

# TEACHING POLICY INSTRUMENT CHOICE IN ENVIRONMENTAL LAW: THE FIVE P'S

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Difficult choices lie at the heart of environmental law and policy. Should we reduce emissions of greenhouse gases? Should we protect a local population of endangered plants? Should we limit the catch in a fishery that seems in danger of collapsing? And if we take these actions, *how much* should we reduce the activity? Answering these questions is fascinating but no easy matter. It requires consideration of scientific, economic, legal, and political issues, not to mention the trade-offs that inevitably arise.

And even if we can agree that emissions of a particular pollutant are too high, that grazing levels of the local commons must be reduced, or that a local endangered species requires greater protection, a fundamental choice still remains: We need to decide how best to *achieve* these goals.

Put another way, even if we agree on our starting point and end point, we still need to determine which path should take us there. Reliance on regulatory mandates? Market instruments? Pilot projects or information generation? Implementing environmental policy is where the rubber meets the road, and it has provided some of the most innovative policy instruments in all of American law.

While environmental law may appear dauntingly complex, and on occasion truly is, it turns out that understanding instrument choice can be straightforward. Perhaps surprisingly, there are only five basic policy instruments in play, and these can be effectively taught through a simple framework known as “The Five P’s.”

Just as a complex sonata can be reduced to a small number of white and black piano keys, so can students’ mastery of the Five P’s allow them to identify the potential range of policy instruments at

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work in any statute. Despite their application across a dizzying range of situations, the basic environmental policy tools remain the same.

The “**Five P’s**” include **P**rescriptive Regulation, **P**roperty Rights, **P**enalties, **P**ayments, and **P**ersuasion. There will rarely be one best tool for a particular situation, and much of the challenge in instrument choice lies in identifying each instrument’s particular advantages and disadvantages.

The DELPF editors have kindly invited me to set out the Five P’s as a teaching tool for other instructors to consider. Easy to remember, over the years it has proven a user-friendly and effective approach in the classroom. In the sections below, I use the well-known Tragedy of the Commons as a shared example.<sup>1</sup>

### 1. **P**RESCRIPTIVE REGULATION<sup>2</sup>

Prescriptive regulations mandate what parties can and cannot do—*Thou Shalt* or *Thou Shalt Not*. This is both the most direct and the most common form of environmental law. In the context of overgrazing the commons, for example, the government might limit the number of sheep that may graze, or restrict grazing to a particular season or period of time.

We see prescriptive regulations at all levels of environmental governance—from hunting permits at the local level<sup>3</sup> and effluent limits under the Clean Water Act at the national level<sup>4</sup> to restrictions

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1. As legions of law students have learned, Garrett Hardin’s classic example of the tragedy of the commons is one of grazing sheep. In it, too many sheep are grazing on an open-access commons, and unless something is done, the grass will soon be overgrazed and *no* sheep will be able to feed on the commons. Individual incentives encourage rapid depletion of the resource to the detriment of all—hence the tragedy. Government intervention becomes necessary because the problems of hold-outs (parties that are not willing to cooperate), free riders (parties that will do nothing but benefit from others’ contributions), and collective action (the transaction costs from bringing multiple parties together to seek agreement) make it infeasible for individual shepherds to come together and agree on a solution. *See* Garrett Hardin, *The Tragedy of the Commons*, 162 *SCI.* 1243 (1968).

2. The following sections are adapted from JAMES SALZMAN & BARTON THOMPSON, *ENVIRONMENTAL LAW AND POLICY* 47–53 (3d ed. 2010).

3. *See, e.g.*, 4 *SANFORD, N.C. CODE OF ORDINANCES* art. I, § 4-15 (2010) (requiring hunters seeking to conduct “urban archery deer hunting” to “have in their possession a valid North Carolina Hunting License showing completion of a hunting safety course” and to “hunt from an elevated platform of at least ten feet above ground.”)

4. *See, e.g.*, 40 *C.F.R.* § 122.41(a)(1) (2011) (“The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act . . .”).

on foreign commerce in endangered species under the Convention on International Trade in Endangered Species.<sup>5</sup>

Also referred to as *command-and-control regulation*, prescriptive regulation can be very effective in mandating uniform compliance across all actors, preventing problems of hold-outs, free riders, and collective action. If implemented across a broad geographic area, it can also prevent a “race to the bottom,” in which regulated parties seek jurisdictions with less stringent requirements.<sup>6</sup>

There is considerable debate, however, over the efficiency of prescriptive regulations.<sup>7</sup> Economists, for example, often criticize them as inefficient and unwieldy. They argue that this approach provides little incentive for innovation because once the regulated party has satisfied the necessary requirement, the law creates no incentive to reduce harmful activities further. Once a company has reduced its emissions to the mandated limit of, for example, ten tons per year, there is no obvious benefit in further reducing emissions. Such regulations also tend to encourage reliance on traditional, proven control technologies rather than on pollution-prevention strategies and new technologies.<sup>8</sup> “So long as the regulations require use of Filter X, we’ve bought Filter X, and it’s working properly,” a plant manager might reason, “there’s no need to go further.”

