

ADVANCED PROBLEMS IN ENVIRONMENTAL POLICY:  
KEY ISSUE ANALYSES AND SOLUTION PROPOSALS  
Federal Environmental Planning: Problems and Recommendations for Improvement  
Politics and Judgments in Endangered Species/Natural Resources Management  
Land and Ecosystem Protection Strategies

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## **1) Federal Environmental Planning: Problems and Recommendations for Improvement**

Major problems and challenges are associated with environmental planning by federal agencies. Among other factors, such problems involve: insufficiently small geographic management scales, climate change's unpredictable threats, ineffective or missing monitoring, funding deficiencies, and flawed narratives about important issues. In this essay, I will describe these problems, make three mitigation recommendations, and then present possible strategies for implementing said recommendations.

One problem with federal agency planning is that it often occurs at insufficiently small geographic scales that result in ineffective actions lacking appropriate scope and impact longevity. Managing more land on broad ecosystem scales could be more effective than the status quo. However, obstacles related to fragmented land ownership stand in the way (Nie 2012). Nie aptly summarizes this problem: "Put simply, while federal, state, tribal and private properties often come in squares, ecosystems do not. There is no lack of creative ways in which to describe the 'cartographic chaos' found within the federal estate. Some see the mess as a 'crazy quilt' of land ownership, while for others it signifies a 'tragedy of fragmentation'" (2012, 2).

Another problem hindering federal environmental planning efforts is climate change and its unpredictable threats (Glicksman 2009). Ecological conditions are changing in unprecedented ways, and nobody's quite sure what to do (Zavaleta and Chapin III 2010). As Glicksman points out: "What is desert today may be grassland tomorrow, and what is tundra this year may be temperate forests the next" (2009, 443). In addition to the problem of climate change having unpredictable and sometimes damaging effects, just planning to manage contributors to climate change can be difficult (Glicksman 2009). As Glicksman states: "Most activities that contribute to climate change are beyond the control of the federal land management agencies (and those taking place in other countries are for the most part beyond the regulatory jurisdiction of the entire federal government)" (2009, 403).

An additional problem associated with environmental planning by federal agencies is that monitoring is often ineffective or simply missing when it should exist (Biber 2012). Biber notes that there is a "surprising lack of good-quality information about the conditions of the environment in which we live

. . . . There are tremendous gaps in our knowledge about a wide range of environmental resources, from water quality to air quality, from endangered species to wetlands” (2012, 3). Biber adds that “monitoring is costly and difficult to do well,” and “there are also significant legal, political, and institutional obstacles to the pursuit of effective monitoring by the public agencies that gather most of the data” (2012, 3).

Biber summarizes two of the major obstacles: “Myopic legislatures and agencies cut monitoring budgets in order to fund activities with more short-term payoffs; and, the long-term nature of monitoring makes it unappealing professionally for the agency scientists who are often key figures in monitoring programs” (2012, 33). Another obstacle to effective monitoring is that monitoring information and methods can be easy targets for politicization, as was the case with the National Biological Survey and the backlash against it. Monitoring also often involves dispersed public benefits with disproportionately distributed costs. This factor increases the difficulty for pro-monitoring groups to organize while making it easier for cost-paying anti-monitoring groups to organize (Biber 2012).

Monitoring and other important aspects of federal environmental planning efforts often lack sufficient funding (Biber 2012). This is another major problem. According to Nie, “agencies like the BLM and USFS have a long history of not delivering on monitoring promises, partly because of predictably inadequate congressional funding” (2008, 157). In addition to the problem of funds sometimes not being available, available funds are not always fully utilized. This is the case with the Land and Water Conservation Fund (LWCF) (The Wilderness Society 2012). According to The Wilderness Society, the LWCF:

was established . . . to protect critical habitat, preserve natural areas and wildlife, provide clean water and ensure all Americans have access to quality outdoor recreation . . . Every year LWCF receives \$900 million from offshore oil and gas drilling fees. Unfortunately, only once in the fund’s 46 year history have all these dollars been allocated for their intended conservation purposes. Instead, LWCF is often raided and Congress has allocated the funds to other non-related programs. (2012)

Yet another problem with the environmental planning efforts of federal agencies is that predominant narratives (those known by the general public) about important planning elements are often flawed (Nie 2008). As Nie points out, “the framing of environmental regulation as counter-productive and

litigation as ‘obstructionism’ is deeply troubling” (2008, 158). He adds that “this widely publicized problem-definition leads to the incipient undermining of natural resources law and policy” (2008, 158). Law, policy, and regulation are key parts of federal environmental planning, so it is problematic when the public misunderstands those issues because of flawed narratives (Nie 2008).

