov/airtrends/images/inNAAQS19802014_20150923.png.

7) See CWA § 304(b), 33 U.S.C. § 1314(b) (requiring EPA to issue effluent limitation guidelines within one year of October 18, 1972).

some important rules were not issued until 1987[8] and the process was not complete until 1990.[9]

A more recent example is provided by legislation relating to food safety. After President Obama signed food safety reforms at the beginning of 2011, the Food and Drug Administration (FDA) had one year to propose safety requirements for producing and harvesting farm produce, among other mandates. The FDA did manage to complete drafts of two proposed rules before the Act's deadline. After much delay by White House staff,[10] the FDA formally proposed the revised versions on January 4, 2013, exactly a year later than the statutory deadline.[11] The FDA had also missed other deadlines under the Act, prompting a district court judge a few months later to order the agency to propose new deadlines it would meet.[12] This was not the last of the delays. By early 2014, the FDA had proposed most of the required rules, but there were continuing delays in proposing others. The FDA agreed with the plaintiffs on a new schedule for issuing many of the final regulations by 2017.[13] If this schedule is kept, it will mean that most but not all of the rules will be out within five years of the statutory deadline.

A careful empirical study across multiple administration agencies provides a firmer basis for generalizing the operation of regulatory deadlines.[14] The study identified almost 2500 regulations from 1987 to 2003

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8) Env. Rep., Nov. 13, 1987, at 1736.

9) Rybachek v. Alask Miner's Ass'n, 904 F.2d 1276 (1990). As a result of such delays, many permits were issued in the meantime without the benefit of the mandated EPA regulations based on the best judgment of individual state officials on feasible pollution reductions. See Howard Latin, *Regulatory Failure, Administrative Incentives, and the New Clean Air Act*, 21 Env. L. 1647 (1991).

10) *See* Helena Bottemiller, *Documents Show OMB Weakened FDA's Food Safety Rule*s, Food Safety News, March 25, 2013.

11) Food and Drug Administration, FDA Proposes New Safety Standards for Foodborne Illness Prevention and Produce Safety (Jan. 4, 2013).

12) Food Safety v. Hamburg, No. 12-cv-04529 (N.D. Cal. Apr. 22, 2013). The court approved the FDA's new deadlines in June.

13) Renée Johnson, "Food Safety Issues for the 114th Congress" 10 (Feb. 13, 2015) (Congressional Research Service).

14) Gersen and O'Connell, *Statutory Deadlines.* The empirical findings are found in *id.* at 937-949, with more details in the tables at the end of the article.

involving statutory deadlines and about 15% of them involved judicially imposed deadlines.[15] Deadlines are associated with a shorter regulatory process, but to a surprisingly modest extent. Controlling for other differences, there was a 57% chance that a rulemaking with a deadline would end before a similar rulemaking with no deadline.[16] At EPA, for example, the average duration of rulemakings without deadlines was 685 days; the presence of a deadline reduced the length to an average of 610 days or by only about 10%.[17] If not wholly irrelevant, rulemaking deadlines seem to be a good deal less motivating than one might have expected.

Other deadlines involve state governments' issuance of environmental compliance plans or other regulations or achieving environmental goals by the deadlines imposed by Congress. In theory, EPA has complete control over laggard states in this system, because it can disapprove a state plan, impose its own program, or even rescind the delegation to a state entirely. Thus, in theory, states that lag behind should be swiftly shouldered aside. But this threat is not altogether credible because taking over a state program is very costly for EPA.[18] As a practical matter, EPA needs the active participation of state governments for the program to succeed; it simply does not have the resources to implement federal environmental statutes on its own.[19] Minor conflicts with state agencies can be resolved simply through the exercise of EPA's authority, but major disputes may require EPA to negotiate with the states in order to obtain their cooperation.[20] As a result, "the states have been able to work compromises with EPA rather than be slavishly subject to federal dictates."[21]

Because of these dynamics, federal air pollution deadlines have served as the bases for rounds of negotiation and increasingly stringent restrictions

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15) *Id.* at 983 Table 4,

16) The percentage is derived from the 1.37 to 1 odds given in *id.* at 949.

17) *Id.* at 988 Table 12.

18)See Victor Flatt, *A Dirty River, Runs Through It: The Failure of Enforcement of the Clean Water Act*, 25 B.C. Envtl. Aff. L. Rev. 1, 31 (1997).

19) John Dwyer, *The Practice of Federalism Under the Clean Air Act*, 54 Md. L Rev. 1183. 1218 (1995).

20) *Id.* at 1224.

21) *Id.*

on states.[22] As originally enacted in 1970, the Clean Air Act required states to achieve national air quality standards in five years, which Congress extended for two years (ten years years in some areas). In 1990, Congress yet again extended the compliance period. Despite the frustrations and delays involved in this process, air quality has improved substantially and retrospective studies show that the benefits have far exceeded the costs.[23] Still, the original statute with its strict deadlines provides no clue of the complex minuet of deadlines, delays, and renegotiation that actually resulted.

2) Non-Compliance by Sources

It would be grossly inaccurate to say that the federal environmental statutes are a dead letter. Obviously, they are not. They have resulted in dramatic improvements in air and water pollution in many parts of America.[24] But it is equally obvious that translating legal mandates into physical compliance is far from automatic. The problem is not limited to air pollution. Implementation of the Clean Water Act received considerable attention before the close of the last century, with discouraging findings. Twenty years after passage of the statute, roughly ten thousand discharges still had no permits whatsoever, 12-13% percent of major private and municipal sources were in a "Significant Noncompliance" status during a single three-month period alone, and another 5% avoided that status only because they were already on extended compliance schedules.[25] Other studies showed considerable variation in compliance levels between states.[26] EPA's inspector general also documented widespread shortfalls in state enforcement,[27] and even disparities between states in which EPA

22) The account in this paragraph and the next one is drawn from Daniel A. Farber and Ann E. Carlson, Environmental Law: Cases and Materials 420-422 (9th ed., 2014).