It is important to note arguments that, by forcing better environmental performance, prescriptive regulations can actually increase efficiencies and productivity, often resulting in benefits to the company. Noted economist Michael Porter, for example, has argued that strict environmental regulation encourages production-

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5. Convention on International Trade in Endangered Species of Wild Fauna and Flora, art. II, § 4, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243.

6. See generally Kirsten H. Engel, *State Environmental Standard-Setting: Is There a “Race” and Is It “To the Bottom”?*, 48 HASTINGS L.J. 271 (1997) (defending the validity of the “race to the bottom” theory). But cf. Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race-to-the-bottom” Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992) (questioning the vitality of the race-to-the-bottom argument).

7. Compare Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1333 (1985) (“The present regulatory system wastes tens of billions of dollars every year, misdirects resources, stifles innovation, and spawns massive and often counterproductive litigation.”), with Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and “Fine-Tuning” Regulatory Reforms*, 37 STAN. L. REV. 1267, 1331 (1985) (“In light of the inefficiencies associated with command-and-control standards, one could not conclude that uniform treatments are invariably superior to individualized decisionmaking, but that the opposite generalization is equally untenable.”).

8. Cass R. Sunstein, *Paradoxes of the Regulatory State*, 57 U. CHI. L. REV. 407, 420–21 (1990).

process and design innovations.<sup>9</sup> These cost savings, Porter contends, can exceed both compliance and innovation costs, resulting in greater competitiveness.<sup>10</sup>

Two unstated assumptions behind prescriptive regulation merit mention. The first is that the regulator will set the standard at the proper level. This may not happen, either because of inadequate information or agency capture (a classic problem in the context of natural resources such as fish and timber, where industry pressure has led to overfishing and large-scale clearcutting).<sup>11</sup> The second assumption is that the regulator will be able to monitor compliance with the standard. Both impose administrative costs, which, as a result, can sometimes be a good deal higher for prescriptive regulation than for other policy instruments.

## 2. PROPERTY RIGHTS

A classic solution to the tragedy of the commons is to privatize the resource by creating property rights. Using our grazing example, instead of an open-access commons, assume the field has now been divided into square parcels of land and allocated to individual shepherds, including you. You now have the right to exclude everyone else's sheep from your parcel. Are you still as eager to overgraze as before?

All of a sudden, your previous incentive to consume the resource as fast as possible (before everyone else does) is no longer relevant. Instead, your interests are best served by carefully tending your part of the commons so it remains productive long into the future—so it is *sustainably managed*. You may well charge other shepherds to use your parcel, or even let them on for free, but you would do so only to the extent that the resource base remains intact and productive—that is, so long as the resource is not overgrazed. In financial terms, to maximize profits you will safeguard your asset over the longer term. The same should be true whether the property rights are vested in

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9. See Michael E. Porter & Claas van der Linde, *Toward a New Conception of the Environment-Competitiveness Relationship*, 9 J. ECON. PERSPECTIVES 97 (1995) (presenting examples of instances where “environmental innovation produces net benefits for private companies”).

10. *Id.* at 100 (“Thus the *net* cost of compliance can fall with stringency and may even turn into a net benefit.”).

11. JAMES RASBAND ET AL., *NATURAL RESOURCES LAW AND POLICY* 219–20 (2d ed. 2009).

individuals or in communities (as is the case in many indigenous cultures).

The Law of the Sea provides a classic example of a property rights approach at the international level. In part to strengthen the sustainable management of fisheries, coastal states were given control over resources in the seas up to 200 nautical miles off their coasts, in a new jurisdiction known as the Exclusive Economic Zone.<sup>12</sup> The global commons of the high seas was carved up, with countries given exclusive authority over the most productive areas off their coastlines.

Compared to prescriptive regulation, this approach should have lower administrative costs. The government simply creates the property rights, allocates them initially, and steps back, leaving future allocations to the market. A number of commentators have called for far greater reliance on property-rights approaches to environmental protection. Sometimes called “Free Market Environmentalism,” this strategy would privatize as many environmental resources as possible, based on the belief that markets provide better resource-allocation mechanisms than government regulators.<sup>13</sup>

Implicit in a property-rights approach is the importance of technology. To enforce your right to exclude, you need both to know someone is making use of your resource (an issue of monitoring capacity) and to have the ability to exclude others' use. As an example, consider the history of the American West and its iconic cattle drive, where thousands of cattle were driven across the landscape to the railroad terminus where they could be shipped to market. A staple of Western films, this practice endured for only a few decades. The invention of barbed wire enabled settlers for the first time to exclude cattle effectively and affordably from trespassing across their lands.<sup>14</sup> In a more modern context, decoders have allowed satellite television channels to privatize the airwave commons. Unless satellite-channel providers could exclude others' use by scrambling their signals, there would be no way for them to sell their product, since people could use it for free.