The general narrative about environmental monitoring is also somewhat flawed because people do not seem to recognize just how important it is (Biber 2012). Biber remarks that environmental monitoring has a low-profile nature and states that “rallies in Washington DC are not held to demand that Congress provide more funding for monitoring environmental conditions . . . monitoring is particularly susceptible to the public choice failures so common in environmental law” (2012, 7). He adds that “monitoring funding also is vulnerable to the charge that it is useless” (2012, 7).

Regarding the problems described above, I would improve a federal agency environmental planning framework by: expanding geographic management scales, improving the monitoring process, and implementing more effective adaptive management. Various elements of these solutions overlap. For example, something done for better monitoring could also improve adaptive management and expansion of geographic management scales and vice-versa. Many components of the adaptive management improvement remedy relate to mitigating all or several of the problems illustrated above. Thus, adaptive management improvement strategies will receive the most attention in this analysis.

For improved planning frameworks, federal agencies should expand their geographic management scales. To overcome expansion problems related to fragmented land units and different jurisdiction layers, federal agencies should work toward better collaboration with varied stakeholders. This could occur at somewhat localized (but still fairly expansive) ecosystem scales, as has been the case with projects authorized under the Collaborative Forest Landscape Restoration Act (CFLRA) (Nie 2011). According to Nie, “the CFLRA has received broad-based support, from environmental groups to the forest products industry” (2011, 10243). Nie describes how CFLRA program projects work.

The program selects and funds carefully screened landscape-level forest restoration projects. Such projects must comply with existing environmental laws and be developed and implemented through a collaborative process. Up to 10 proposals can be funded per year (with only two

proposals in any one region of the National Forest System), and each project is evaluated based on several criteria. The program authorizes \$40,000,000 per year (FY 2009-2019) to be used to pay for up to 50% of selected restoration projects. Once chosen, these projects must incorporate the best available science, be monitored by multiple parties, and submit reports to selected congressional committees. (2011, 10243)

The Burney-Hat Creek Basins restoration proposal was one CFLRA project the Forest Service approved for 2012 funding (USDA 2011). This project demonstrates broad geographic management scales because it covers a landscape of over 369,000 acres that includes “federal, state, and private ownerships . . . with the Forest Service and National Park Service managing much of the upper watersheds, and the lower watersheds a mosaic of private, state and federal ownership” (USDA 2011, 3). Thus, improving federal environmental planning with CLFRA project principles can provide expanded management scales with effective collaboration tempered by clear science, monitoring, and accountability measures (Nie 2011).

Planning at broader geographic scales could also involve more federal influence over local community planning such that communities within broad ecosystem management zones would expand less at urban-wildland interfaces and make ecosystem management easier. Federal incentive programs (similar to those in the Coastal Zone Management Act) could be expanded to better temper urban growth in ecologically sensitive areas. For example, with federal support/prodding, more cities could develop ecosystem-friendly growth patterns with infill, redevelopment, high density, and growth boundaries. Boulder, Colorado already demonstrates these principles. However, this urban planning component of expanding geographic management scales could face serious opposition from the public and industry. Ecologically healthy growth patterns can reduce availability of developable land and make housing more difficult to acquire. Nonetheless, tax incentives and heavily promoting the value of ecosystem services could mitigate these challenges.

Improving the monitoring process would be another way to enhance a federal agency’s environmental planning framework. Biber suggests an idea for improvement by remarking that “separate agencies need not conduct the monitoring themselves; they might instead provide regular, expert, and effective audits of monitoring data that can provide sufficient incentives for management or regulatory

agencies to conduct their own effective monitoring programs” (2012, 52). This concept could allow federal agencies to constantly be holding each other accountable as well as various non-federal government entities and private parties.