23) This is not to say, of course, that some other approach might not have produced the same benefits more quickly or cheaply.

24) For an overview of enforcement mechanisms, see Robert Esworthy, Federal Pollution Control Laws: How Are They Enforced? (Congressional Research Service, 2014).

25) See Robert W. Adler et al., *The Clean Water Act: 20 Years Later* 147-167 (1993), for the sources of these figures.

26) See Victor Flatt, supra note 20.

27) John Cushman, *EPA and States Found to Be Lax on Pollution Law*, NY Times, June 7,

rather than the state is in charge of enforcement.[28] These studies may exaggerate the significance of non-compliance because they do not take into account the seriousness of the violation.[29] Still, these figures were cause for serious concern.

Unfortunately, environmental enforcement problems seem to have continued into this century. In terms of EPA performance, according to one summary of the available evidence:

> The Government Accountability Office ("GAO"), EPA's Office of Inspector General ("OIG"), EPA's Administrator, and EPA's own enforcement office have all offered highly critical assessments of EPA's performance in promoting compliance with environmental regulatory requirements. In a December 2012 report, for example, the GAO noted that "[i]n recent years, EPA has reported that it is not achieving all of the environmental and public health benefits it expected in regulating certain entities because of substantial rates of noncompliance in some programs." Compounding the challenge in inducing compliance at desired levels is the enforcers' ignorance of the scope of the problem they are addressing. As the GAO also noted, "[B]ecause of incomplete or unreliable data on compliance in some programs…EPA cannot determine the full extent of entities' compliance."[30]

Enforcement by states has also continued to fall short of expectations, including:

1998, available at http://www.nytimes.com/1998/06/07/us/epa-and-states-found-to-be-lax-on-pollution-law.html?pagewanted=all.

28) For a detailed description of the enforcement process, see Joseph F. Guida and Jean M. Flores, *From Here to A Penalty: Anatomy of EPA Civil Administrative Enforcement*, 43 Tex. Envtl. L.J. 129 (2013). For a striking failure of implementation by the state which was only belatedly corrected by EPA oversight, see Mary Tiemann, Lead in Flint, Michigan's Drinking Water: Federal Regulatory Role, CRS Insights (March 2, 2016), available at https://www.fas.org/sgp/crs/misc/IN10446.pdf.

29) See Joel A. Mintz, *Measuring Environmental Enforcement Success: The Elusive Search for Objectivity*, 44 Env. L. Rev. 10751 (2014). Mintz discusses possible improved metrics. See *id.* at 10754-55.

30) Markell and Glicksman, supra note 5, at 45.

- Widespread and persistent data inaccuracy and incompleteness in national data systems, which make it hard to identify when serious problems exist or to track state actions;
- Routine failure of states to identify and report significant noncompliance;
- Routine failure of states to take timely or appropriate enforcement actions to return violating facilities to compliance, potentially allowing pollution to continue unabated; and
- Failure of states to take appropriate penalty actions, which results in ineffective deterrence for noncompliance and an unlevel playing field for companies that do comply.[31)]

The upshot is that, as EPA's Office of Inspector General (OIG) has found, "state enforcement programs frequently do not meet national enforcement goals."[32)] Some of the defects in state performance were particularly troubling:

> The OIG found that during fiscal years 2003 to 2009, "… performance was low across the board," with some states performing far below average. For example, EPA established a national goal that states inspect 100% of major CAA emitters every two years, but the Inspector General found that only eight states met that goal. As of 2009, EPA set a national goal that states inspect 100% of CWA major permit holders every two years, but in 2010, only two states met that goal, the national average was only 61%, and thirteen states inspected fewer than 50% of major facilities.[33)]

It is important to keep defects in enforcement in perspective. They indicate a troubled but not impotent enforcement system. Despite the

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31) *Id.* at 47-48.

32) *Id.*

33) *Id.* at 48. For more recent discussion of some of the weaknesses of the implementation process, see David L. Markell and Robert L. Glicksman, *Dynamic Governance in Theory and Application, Part I* (2016), available at www.ssrn.com/abstract=2734204 (forthcoming in the Arizona Law Review).

unevenness discussed above, enforcement is often vigorous and effective. For instance, EPA summarized its 2015 enforcement record as resulting in $7 billion in investments by companies in compliance and cleanup measures; $404 million in penalties; $39 million for environmental mitigation projects (discussed in Part III); and 129 combined years of incarceration for sentenced defendants.[34] EPA reported that its enforcement actions that year resulted in reductions of 215,000 tons of air pollutants and 46,000 pounds of water pollution.[35] No doubt, the figures would be considerably higher if state enforcement actions were added. Thus, enforcement is by no means a paper tiger. It falls far short of reaching all violations, leaving many pollution sources out of compliance. The next section considers ways in which the level of compliance could be increased.

2. Improving Compliance

One of the distinctive features of U.S. environmental law is the use of citizen suits for enforcement purposes.[36] Available remedies include an injunction against noncompliance, an order requiring the defendant to pay civil penalties to the government, and attorneys fee. These citizen suit provisions may authorize "any person" to commence an action against a violator. They require plaintiffs to give notice, usually sixty days, to the alleged violator and to federal and state authorities prior to filing suit. Most of the statutes specify that if federal or state authorities are diligently prosecuting compliance actions, citizen suits are barred, though citizens are authorized to intervene in federal enforcement actions.[37]

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34) See https://www.epa.gov/enforcement/enforcement-annual-results-fiscal-year-fy-2015.

35) https://www.epa.gov/enforcement/enforcement-annual-results-analysis-and-trends-fiscal-year-fy-2015.

36) See, e.g., § 304 of the Clean Air Act, § 505 of the Clean Water Act, § 18 of the Toxic Substances Control Act (TSCA), § 7002 of the Resource Conservation and Recovery Act (RCRA), § 326 of the Emergency Planning and Community Right-To-Know Act, § 11(g) of the Endangered Species Act, and § 310 of CERCLA. An exception is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which does not authorize citizen suits.