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12. United Nations Convention on the Law of the Sea, art. 57, Dec. 10, 1982, 1833 U.N.T.S. 397.

13. See generally TERRY L. ANDERSON & DONALD R. LEAL, FREE MARKET ENVIRONMENTALISM (rev. ed. 2001) (advocating for the use of markets and property rights to implement environmental policies).

14. See Bruce Yandle & Andrew P. Morris, *The Technologies of Property Rights: Choice Among Alternative Solutions to Tragedies of the Commons*, 28 ECOLOGY L.Q. 123, 131–32 (2001) (relaying the history of barbed wire as an important technology in enforcing property rights).

Despite the increasing interest and application of property-rights approaches to environmental protection, they face some significant obstacles. The first is that many environmental resources are not easily amenable to commodification. When resources have significant public-goods aspects (such as major watersheds or biodiversity), privatization might not lead to the most socially beneficial use of the land. Private-property owners typically value only those uses that provide monetary remuneration. In these cases, the important positive externalities will not be valued. Perhaps the new owners of the commons wish to use it for mini-golf while the sheep starve and people go hungry. If the government wants to ensure the important public goals of a secure food supply, conservation of rare biodiversity, or buffers against flooding, it may need to step in and restrict the use of the land. Property-rights advocates would generally approve of this sort of government restriction, it should be noted, so long as the government pays the property holders for the corresponding loss in value.

There may also be normative concerns that rub against privatization of national parks or other environmental amenities in the public domain. For example, the government could try to “privatize” wildlife by equipping each animal with a collar or tag that identifies its “owner.” As a result, though, collared wildlife would lose part of its “wildness,” the quality that gives it a unique and valuable identity.<sup>15</sup>

Practically, there also are difficult allocation issues for the initial privatization of environmental resources. Using the commons as an example, assume that the government has divided up the land into fifty separate parcels. Whom should be given title? Should the land be auctioned to the highest bidder? This could favor wealthier newcomers and corporate interests. To give more respect to traditional users, perhaps the allocation could be based on historic use or current levels of consumption? Yet this would put newcomers at a disadvantage and favor those who have been the most profligate in the past. If we cannot decide among these competing users, should we just have a random drawing? Any allocation mechanism will tend to favor some groups at the expense of others. Inevitably, who should

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15. See Holly Doremus, *Restoring Endangered Species: The Importance of Being Wild*, 23 HARV. ENVTL. L. REV. 1, 13 (1999) (“Wildness, understood as unpredictability or freedom from human control, imparts an aura that cannot be duplicated by captive species. That aura attracts and inspires us. It makes us care about wild places and wild creatures, and leads us to believe they merit special protection.”).

be favored comes down to a contentious political decision, with winners and losers.

#### A. *Tradable Permits*

Prescriptive regulations can be combined with property rights through the use of tradable permits in environmental markets. Here, property rights are created for *use* of the resource—for the right to graze sheep in a certain area, emit a ton of sulfur dioxide, or catch a lobster, for example. Trading systems use the market to make prescriptive regulation more efficient. The government decides how much of a harmful activity to permit (just as it would with prescriptive regulations), awards private rights to engage in the activity up to the regulatory cap, and then permits those rights to be traded. The market does not play a role in determining the overall level of environmental protection; that is the role of the regulatory regime.

To make this more concrete, imagine how a trading program would work with grazing on the commons. Policy-makers decide that the commons can sustain no more than 400 sheep grazing per year. The government therefore creates 400 permits, entitling the holder to graze one sheep for the calendar year listed on the permit. Unless the shepherd has a separate permit for each sheep grazing on the commons, she is breaking the law. The government then allocates the permits in some fashion (which, as noted above, will have significant distributional consequences) and lets trading commence. Those for whom grazing is most valuable will pay the highest price to buy the permits from those who value it less, ensuring that the commons is dedicated to the most valuable market use. If the cap is set appropriately, marketable permits achieve the same level of protection as command-and-control alternatives, but at a lower cost.

The tradable-permit approach has additional benefits in the pollution realm. By letting the market rather than regulators determine individual actors' emissions, profit-motivated agents who can control pollution at low cost can sell surplus allowances to higher-cost agents at a profit. This creates an incentive to *over-comply*—to reduce emissions even more than is necessary to comply with permit limits. Each polluter will weigh the marginal cost of abatement against the cost of buying credits and then make an efficient individual decision. If the market price for credits is high enough, pollution reduction can become a profit center in its own right.