Monitoring could also be improved with “dedicated funding streams that are more resistant to political whims” (Biber 2012, 53). Perhaps more money from the LWCF could be dedicated specifically to monitoring and safeguarded for that purpose. LWCF money could also be further utilized for adaptive management and other environmental planning goals in general.

According to the Forest Service’s 2012 planning rule, its monitoring requirements “are not a prerequisite for making a decision to carry out a project or activity” (USDA 2012, I-20). If monitoring is to be improved, this should not be the case. More often making monitoring a prerequisite for various activities that both the federal government and private entities wish to perform could improve monitoring in general. For example, oil companies on the Pinedale Anticline might have to gather good baseline monitoring data on pronghorn and mule deer populations before they are allowed to start initial drilling infrastructure development. However, increasing the status of monitoring as a prerequisite could face notable challenges from industry lobbyists (oil, timber, mining, etc.) and from bureaucrats whose lives would be easier without further change to their operation patterns. The public and politicians could also paint the “more monitoring as a prerequisite” idea as an economic threat that slows progress. However, proponents could counter that monitoring can cause smarter economic gains and is a contributor to more streamlined operations and better environmental and human health.

Monitoring could also be improved by increasing “the compatibility of monitoring data and protocols across multiple agencies conducting similar monitoring programs” (Biber 2012, 54). Agencies may be reluctant to work too much with each other because of threats to discretion and autonomy (Biber 2012). However, all-expense paid (maybe from the LWCF) interagency conferences and social events specifically geared toward enhancing monitoring compatibility could prove effective. Financial bonuses to bureaucrats who perform (or significantly contribute to) effective monitoring (fitting various guidelines and accountability measures) might also improve monitoring in general.

Implementing more effective adaptive management would help to remedy many of the federal agency environmental planning problems discussed earlier. According to the National Research Council, “adaptive management [is a decision process that] promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood” (Nie 2012, 9). Adaptive management involves “careful monitoring” and “emphasizes learning while doing” (Nie 2012, 9). A commonality in adaptive management literature is that such management should involve structured decision-making and clearly identified objectives (Nie and Schultz 2011).

More effective adaptive management and better federal environmental planning in general should involve clearer objectives and better-structured decision-making with more accountability. According to Nie, most National Forest plans “are mostly ‘strategic and aspirational’” (2011, 10246). These plans should be more binding. Otherwise, what’s the point? Rules should be clearly laid out and enforced. As Nie aptly states, “Without clear-cut regulatory objectives and boundaries, adaptive management will be subject to science-coated political manipulation” (2008, 156). Doremus stresses that “clear, enforceable information collection and disclosure mandates must be part of any adaptive management requirement or authority. We must, in so far as possible, specify the type and extent of monitoring required in advance” (Nie 2008, 157). I agree. Accountability is necessary for effective adaptive management, and it should come from within the government (via competing agencies overseeing each other) and from outside the government (via academic institutions). Triggers should also be used more often with adaptive management to make it more structured (Nie and Schultz 2011).

Adaptive management by federal agencies could also be made more effective with less emphasis on preserving the present and protecting “naturalness” and more emphasis on encouraging overall ecosystem integrity and resilience for now and the future. According to Zavaleta and Chapin III, “resilience is a vehicle for sustaining native biodiversity in the long term, in part through its focus on sustaining processes such as the capacity for evolutionary adaptation and species range shifts” (2010, 147).

As climate change creates new ecological conditions, federal agencies should allow and even encourage new species migrations that may have been discouraged in the past—as long as such migrations preserve the integrity of a functioning ecosystem providing desirable ecosystem benefits. The 2012 Forest Service planning rule touches on the theme of integrity by mentioning standards or guidelines “to maintain or restore the ecological integrity of the terrestrial and aquatic ecosystems and watersheds in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity” (USDA 2012, (I-12). I agree that such guidelines should be addressed. More traditional environmentalists might challenge a focus on resiliency that deemphasizes naturalness. This opposition could be countered by insightful case studies and efforts (by the federal government, scientists, and advocacy groups) to change the narratives about “naturalness” and ecosystem functionality.