37) For an introduction to the topic and a defense of citizen suits, see Mark Seidenfeld and Janna Satz Nugent, "*The Friendship of the People": Citizen Participation in Environmental Enforcement*, 73 Geo. L. Rev. 269 (2005).

Empirical evidence about the effectiveness of citizen suits is limited, but the existing evidence does suggest that they improve environmental compliance. A recent study by the Center for Law, Energy, and Environment at Berkeley found that citizen suits against municipal waste treatment facilities led to settlements that resulted in improvements in environmental quality.[38] Another study, this time of citizen suits under the Endangered Species Act, found that the suits led to protection for species that were as in need of protection as those that the agency chose, thereby augmenting the statute's protection.[39]

Although the citizen suit technique has proved effective, it might be even more useful if the Supreme Court had not placed restrictions on the ability of plaintiffs to bring these suits[40] and on the availability of attorneys' fees.[41] Perhaps it is not too late to reconsider some of these limiting decisions. In addition, although some states already allow citizen suits to be brought in their own courts,[42] states might consider expanding this option.

Transparency can also be useful in curbing violations. EPA formerly had a practice of publicizing each stage of an enforcement action, and these routine press releases often received attention from local media in the vicinity of the violation and "were widely viewed as having a meaningful deterrent impact on existing and would-be environmental violators."[43] Today, EPA is once again exploring methods for greater transparency, including on-line reporting of real-time monitoring data and other forms of

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38) Nell Green Nylen, Luke Sherman, Michael Kiparsky, and Holly Doremus, *Citizen Enforcement and Sanitary Sewer Overflows in California* (2016), available at https://www.law.berkeley.edu/wp-content/uploads/2016/04/CLEE_CitizenEnforcementSSOs_2016-04-11.pdf.

39) Eric Biber and Berry Brosi, *Citizen Involvement in the U.S. Endangered Species Act*, 337 Science 802 (2012).

40) See Hallstrom v. Tillamook County, 493 U.S. 20 (1989) (requiring strict compliance with time limits for notice of intent to file suit); Steel Co. v. Citizens for a Better Environment, 523 U.S. 83 (1998) (no jurisdiction if defendant complies after receiving notice of intent to file suit)

41) See Buckhannon Bd. & Care Home v. West Virginia Dept. of Health, 532 U.S. 598 (2001) (precluding fees where the defendant alters behaviors without formal court order).

42) See James R. May, *The Availability of State Environmental Citizen Suits*, 18 Nat. Res. & Env. 53 (Spring 2004).

43) Joel A. Mintz, *Shaping Next Generation Compliance at EPA: Lessons from the Agency's Past and Some Post-Workshop Thoughts*, in Paddock and Wentz, supra note 3, at 330.

e-reporting that make information available to the public.[44)]

One aspect of enforcement that has become clear is the need to focus on small, dispersed sources that may cumulatively cause major problems:

> [W]hen EPA developed its enforcement policies, it focused primarily on the largest (or major) facilities with individual permits that are in significant noncompliance. But EPA had found a rate of serious noncompliance at about forty-five percent of smaller facilities. EPA had further concluded that "[i]t is likely that these smaller but more numerous sources are of critical concern, especially where there are clusters of permitted facilities around impaired waters."[45)]

These small, dispersed sources can also be major contributors to toxic air pollutants.[46)] EPA has also explored communication strategies in some industries with numerous small emitters. Rather than seek enforcement, EPA simply sent letters to firms with suggestions about low-cost methods of compliance; the letters were inexpensive but produced noticeable results.[47)]

As this example indicates, there has also been considerable interest in use of cooperative compliance strategies.[48)] There are a number of economic

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44) Cynthia Giles, New Generation Compliance, in Paddock and Wentz, supra note 3, at 4-7, 15, 18. For instance, EPA has deployed solar-powered monitors that can upload data via cell phones and infrared cameras that allow it to identify release plumes. *Id.* at 15. This seems to be a very promising development: "[t]he advent of low-cost, tamper-proof, real-time monitors that regularly transmit data to regulators holds great promise, as do remote sensing technologies." James Salzman, J.B. Ruhl, and Jonathan Nash, *Environmental Law in Austerity*, 32 Pace Envtl. L. Rev. 481, 487 (2015).

45) Markell and Glicksman, supra note 3, at 64.

46) For further discussion, see Daniel A. Farber, *Controlling Pollution by Individuals and Other Dispersed Sources*, 35 Env. L. Rep. 10745 (2005).

47) *Id.* at 329. There is some empirical evidence supporting the effectiveness of enforcement techniques that rely on cooperation rather than coercion. See Dietrich H. Earnhart and Robert L. Glicksman, *Coercive vs. Cooperative Enforcement: Effect of Enforcement Approach on Environmental Management*, 42 Int'l Rev. of L. & Econ. 135 (2015). For additional thoughts on cooperative compliance strategies, see Daniel A. Farber, *Triangulating the Future of Reinvention: Three Emerging Models of Environmental Protection*, 2000 U. Ill. L. Rev. 61 (2000).

48) See Glicksman and Earnhart, supra note 45, at 79. For definitions of these enforcement

reasons for some firms to comply voluntarily, or even go beyond strict legal requirements, such as a desire to improve brand image, avoid potential future litigation or penalties, or attract investors by signaling effective risk management systems.[49] The empirical evidence on the relative effectiveness of these two enforcement strategies is mixed.[50] Regulators seem to use a mix of these strategies; for instance, a study of chemical manufacturing facilities found that 39% of firms reported cooperative attitudes with regulators.[51] The same study found that firms were more likely to employ stringent internal monitoring when subject to more cooperative enforcement, with little difference in other compliance activities between cooperative and adversary enforcement.[52] Another recent study finds a complex interplay between self-auditing, cooperative relationships with regulators, and agency enforcement and monitoring stringency.[53]

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strategies, see *id.* at 79-80. A related topic is the widespread use of voluntary compliance measures, as described in Cary Coglianese and Jennifer Nash, *Performance Track's Postmortem: Lessons from the Rise and Fall of EPA's "Flagship" Voluntary Program*, 38 Harv. Envtl. L. Rev. 1, 3 (2014). Coglianese and Nash did not find evidence of success for one of EPA's flagship voluntary programs, the "performance track" effort to reward companies that exhibit strong environmental performance. *Id.* at 8. They concluded that the program did not in fact attract top performers, *id.* at 46, and that program growth was unlikely because higher rewards were linked with increasingly stringent entry requirements. *Id.* at 79-80. They did find, however, that the program allowed EPA to gain a better understanding of firm behavior, which was useful in designing other programs:

> To at least some degree, Performance Track apparently did help EPA officials better understand the role of environmental management systems in environmental protection. After visiting Performance Track facilities and observing how EMSs worked in practice, EPA learned that EMSs that were not externally certified tended to diminish in quality. Hence, the agency added a requirement for facilities participating in Performance Track to have their EMSs certified by a third party.