Adaptive management and federal environmental planning could also be improved by better educating the public and correcting flawed narratives about important issues. Predominant narratives painting environmental regulation and litigation as bad things should be corrected with better public outreach efforts. These could occur through new elementary school education standards touching on the importance of environmental regulation and the history of unregulated environmental damage in the U.S. The government could put guest speakers from the EPA and other agencies on tour across the U.S. to visit schools. Indoctrinating the youth is important because they will inherit what is left of the Earth. TV spots espousing the benefits of regulation and sharply contrasting the negative past with the positive present could also be employed. A similar approach could be used to make people more aware of the importance of environmental monitoring, ecosystem services, etc. Public outreach should emphasize the positive effects of regulation and monitoring on individuals’ personal health and future generations. Some political groups and resource extraction industries would likely pose serious obstacles to such public outreach efforts, but if environmental educators stand their ground, facts may stick longer than some misleading forms of industry-friendly rhetoric.

In addition to changing narratives about regulation, litigation, and monitoring, I would recommend trying to change the narrative about certainty. From the bureaucrat worried about his or her



job to the timber company CEO worried about his or her company's bottom line, everybody wants certainty. However, we live in an uncertain world. Adaptive management could be more effective if people were certain of uncertainty, and treated uncertainty as normal and expected. Making uncertainty more expected could occur by removing and reducing safety nets federal agencies sometimes give private project partners. Uncertainty might also be more accepted if agencies were more upfront about the fact that things are unpredictable. Entities willing to take on particular risks will do so, and those who want more certainty will walk away.

## **2) Politics and Judgments in Endangered Species/Natural Resources Management**

Politics and judgments in the management of endangered species and natural resources often relate to just what decision-making science is used and how it is used. Politics and judgments may intertwine with scientific controversies. Evaluation and formulation of the "best available science" is often a key factor in such controversies. More agencies should *use* best available science to make their decisions instead of merely *considering* it. When environmental change and scientific uncertainty are significant, decisions should be made with forthrightness and transparency.

Judgments that are political and involve setting standards can be interlaced with scientific controversies regarding natural resources management and endangered species. Political and normative judgments are embedded in such controversies in various ways.

Not all natural resources management and endangered species issues can be feasibly resolved based solely on the best available science. Some populations of salmon and gray wolves in the continental U.S. provide examples of these complex situations in which politics and normative judgments play an important role in decision-making in addition to science (Doremus 2004). Doremus states that these situations represent "problems that cannot be objectively characterized" and with these issues, "observers with different values see very different problems and correspondingly different solutions" (Doremus 2004, 420). Doremus argues that such problems ("wicked problems" according to Rittel and Webber) are solved politically rather than scientifically (Doremus 2004).

For example, the best available science could indicate that, based on distribution levels, a certain species is not fully recovered and should not be delisted. However, because of varying cultural tolerance thresholds in different regions, full recovery of some species may not be practical or worth the effort. Delisting without full historic range occupation could make sense and be proposed by the U.S. Fish and Wildlife Service (Doremus 2004).

This has been the case with gray wolves (*Canis lupus*) in the continental U.S. Though now mainly limited to parts of the Rockies, the Southwest, and regions near the northern portions of the Great Lakes, gray wolves used to range across the majority of North America. Viable wolf populations exist in the Rockies and near the Great Lakes, so, in the past, the U.S. Fish and Wildlife Service has planned to fully remove some continental U.S. gray wolf populations from the Endangered Species List. However, some conservation groups (e.g., Defenders of Wildlife) have taken issue with the proposed downlistings because they think wolves should be restored to additional historic range (Doremus 2004). Doremus makes the point that the question of how much range wolves should occupy is “not a scientific question” but rather “a question of values on which people strongly disagree” (Doremus 2004, 421).

Hypothetically, just based on science and historic range, gray wolves could occupy much more habit than they do at present. However, cultural intolerance has been a significant limiting factor. Rural citizens (especially ranchers and hunters) fear the negative economic impact of wolves’ effects on big game populations and livestock. Many locals also fear wolves in general. While some fears and threats regarding wolves are exaggerated or based on flimsy data, they illustrate how culture (instead of science) can be a primary factor in decision-making associated with controversial natural resource issues. Just getting wolves re-established in Yellowstone and the Idaho Rockies involved political compromise in that the new populations had special experimental/non-essential status under the Endangered Species Act and could be subject to lethal predator control if they caused livestock damage.

Hatchery salmon represent another wicked problem that cannot be easily resolved just with science (Doremus 2004). Doremus effectively summarizes this issue:

In many of the places where wild salmonids are dwindling, hatcheries produce steady quantities of fish. The question is whether the presence of a stable hatchery population should preclude listing of the remaining wild fish. That question does have scientific dimensions, since hatchery fish may genetically diverge from wild fish even if they are not now distinct, and may present a disease threat to the wild fish. But fundamentally it is a question of values; the answer depends upon whether or not hatchery fish are considered an adequate substitute for wild ones. Science should be able to describe the nature and extent of differences between wild and hatchery fish, but it cannot ultimately prescribe the decision. (2004, 421)

I think agencies should be *required* to make decisions based on the best available science instead of merely *considering* the best available science in the decision-making process. If an agency is merely considering the best available science, I question the motives for their decisions. However, in some cases (e.g., de facto endangered species with precluded listings because of higher economic priorities), I suppose consideration of best available science is better than nothing. Even if a species isn't listed or immediately protected well, an attempt to gather best available science from the field and literature could still be helpful. Best available science also is not always great, and if that is the case, a goal of encouraging overall ecosystem integrity should be paramount.

Best available science should be used with care. For example, the 9<sup>th</sup> Circuit Court affirmed that the U.S. Fish and Wildlife Service failed to properly use science when they determined that the decline of the whitebark pine did not threaten Yellowstone grizzlies. This failure delayed delisting of an endangered wildlife population (*Greater Yellowstone Coalition, Inc. v. Christopher Servheen* 2011). During the George W. Bush Administration, politics was scientized (Doremus 2005). According to Doremus:

Political actors are often tempted to describe their decisions as scientific, but science is not, and cannot be, the primary driver of most regulatory decisions. The long history of scientific leadership within the conservation community has produced a sense in that community that emphasizing the scientific aspects of natural resource management necessarily works to their advantage. The current administration, however, has shown that the rhetoric of science can also be used defensively, as a barrier to regulation. (2005, 249)

Science is often used to provide credibility (or maybe just the *perception* of credibility) to agendas. Thus, various politicians have used science to further their goals, which do not always fit well with the core principles of the scientific method.

When large amounts of environmental fluctuation and scientific uncertainty are involved with a management situation, I think agencies should be open and transparent. This could enhance agencies'

credibility, even if initial admissions of ignorance make them look bad. Being upfront early could prevent bigger problems in the future if things are kept quiet and certain predictions end up being wrong.

Additionally, when there is a lot of change and uncertainty, I think decisions should be made based on three recommendations from Doremus (2004, 437).

1. Agencies should more forthrightly acknowledge the limits of science, including both the extent to which their decisions require nonscientific elements and the uncertainties in the data they use to make those decisions.
2. [Agencies] should do more to expand and update their knowledge base, and to put new knowledge to use.
3. [Agencies] should build public credibility and political acceptance of their decisions by, among other things, making greater efforts to overcome their project-specific myopia.

When little information is available, agencies should also embrace some of the basic principles of effective adaptive management: clearly identified goals, structured decision-making, careful monitoring, and an emphasis on learning while doing (Nie and Schultz 2011; Nie 2012).

### **3) Land and Ecosystem Protection Strategies**

Using more traditional regulation (laws, codes, fines, etc.) and paying to protect natural resources (land acquisition, conservation easements, ecosystem service payments, etc.) can both be effective land management strategies. However, these strategies have their own strengths and weaknesses (Echeverria and Pidot 2009; Nie 2008). The payment and regulation strategies for land and ecosystem protection can complement each other and work at cross-purposes. Regarding striking an appropriate balance between regulating and paying to protect the land, I think both approaches should heavily complement each other when practical and be made more fair and effective.

Echeverria and Pidot are strong proponents of using regulation instead of payment. They offer a list (excerpted below) of strengths regulatory approaches could provide (2009, 10878).