Id. at 85.

49) See *id.* at 85; LeRoy C. Paddock, *Beyond Deterrence: Compliance and Enforcement in the Context of Sustainable Development*, in Paddock and Wentz, supra note 3, at 121, 126-131.

50) For a review of the literature, see Glicksman and Earnhart, supra note 45, at 89-91.

51) *Id.* at 99.

52) *Id.* at 104.

53) Dietrich Earnhart and Robert Glicksman, *Extent of Cooperative Enforcement: effect of the Regulator-Regulated Facility Relationship on Audit Frequency*, 5 Strategic Behavior & the

Empirical research in this area is hampered by lack of data and by the likelihood that regulators may adjust their enforcement strategies based on the compliance activities of companies, so that high compliance may result in cooperative relationships rather than vice versa. Indeed, some enforcement systems explicitly tie external monitoring and enforcement strategies to the quality of a firm's compliance management.[54]

Another approach is to make use of third-party certification efforts.[55] According to one recent observer, "[w]hile not an entirely new practice, third-party verification seems to be increasingly attractive to Congress and federal agencies in light of inadequate agency resources and other persistent barriers to reliably monitoring regulatory compliance."[56] Of course, there are obvious pitfalls to avoid, including concerns about auditor independence and competence.[57] But careful program design can ameliorate problems.[58]

These approaches by no means exhaust the array of innovative enforcement techniques. In one recent study, for instance, food safety inspectors working alone were compared with inspectors who had been assigned to do joint inspections.[59] This simple technique resulted in an increase of detected violations and greater uniformity between inspectors.[60] Another innovation is to use social media to identify places in need of inspection, a technique that seems feasible using data mining techniques.[61]

Environment 111 (2015), available at ssrn.com/abstract=2676856.

54) See Paul Meerman and Martin Bree, *Compliance Assurance Through Company Compliance Management Systems*, in Paddock and Wetnz, supra note 3, at 301, 311.

55) For an extensive discussion of this option, see of Lesley K. McAllister, *Harnessing Private Regulation*, 3 Mich. J. Envtl. & Admin. L. 291 (2014).

56) *Id.* at 297.

57) *Id.* at 309.

58) *Id.* at 400-411.

59) See Daniel E. Ho, *Does Peer Review Work? An Experiment of Experimentalism*, 69 Stan. L. Rev. (forthcoming).

60) *Id.*

61) As two scholars explain:

> [I]nspections do not *have* to be random. Suppose Instead that you were to base the likelihood of inspection on evidence from Yelp reviews. Perhaps you would start with a search on Yelp for terms like "sick" or "dirty"; you would probably find a few culprits. But a predictive algorithm would "learn" from the history of

It is heartening that compliance issues are beginning to get the attention they deserve, but there is clearly a need for more rigorous evaluation of the effectiveness of compliance strategies.

III. Creative Implementation

Implementation shortfalls involve lagging behind statutory obligations through delays or compliance failures. In contrast, creative implementation involves establishing remedies parallel to the statutory mandate or sometimes even remedies that are more vigorous. These are less widespread but still a significant part of the U.S. environmental law program. Section A surveys some of the most notable examples of creative implementation, while section B discusses some of the pitfalls and methods for courts to control possible agency excesses.

Adapting a statute to deal with new problems or changing circumstances, and incorporating improved methods of achieving goals, is essential to proper implementation of statutes. The legislature cannot anticipate all of the developments that may affect achievement of a law's goals. Generally, the experts who are involved in implementing the law are more likely to have the deep knowledge required to adapt to changing circumstances. Thus, there are real benefits to creative implementation, whereby the statute responds organically to changes in experience and knowledge.

In order to preserve the rule of law, however, this adaptation must take place within definite limits. Statutory language often has flexibility that allows an agency to act in ways that are consistent with the goals of the legislature, even if the legislature had different expectations about how the statute would be implemented. But implementation cannot be allowed to

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reviews and history inspection outcomes, and then predict the likelihood of finding violations based on more recent reviews. Inspectors could then be reallocated to restaurants that are most likely to have violations.

Edward L. Glaeser, Scott Duke Kominers, Michael Luca and Nikhil Naik, *Big Data and Big Cities: the Promises and Limitations of Improved Measures for Urban Life* (Dec. 2015), available at https://research.hks.harvard.edu/publications/workingpapers/Index.aspx.

violate the clear meaning of the statute or to run counter to the goals of the legislature. It remains legitimate, however, when it respects both the boundaries of the statutory language and the purposes of legislation. Indeed, being completely literal about implementing legislation or refusing to exercise any creativity is a good way to undermine the statute. Being faithful to the legislature's purpose sometimes requires responding to unexpected developments or new possibilities.

1. Examples of Creative Implementation

Creative implementation falls uneasily between compliance and noncompliance. By definition, it does not follow the apparent thrust of the underlying mandate. But it may have at least some colorable legal validity, and where even that is lacking, Congress sometimes steps in after the fact to provide its imprimatur.