- Reasonable regulation is designed to establish a common baseline of combined landowner protection and responsibility.
- Reasonable regulation is inherently fair, insofar as it provides legally and socially justifiable protection for the community, including for most property owners, while not placing unreasonable burdens on a landowner singled-out for special treatment.

- Regulation is readily capable of overcoming the holdout problem; indeed, that is its design and purpose.
- Regulatory decisionmaking, by law, is a process that is publicly transparent, accountable, and often planning-based.
- Regulation avoids the moral hazard problem by discouraging investments that create conflicts with land conservation objectives.
- Regulation, when applied comprehensively, tends to create more reciprocal benefits for landowners than relatively scattershot, voluntary payment programs.
- Regulation is adaptable in addressing uncertain and changing resource, land protection, and community needs.

Essentially, Echeverria and Pidot argue that regulation is fair, flexible, and can be effective at consistent enforcement across a variety of scales and circumstances (2009). However, regulation can have weaknesses (Nie 2008).

Litigation is one of the most common ways environmental regulations are enforced. Litigation provides regulation with strengths *and* weaknesses (Nie 2008). According to Nie: “Governmental regulation is widely criticized as ineffectual, inefficient, and self-defeating, and the use of litigation by conservationists has been widely disparaged by academics, interest groups, and political decision makers, whom often favor less adversarial approaches to resource management” (2008, 140).

Nie states that “the judicial role is to ensure that the promise of legislation becomes reality” (2008, 141). Thanks to the Administrative Procedures Act (APA) of 1946, the judiciary can evaluate agency actions to determine if they are “arbitrary, capricious, an abuse of discretion or otherwise not in accordance with law” (Nie 2008, 141). This can be a significant strength for regulation because it helps ensure enforcement (Nie 2008).

The citizen suit provisions of many environmental laws also illustrate litigation as a strength of regulation. Various groups and private individuals can legally challenge government laws that they question. Litigation can help safeguard regulatory justice when legislative and executive bureaucracies are corrupted with special interests (Nie 2008). Litigation can also result in “decisions, injunctions, and remands” that “can be an effective way to force bureaucratic change, set agendas, shape public opinion,

and help draw attention to issues (Nie 2008, 143). Nie adds that litigation can also slow “things down long enough so that other offensive forces can be mobilized. This is the history of many federal wilderness areas for example: litigation stopped proposed development long enough that Congress had a chance to protect these places legislatively” (2008, 143).

Although litigation offers regulation numerous strengths, it can also provide weaknesses. Litigation can spark backlash from opposing forces and contribute to detrimental political narratives aimed at weakening regulation (Nie 2008). According to Nie, “there has been a concerted effort to frame conservationists as ‘obstructionists’ who serially abuse the judicial system. The political implications of such framing are serious, as policy solutions follow problem definitions” (2008, 144). Thus, anger over frequent litigation can help solidify a narrative where litigants are problem-makers, and policy “solutions” could then follow that focus on weakening litigation and regulation (Nie 2008). Regarding recent efforts to undermine litigious enforcement, Nie mentions both “SLAPP suits (strategic lawsuits against public participation) initiated by industry, developers, and federal land users” and “the use of congressional policy riders exempting various programs and projects from judicial review” (2008, 144). The government’s use of eminent domain as regulation measure to protect land—something encouraged by Echeverria and Pidot (2009)—could also produce severe political backlash.

Public agencies’ attitudes toward litigation present another weakness of litigation in the context of regulation. Agencies have clearly stated their negative views regarding litigation-based regulation that they stress threatens the efficacy of their land management and administration efforts (Nie 2008). For example, Nie remarks that “the U.S. Forest Service . . . argues that administrative appeals and litigation . . . pose a challenge to forest health and restoration goals (2008, 144). The Forest Service has been so adversarial to litigation-based regulation that they even proposed 2007 planning regulations that “remove[d] some of the most substantive standards in place since 1982, like the enforceable ‘viable populations’ of wildlife standard” (2008, 144).

The attitude of the Forest Service during the George W. Bush Administration (described above) highlights another weakness/strength of regulation (Nie 2008). Regulation can be adaptable, which can be

a strength (Echeverria and Pidot 2009). Echeverria and Pidot note that “regulations can be changed with needs over time” (2009, 10873). However, that change might not always be in the best interest of the public or natural resources. Thus, that factor can be a weakness of regulation (Nie 2008). Politics and administration turnover can play a big role in just how regulations are changed over time. The 2001-2008 Bush Administration provides many examples of federal powers changing natural resource regulations in efforts to weaken them (Nie 2008). According to Nie, “regulatory changes [were] initiated at the Department of Interior, including a streamlining of NEPA, expediting oil and gas exploration and development on public lands, revising environmental regulations pertaining to hardrock mining, and a controversial rewriting of federal grazing regulations, among other significant developments” (2008, 144). According to some legal scholars, under the Bush Administration, “program after program [related to environmental regulation] has been weakened, shelved, derailed, under funded or unenforced” (Nie 2008, 145).

In addition to traditional regulations, payment is another common approach to protecting land and ecosystem services. The payment approach can involve buying land, establishing government-subsidized conservation easements, paying agricultural interests for conservation efforts, etc. As with the regulatory approach, the payment strategy provides an assortment of strengths and weaknesses (Echeverria and Pidot 2009).

The payment conservation strategy offers notable strengths. For example, thanks to IRS rules, conservation easements often protect land for perpetuity. Regarding protection timeframes, regulation can be more unpredictable and leave land more vulnerable over time. The payment approach can also achieve land protection in regions where effective regulation is not possible or would be especially harsh (Echeverria and Pidot 2009). Echeverria and Pidot explain another strength by mentioning that “conservation easements . . . can be tailored to each property more easily than regulatory policies, and thereby can maximize the owner’s economically productive use of the property while also achieving identified conservation goals” (2009, 10871).

Despite strengths, Echeverria and Pidot emphasize many weaknesses of the payment approach. They remark that “payment programs depend on voluntary landowner participation, and in the case of easement restrictions, typically involve self-selection by the landowner” (2009, 10871). This can be a weakness because various parties controlling land worthy of protection may not volunteer to conserve it—whether they are paid or not. Thus, compared to regulation, regarding what is protected, the payment method can be more unpredictable and inconsistent (Echeverria and Pidot 2009). Echeverria and Pidot point out that “under the payment-to-volunteers approach, holdouts can undermine the integrity and comprehensiveness of conservation efforts” (2009, 10871). Payment-based conservation can also result in inefficient distribution of land uses (Echeverria and Pidot 2009). Echeverria and Pidot explain.

Landowner-driven conservation easements may undermine public land use policies by preventing future development on lands that the community has or might have chosen for eventual growth through a community planning process. Unless focused on very high-value conservation areas, easements have the potential to produce leap-frog “green sprawl” that preserves relatively undistinguished land and disperses development away from concentrated areas where it might best occur in the future from an efficiency and community planning perspective. (2009, 10871)

Thus, easements can redistribute sprawl in ways that could be detrimental to ecological protection. Checkerboard conservation easements (perhaps with scenic outdoorsy amenities) could also increase the property value of adjacent developable lands and inadvertently encourage development (Echeverria and Pidot 2009).

Conservation easements and the payment approach also lack fairness and public input and can be costly to the public because of the tax-savings of easement holders and the costs of subsidies distributed to those who disproportionately benefit. For those with a perspective generally placing community values above those of the individual, these factors would be weaknesses of the payment strategy. However, for individuals with effective conservation plans and valuable land, these factors could be strengths. The IRS does not make conservation easement donations an audit priority, and in all states but Massachusetts, public review and approval of conservation easement proposals is not required. Private land trusts and individual landowners often form conservation easements (Echeverria and Pidot 2009).



The “moral hazard” issue with the payment approach fits with the theme of lack of fairness and is a weakness (Echeverria and Pidot 2009). Echeverria and Pidot explain by quoting Byrne: “If farmers are rewarded for not polluting the river, does it not give every farmer an incentive to become, or at least threaten to become, a polluter?” (2009, 10874). Echeverria and Pidot add:

The payment approach may encourage investment in environmentally sensitive areas, based on the expectation that government (or someone) will then pay the owner to avoid development. If private-property owners feel an entitlement to do whatever they want with their property, no amount of money will be sufficient to protect a community or state, much less the planet. (2009, 10874)

The payment and regulation strategies for land and ecosystem protection can complement each other and work at cross-purposes. Both approaches seek to protect natural resources (Echeverria and Pidot 2009). Nie illustrates this point: “While acquisition, for example, can undermine the regulatory approach, it can also help meet the goals and standards articulated in various environmental laws, thus actually enhancing regulatory efforts” (2008, 154).