The Endangered Species Act provides a notable example of creative implementation. As originally enacted, the statute was an all-but-absolute ban on destruction of individual members of endangered species. But this ban led to what seemed to be an untenable situation, in which individual landowners were faced with bans on development to save the last few members of a species, while the government seemed powerless to intervene at an earlier time to protect the habitat on which the species relied.

An obscure 1982 amendment proved to be the key to the solution. The amendment allowed the Secretary of the Interior to issue a permit to "take" members of an endangered species (for example, by modifying their habitat), provided that the taking is incidental to the project; all possible mitigation measures are used; and there will be no appreciable effect on the prospects of the species for survival.[62] Although this amendment seemed very narrow, it has served as the basis for a new approach to protecting endangered species that focuses on the most common cause of endangerment, habitat destruction. Habitat conservation plans (HCPs) based on this provision have become widespread, with one study identifying 208 plans covering anything from half an acre to 1.6 million

62) Endangered Species Act §§ 10(a)(1)(B); 10(a)(2); 16 U.S.C. §§ 1539(a)(1)(B), 1539(a)(2).

acres, and having durations ranging from seven months to a century.[63]

Creative implementation can also be found in the enforcement process. EPA has created a new enforcement remedy, the Supplemental Environmental Project (SEP). An SEP is an environmentally desirable measure that a violator agrees to implement in place of some of the penalty that it would otherwise be legally required to pay. From 2005-2011, about $220 million worth of SEPs were reported.[64] Still, SEPs are used in only about a tenth of settlements, and the rate has declined since 1995 because of tough restrictions on their use.[65] EPA has recently updated its SEP policy to clarify its priorities in agreeing to projects, including climate change among other priority goals.[66] In another creative use of the settlement process, EPA has used settlements as the occasion to upgrade monitoring. For instance, in a case involving a British Petroleum oil refinery facility, the settlement required BP to spend $2 million to install a fence-line emissions monitoring system and post the results online.[67]

EPA has also found creative solutions in the context of rulemaking. An

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63) Peter Kareiva et al., *Using Science in Habitat Conservation Plans* (1998), available at http://ww.w.carmelacanzonieri.com/library/6108-LandscapeEcoPlanning/Kareiva-UsingScienceInHabitatConservationPlans.pdf. Some other voluntary programs were arguably less successful, such as EPA's "performance track" program, which sought to reward companies with strong compliance records.

64) *EPA Inspector General Examines Trends in Agency Enforcement Results*, 23 Air Pollution Consultant 1.1 (2013). Note that the total monetary penalties and mandated compliance expenses in EPA enforcement actions totaled an average of about $10 billion per year during the same period.

65) Brooke E. Robertson, *Expanding the Use of Supplemental Environmental Projects,*86 Wash. U. L. Rev. 1025, 1035-36 (2009).

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> Though no single type or focus of a project is mandated by the Updated Policy, EPA appears to have a strong preference for projects that promote environmental justice, address climate change, and/or promote technological advances in pollution reduction or compliance assurance. Of those, only the express inclusion of climate change as an SEP target area represents a new development; EPA has long emphasized SEPs as a means of addressing environmental justice concerns and of proving and expanding the use of pollution reduction and compliance tools.

Colin G. Van Dyke, *A Few Thoughts on EPA's Updated SEP Policy*, Nat. Resources & Env't, Winter 2016, at 50, 51.

67) Giles, supra note 46, at 15.

important example of creative implementation in rulemaking is found in *EPA v. EME Homer City Generator, L.P.*[68] The case involved the "good neighbor" provision of the Clean Air Act, which deals with the problem of interstate air pollution.[69] The problem faced by EPA was how to allocate emission cuts when multiple states contributed to a violation of air quality standards in a downwind state. The statute directs EPA to ensure that upwind emissions are controlled, but does not mention compliance costs and could be read to require that the resulting emission cuts be divided proportionally between states. EPA adopted a two-stage process to set each upwind state's obligations, first identifying states that contributed "significantly" to downwind violations,[70] and then determining how much each state could reduce its emissions at a cost that EPA viewed as reasonable.[71]

The Supreme Court upheld the EPA's approach in an opinion by Justice Ginsburg that emphasized EPA's authority to creatively address regulatory problems. "Lacking a dispositive statutory instruction to guide it, EPA's decision, we conclude, is a 'reasonable' way of filling the 'gap left open by

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68) 134 S. Ct. 1584. The EME Homer facility was a major source of interstate air pollution in its own right:

> For more than 40 years, Homer City has spewed sulfur dioxide from two of its three units completely unchecked, and still does because it is largely exempt from federal air pollution laws passed years after it was built in 1969. Last year, the facility released 114,245 tons of sulfur dioxide, more than all of the power plants in neighboring New York combined.
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> "It is an emblem, a poster child of the challenge of interstate air pollution," said Lem Srolovic, the head of the environmental protection bureau for the New York Attorney General's office, in an interview with The Associated Press.

Dina Cappielo and Kevin Befos, *After Decades, Dirty Power Plant to get Clean* (May 2014), available at http://bigstory.ap.org/article/after-decades-dirty-power-plant-get-clean. As the title of that article indicates, the plant finally planned to install scrubbers, one of the last plants in the country to do so. *Id.*

69) The "good neighbor" provision requires each state implementation plan to prevent any source within its borders from "contributing significantly" to nonattainment in any other state.

70) *Id.*

71) *EME Homer v. EPA*, 696 F.3d 7 (D.C. Cir. 2012).

Congress'."[72] In the Court's view, EPA's choice "makes good sense," providing "an efficient and equitable solution to the allocation problem the Good Neighbor Provision requires the Agency to address."[73] The Court praised EPA for finding a cost-effective solution[74] and praised the solution as fair because it imposed heavier burdens on laggard states.[75] In dissent, Justice Scalia complained that the agency was straying far beyond the statutory language.[76]

Another example of creative implementation is provided by the federal government's approach to protecting headwater streams.[77] The Clean Water Act establishes a permit program for dredging and filling, which is normally applied to wetlands. But the program has evolved over time and is now often applied to small streams at the top of watersheds. The regulatory approach now features lower thresholds for regulation and permitting for activities on those streams, as well as a requirement for compensatory mitigation when small streams are impaired (meaning that corresponding improvements must be made in other streams). This is a notably creative transformation of the statute's prior focus on wetlands, though they too remain subject to regulation.

Probably the most important example of creative implementation has been the use of the Clean Air Act to address climate change, although the statute was based long before climate change had become a major public concern.[78] The state of California made the first effort to use the Act by

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72) *EME Homer*, 134 S. Ct. at 1607.

73) *Id.*

74) *Id.*

75) *Id.*

76) *Id.* at 1611 (Scalia, J., dissenting).

77) This account is drawn from Dave Owen, *Little Streams and the Continuing Transformation of Environmental Law* (2016), available at http://ssrn.com/abstract=2773897.

78) For pro and con commentary about this development, see Andrew Rudalevige, *Old Laws, New Meanings: Obama's Brand of Presidential "Imperialism"*, 66 Syracuse L. Rev. 1 (2016); Holly Doremus and Robert Infelise, *Foreword*, 41 Ecology L.Q. 171, 174 (2014). As Doremus and Infelise explain in introducing a review of recent environmental law decisions:

> The second theme that emerges this year is the challenges posed by the need to address new environmental problems using old statutes developed in a very different context. Environmental lawyers are keenly aware that changes in circumstances, societal values, and scientific understanding often call for changes

exercising its special statutory authority to control emissions from new vehicles.[79] California was also one of the group of states that successfully sued EPA to force it to regulate tailpipe emissions of greenhouse gases on a national basis, culminating in the Supreme Court's decision in *Massachusetts v. EPA*.[80] Meanwhile, California had been sued by car manufacturers and others arguing that it had overstepped its authority under the statute.

What followed was an enlightening exercise in creative implementation, as recounted by a scholar who had actively participated in the events as a member of the White House staff. After intense bargaining involving the industry, the state of California, and the White House, the stakeholders agreed to a deal, including the following proposed regulation:

> As part of a negotiated agreement to support this program, all the major foreign and domestic auto companies signed letters of commitment promising not to challenge the new standards in court.... The state of California, represented by the Governor, the Attorney General, and the Chair of the California Air Resources Board ("CARB") also agreed to support the new national program by treating compliance with the joint federal standards as compliance with California's separate GHG standards for cars and trucks.
>
> In addition, the auto companies and their trade associations committed not to contest any grant of a waiver of federal preemption under the Clean Air Act ("CAA") authorizing

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in law. But legislatures can be slow to respond, with the current legislative paralysis in the U.S. Congress providing an extreme example. When legislative changes fail to keep up with conditions, environmental advocates find themselves forced to address modern problems with laws not designed for those problems. The resulting difficulties are most familiar in connection with application of the Clean Air Act (CAA) to greenhouse gas emissions.

Id. at 174.

79) The statutory mandate is A.B. 1493, also called the Pavley Act, which requires the state to issue regulations achieving the "maximum feasible and cost-effective reduction of greenhouse gas emissions" from vehicles. Cal. Health & Safety Code §433018.5(a).

80) 127 S. Ct. 1438 (2007).

> California's GHG standards for Model Years 2009-2016, and to stay and ultimately dismiss more than a dozen pending lawsuits challenging California's legal authority to regulate GHGs.
>
> Thus, the joint rule, once final, would effectively create a uniform federal system for regulating fuel efficiency and controlling GHG pollution in a significant part of the U.S transportation sector.[81]

This story may have implications for other regulatory efforts: "although in some respects the car deal was unique, much of its innovation can be replicated, including the use of joint rulemaking or similar uniformity-promoting mechanisms, along with extralegal tools like commitment letters that can memorialize agreements and specify implementation plans."[82]

The first EPA effort to extend the regulatory regime from vehicles to stationary sources like power plants utilized a section of the Clean Air Act that was originally designed to maintain existing air quality in areas that already have clean air, rather than letting the air in those areas deteriorate.[83] It applies to any "major emitting facility" constructed in an area that is in compliance with air quality standards for any major pollutant. Under this provision, each such major emitter must use the "best available control technology [BACT] for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility."

In applying this provision to greenhouse gases, EPA was faced with two major coverage issues. First, what facilities does the statute cover? Second, once a facility is covered for whatever reason, are greenhouse gases among the pollutants for which BACT is required?

The first question is troubling because of the way the statutory coverage requirements would apply to sources that emit CO_2 but not significant amounts of other pollutants. Under the statutory language, a source is covered by BACT if it emits or has the potential to emit a specified quantity of "any pollutant" -- 100 tons per year if in certain industries and 250 tons

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81) Jody Freeman, *The Obama Administration's National Auto Policy: Lessons from the "Car Deal"*, 35 Harv. Envtl. L. Rev. 343, 345-46 (2011).

82) *Id.* at 374.

83) 42 U.S. § 7475(a).

otherwise.[84] While 250 tons per year is a large amount of most conventional pollutants, there are a huge number of relatively small sources that emit that much CO_2. EPA believed that it would be completely impractical to apply the BACT requirement to all of those facilities. It therefore adopted a "tailoring rule," which limited coverage of BACT to facilities that emitted much larger amounts of greenhouse gases (at least 75,000 tons per year). This left the second question: whether facilities covered because of their emissions of other pollutants (so-called "anyway" sources) had to use BACT for greenhouse gases. An example would be a factory that emitted more than 250 tons of nitrogen oxides per year. Again the agency answered yes. Here the statutory language was clearer.

The Supreme Court approved only one of EPA's coverage decisions in *Utility Air Regulatory Group v. EPA [UARG]*;[85] the Court rejected EPA's effort to cover sources solely on the basis of their CO_2 emissions (as well as the resulting rewrite of the numerical standards) but upheld its coverage of "anyway" sources. Notably, the four liberal Justices on the Supreme Court dissented and would have upheld EPA's approach in its entirety.