In some cases, payment efforts could complement previously established regulation and vice-versa. For example, a farmer already following Clean Water Act regulations could put his land into a conservation easement or receive subsidies through the Conservation Reserve Program. However, payment and regulation could work against each other in the case of certain conservation easements. Most states do not require permanent conservation easements to be in accordance with local land management plans (Echeverria and Pidot 2009). Echeverria and Pidot theorize that “as a result, in most places conservation easements may place off-limits to development lands the community might wish . . . to see developed. In this way, regulations and private conservation efforts may work at cross-purposes . . .” (2009, 10873). The payment strategy can also displace regulation because once certain parties are used to getting paid, it can be politically unfeasible to go back to regulation. The “moral hazard” problem discussed earlier illustrates this factor (Echeverria and Pidot 2009).

Striking an appropriate balance between regulating and paying to protect the land and its ecosystem services is a complicated issue. I think both approaches should heavily complement each other when practical and be made more fair and effective. As Nie wisely remarks: “The challenge, really, is not

to pit environmental lawyers against land trusts and other conservation buyers; but rather to better coordinate the regulatory and acquisition approaches, to find synergies and added-values between them” (2008, 153).

One payment strategy I support (that can complement regulation and improve the payment approach in general) is that of paying for additionalities. According to Coelho and Patterson, “additionality is the extent to which the action (e.g., reforestation, forest thinning, erosion mitigation), market, and payment at hand, increases the provision of ecosystem services above and beyond that which would have been provisioned under a business as usual scenario” (2009, 1640). I think that non-paying regulation should be employed to keep entities from overtly putting human and ecosystem health at risk via pollution, erosion, habitat destruction, etc. However, if private landowners implement improvement projects that go well above compliance with important environmental regulations, payment is justified and can help encourage better land stewardship. Nonetheless, clear, key baselines should be established and met before additionality payments are awarded for ecosystem service enhancements. Unfortunately, establishing such baselines could be a daunting challenge with political maneuvering, funding deficiencies, and a need for much monitoring.

In the case of conservation easements, I do not think the payment approach should be weakened as much as Echeverria and Pidot would like. Conservation can continue to complement regulation for suitable land protection. As part of balancing payment approaches with regulation, I believe public review of conservation easements (a form of regulation) has validity, but I think it should be kept minimal. Private landowners should not be prevented from protecting their land if their community wants to develop it. If public review over easements increases, it should be at levels bigger than local communities. This could ensure fairness and less myopic conditions for the individual trying to secure an easement.

Regarding balance of regulation and payment, the moral hazards problem is significant and troublesome. Paying industries not to pollute should be reconsidered in some circumstances. Stricter regulation with more sticks than carrots could improve regulation’s efficacy. Making harsh examples via financially damaging punishment of especially egregious violators (e.g., coal mining companies that

pollute water) could cause industry and other violators to take notice and pay more attention to regulations because they could cause a real dent in a company's bottom line. With enough sticks, just avoiding a stick could provide the perception of a carrot in itself. However, harshening regulations could cause damaging backlash. Making harsh examples out of industries that suffer from notably low popularity among the public could be effective and help mitigate potential backlash.

Despite regulation's possible hammer-like strengths, I do not like its weaknesses related to flexibility. To make regulations more effective, they should be more binding and more immune to politics and changing presidential administrations. Creating such strong regulations is hindered by the big obstacles of: industry-friendly politicians, political gridlock, and flawed narratives about environmental regulation damaging the economy.

In general, for the purpose of protecting land and ecosystem services, I think regulation should be stronger, fairer, and harsher, and payment approaches should be fairer. However, both strategies should not be weakened and/or modified to the point where communities regularly have oppressive majority rule over individuals' progressive conservation desires. The approaches should also not be altered in ways that significantly encourage the moral hazards problem.

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Note: Information without citations is my own commentary from personal knowledge and was intentionally not cited.

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