The *UARG* decision did not have a dramatic impact on the effectiveness of the PSD rules, because at least 85% of greenhouse gases come from "anyway" facilities. The ruling did raise some serious concerns, however, about how open the Court will be to EPA's efforts to adapt other portions of the Clean Air Act to greenhouse gases. But it may be a mistake to read too much into the majority opinion. The effort to rewrite the numerical limits in the statute was an unusually aggressive legal move by EPA, which even some sympathetic observers thought was very risky. Yet without the rewrite, the expansion of BACT to include plants solely on the basis of their CO_2 emissions was untenable. The Court's rejection of this effort may not mean that it will reject EPA positions that do not appear to entail such direct collisions with statutory language.

EPA more recently issued standards covering emissions of greenhouse

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84) CAA § 169(1), 42 U.S.C. § 7479(1).

85) 134 S. Ct. 2427 (2014). For commentary on the decision, see Jody Freeman, *Why I Worry About UARG*, 39 Harv. Envtl. L. Rev. 9 (2015); William W. Buzbee, *Anti-Regulatory Skewing and Political Choice in UARG*, 39 Harv. Envtl. L. Rev. 63 (2015).

gases from new electric power generators.[86] In order to regulate existing power plants – especially existing coal-fired plants – EPA turned to a previously obscure and rarely used provision of the statute.[87] Once it has issued a standard for new sources in the same category, that provision empowers EPA to require states to submit plans to control emissions from existing plants, but the provision applies only to emissions that are not otherwise regulated by the statute (which is why it has been so rarely used). If a state fails to submit a plan, EPA must submit its own enforceable plans for that state. The plans are supposed to be based on the standard of performance for the industry – that is, the best "system of continuous emission reduction" that has been "adequately demonstrated" in terms of existing plants in that state.

A crucial issue arises concerning the scope of the term "system" – does it include only pollution reduction techniques at a single plant, or could a system be defined more broadly to involve the relationships between multiple plants? EPA took the broader approach. It determined that the best system of emission reduction for existing units consisted of three building blocks: (1) efficiency improvements in coal-fired plants, (2) substitution of natural gas generation for coal-fired generation when feasible, and (3) increased use of renewables.

To uphold building blocks 2 and 3, EPA will have to fend off arguments that the "system" of control cannot include "beyond the fence line" measures such as shifts in electricity production between generating facilities. Defining the system of pollution control to encompass changes in the amount of electricity introduced into the grid is a departure for EPA, which normally defines it as a type of pollution control equipment at the specific emitting facility. In effect, EPA is treating all the power generators on the state grid as part of a single unified source. This makes a certain amount of sense because of the way the grid operates – it has been called the world's most complicated machine – because of the practicalities of controlling carbon. But it may be too innovative for courts to accept.[88]

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86) The action was taken pursuant to §111 of the Clean Air Act, 42 U.S.C. §7411.

87) 42 U.S.C. §7411(d).

88) The Supreme Court unexpectedly issued an order postponing the plan even though the case had not yet been considered fully by the lower court. See Erin Ryan, *The Clean Power*

Due to the outcome of the U.S. Presidential election in 2016, the fate of the Clean Power Plan is even more uncertain. The Trump Administration may attempt to withdraw the rule or help defeat it in the courts. No doubt the new Administration will also attempt to use the flexibility in the environmental laws, but for different purposes than the last President. If that flexibility is used to pursue the environmental goals of the statutes in new ways, it may be constructive and creative. But if flexibility is used to sabotage the purposes of the law or if the Administration violates the clear language of the statutes, it will be up to the courts to uphold the integrity of the law.

2. Judicial Supervision of Creative Implementation

There are limits to the degree of creative implementation that the courts will allow in the interests of maintaining the paramount role of the legislature in setting regulatory policy. One example is the *UARG* case discussed above. Justice Scalia's opinion for the Court captures the judicial attitude to agency innovations that stretch the governing statute to the breaking point:

> We conclude that EPA's rewriting of the statutory thresholds was impermissible and therefore could not validate the Agency's interpretation of the triggering provisions. An agency has no power to "tailor" legislation to bureaucratic policy goals by rewriting unambiguous statutory terms. Agencies exercise discretion only in the interstices created by statutory silence or ambiguity; they must always "give effect to the unambiguously expressed intent of Congress." It is hard to imagine a statutory term less ambiguous than the precise numerical thresholds at which the Act requires … permitting. When EPA replaced those numbers with others of its own choosing, it went well beyond the "bounds of its statutory

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Plan, the Supreme Court's Stay, and Irreparable Harm (2016), available at http://ssrn.com/abstract=2759076; Lisa Heinzerling, *The Supreme Court's Clean-Power Power Grab* (2016); available at http://ssrn.com/abstract=2737441.

authority."[89]

Indeed, the Court saw EPA's action as implicating major constitutional principles:

> Were we to recognize the authority claimed by EPA in the Tailoring Rule, we would deal a severe blow to the Constitution's separation of powers. Under our system of government, Congress makes laws and the President, acting at times through agencies like EPA, "faithfully execute[s]" them. The power of executing the laws necessarily includes both authority and responsibility to resolve some questions left open by Congress that arise during the law's administration. But it does not include a power to revise clear statutory terms that turn out not to work in practice.[90]

Another opinion by Justice Scalia reflects a similar effort to rein in what the majority considered to be overly aggressive implementation by EPA. *Michigan v. EPA*[91] involved a special provision dealing with toxic emissions from power plants.[92] Although toxic emissions from other categories of sources are covered under other portions of the same section based on health considerations,[93] the subsection dealing with power plants takes a different approach. It requires EPA to conduct several studies and reports to Congress, and then to determine whether it was "necessary and appropriate" to regulate power plants taking into consideration the findings of a study focused on health effects. EPA concluded that the

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89) *UARG*, 134 S.Ct. at 2445.

90) *Id.* at 3446.

91) 135 S.Ct. 2699 (2015).

92) 42 U.S.C. § 7412(n)(1)(A). This subsection requires EPA to "perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units" from toxic pollutants despite additional controls already required by other provisions of the statute. *Id.* EPA is then instructed to report on the study to Congress, along with a discussion of "alternative control strategies for emissions." Finally, and most importantly, EPA "shall regulate electricity utility steam generating units under this section, if [it] finds such regulation is appropriate and necessary after considering the results of the study required by this subparagraph." *Id.*

93) 135 S. Ct. at 2705.

statute was ambiguous but that it was reasonable to interpret it to exclude consideration of cost in making the "necessary and appropriate" finding.[94]

A closely divided Supreme Court held that the agency's interpretation was unreasonable.[95] This passage seems to be key to the Court's reasoning:

> One would not say that it is even rational, never mind "appropriate," to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits. In addition, "cost" includes more than the expense of complying with regulations; any disadvantage could be termed a cost. EPA's interpretation precludes the Agency from considering any type of cost— including, for instance, harms that regulation might do to human health or the environment.[96]

Justice Scalia then continued that "[t]here are undoubtedly settings in which the phrase "appropriate and necessary" does not encompass cost. But this is not one of them."[97]

These were closely divided judicial decisions; obviously, some Justices disagreed with the view that EPA had violated its statutory mandate. But no one disagreed with the view that it was up to the courts, ultimately, to make that decision and control overzealousness by the agency. Otherwise, agencies would be free to rewrite the laws, rather than taking their proper subordinate role of the legislature. It is one thing to use legal creativity in order to exploit the flexibility in a law to better achieve the legislature's goal. It is another thing to ignore clear statutory language or to exploit flexibility in order to defeat the legislature's goals.

Flexibility can be used for either good purposes or bad ones. Apart from the rule of law concern, this second problem with creative implementation is that it could actually be used to undermine statutory goals. Similar

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94) 135 S. Ct. at 2706.

95) The four dissenters, lead by Justice Kagan, contended that EPA had made adequate provision for cost considerations at later points of the regulatory process. Michigan v. EPA, 135 S. Ct. at 2714 (2015) (Kagan, J., dissenting). Justice Thomas wrote a separate concurrent to reiterate his argument for overruling *Chevron*. 135 S.Ct. at 2712.

96) 135 S. Ct. at 2699.

97) *Id*.

concerns have been raised about adaptive management for natural resources,[98] in which agencies experiment with policies and monitor the results rather than adopting rigid rules.[99] This problem cannot be tackled by the courts directly, since they are in no position to make independent judgments about what regulatory programs are likely to work. But courts can at least use the "arbitrary and capricious" standard to ensure that the agency has taken a hard look at the problem.

IV. Conclusion

It is hard to imagine any environmental lawyer dismissing noncompliance as an unimportant problem or suggesting that the implementation of environmental statutes has generally followed a straightforward path. As we have seen, the linkage between statutory requirements and implementation is far from automatic: specific ground-level decisions may take place in the absence of standards (though under threat of future standards or potential liability), or in some negotiated deviation from the standards. Thus, rather than focusing on regulatory standards in isolation, we need to see them as part of a larger process of negotiation between government actors, industry, and environmentalists.

Recognizing the quantity of implementation issues might change how we approach the procedures for issuing standards. If we expect standards to be completely implemented, it makes sense to insist on full deliberation and a high standard of rationality when the standards are crafted. But to the extent that the standards function instead as opening gambits in a prolonged bargaining process, this insistence seems somewhat misplaced. Moreover, the considerable uncertainty about how a standard will actually be implemented naturally makes any confident assessment of the regulation before issuance problematic, arguing for a more dynamic approach to assessing and modifying regulations over time.

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98) For a discussion of specific legal changes designed to promote adaptive management, see Eric Biber, *Adaptive Management and the Future of Environmental Law*, 46 Akron L. Rev. 933, 938-39 (2013).

99) See *id.* at 940.

Given Congress's often-unrealistic demands, it is hard to see how the system could operate if the government attempted perfect implementation – for instance, Congress called for an end to all water pollution by 1985, which was not remotely possible.[100] Besides ameliorating the sometimes unrealistic demands found in the statutes, the implementation process has also provided opportunity for some important innovations in environmental regulation.

Even when they produce useful results, mismatches between implementation and statutes also risk doing damage to our concept of the rule of law. Widespread noncompliance with formally binding requirements undermines the concept that good citizens — and even more so, governmental officials — obey the law. For this reason, as much as it may be socially beneficial in some of its guises, creative implementation needs to be held within a reasonable interpretation of the statutory language.

Implementation issues deserve particular attention now, at the time when we are entering a new era of environmental regulation: the Climate Change Era. When we design measures to prevent climate change, it is not enough to set good goals or to proclaim new standards. We must pay very careful attention to how those standards will be enforced. We must also design regulations that are easy to create and enforce.[101] Finally, because climate change has such broad impacts, it may well require creative implementation of existing statutes in order to deal with all of its ramifications.

Implementation issues may in part be because of the sheer difficulty of regulating many different environmental problems at many different facilities across a large, diverse country. Those difficulties, although real, are susceptible to solutions with sufficient effort and ingenuity. The more intractable cause of implementation problems is the degree of political polarization about environmental problems in the United States. Such polarization has prevented Congress from participating actively in policy

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100) See Clean Water Act § 101(a)(1); 33 U.S.C. 1251(a)(1) ("it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985").

101) This is one reason that a carbon tax may be a desirable approach. Tax collection is not perfect either, but it is something that modern societies know how to do, and tracking quantities of fossil fuels is less demanding than monitoring emissions for thousands of sources. The broader point is that the design of regulatory policies needs to be attentive to potential implementation issues.

reform, leading to mismatches between resources and agency responsibilities, and disrupting cooperative relationships between federal and state agencies.

Whether the U.S. can reduce the current level of polarization remains to be seen. But the U.S. does have other important resources to address statutory implementation, including a strong "rule of law" culture, substantial agency expertise, and active environmental NGOs. Thus, there is ground for hope in our ability to cope with the implementation gap. In the meantime, we can be pleased that despite the formidable challenges it faces, the system has achieved substantial progress toward environmental improvement.