Initially allocating permits presents a challenge for trading, just as it does for pure private-property approaches. Moreover, constructing smoothly functioning markets is not simple. There must be a well-defined marketplace and enough buyers and sellers to support an active market. There also must be an effective currency of trade, one that is fungible and that reflects the desired environmental quality. For example, it would be a stretch to consider allowing coastal developers in Florida to “trade” the wetland ecosystem services they eliminate (such as flood control or nutrient filtering) for phosphorous emissions reductions in Oregon.

Because the market decides where the allowances go after their initial allocation, there is a further challenge that harmful activities can be concentrated, creating local “hotspots” of pollution. This can become an environmental justice concern, for example, when allowances to emit hazardous air pollutants are concentrated in low-income communities.<sup>16</sup>

But where the environmental good (or bad, so to speak) can be captured in a measurable unit (whether that be tons of pollutant or kilos of fish), market service areas and participants are well-defined, and hotspots are not significant, trading programs have had demonstrable success in a variety of contexts, from fisheries to wetlands, increasing the efficiency and flexibility of prescriptive instruments.<sup>17</sup>

### 3. FINANCIAL PENALTIES

Short of banning an activity, the next most effective way to limit the behavior is to make it more expensive, whether through charges, taxes, or liability. By increasing the costs of polluting activities, such penalties discourage pollution and waste and force the polluter to bear the costs of her activities. To use economics language, the polluter internalizes the negative externalities of her behavior. Also known as a Pigouvian tax, this policy instrument ensures that each

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16. See Alice Kaswan, *Environmental Justice: Bridging the Gap Between Environmental Laws and “Justice”*, 47 AM. U. L. REV. 221, 230 (1997) (“[E]nvironmental justice concerns are raised by the disproportionate burden of environmental hazards or undesirable land uses borne by low-income and minority communities.”).

17. See, e.g., Alison Rieser, *Prescriptions for the Commons: Environmental Scholarship and the Fishing Quotas Debate*, 23 HARV. ENVTL. L. REV. 393, 395 (1999) (describing U.S. fisheries’ “experiments with exclusive property rights, in which fisheries are managed as closed systems through . . . perpetual harvesting rights known as individual transferable quotas (‘ITQs’)”); see also James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607, 614 (2000).



actor has a direct incentive to regulate her own behavior according to how valuable the polluting activities are.<sup>18</sup> In our commons example, shepherds might be charged a fee per sheep for the right to graze each day. The fee could be shifted up or down, depending on the desired level of grazing. Carbon taxes, much discussed in the press at the moment, are a topical example of this approach.

In theory, financial penalties offer an attractive policy instrument. One could levy the penalty on pollution (whether kilos of emissions or solid waste), on the feedstock (for example, a carbon tax on oil or coal), or on the final product (for example, a gas-guzzling car), but there are two practical obstacles. The first lies in getting the price right. Markets are efficient when the prices for goods accurately reflect their full environmental and social cost. A key aspect in internalizing externalities, then, is valuation. If one agrees that externalities should be internalized—that polluters should pay—the obvious question is “how much”? For example, we might all agree that CFC emissions harm the ozone layer, but how much monetary harm is caused by releasing a kilogram of CFCs? One dollar? One penny? One-hundredth of a penny? Because there is no market for the ozone layer, these values can only be estimated. Or perhaps it may be sufficient to focus, instead, on the level of penalty that changes behavior.

The second challenge is political. As the battles in Congress over the budget have made clear, increasing taxes is never easy, and environmental charges seem to be harder still. President Clinton proposed a carbon tax at the start of his presidency, but the proposal quickly died in a hailstorm of political opposition.<sup>19</sup> This is not to say that environmental taxes are never passed. They have become common in Europe and may be found in the United States; for example, on CFCs. But levying them at charges high enough to

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18. In economic terms, the penalty should be set so it equals the marginal environmental damage at the socially optimal level of pollution. *See generally* A.C. PIGOU, *THE ECONOMICS OF WELFARE* 172–203 (4th ed. 1932) (discussing “incidental uncharged disservices,” now called negative externalities, in chapter on marginal social net product); *see also* William J. Baumol, *On Taxation and the Control of Externalities*, 62 *AM. ECON. REV.* 307, 308–09 (1972) (explaining the reciprocal nature of social costs). For a discussion of Pigouvian Tax Theory and control of externalities, *see* WILLIAM J. BAUMOL & WALLACE E. OATES, *THE THEORY OF ENVIRONMENTAL POLICY* 21–23 (2d ed. 1988).

19. *See Clinton Gives Carbon Tax Thumbs Down*, *COAL & SYNFUELS TECH.*, Feb. 22, 1993, at 2 (citing public criticism of President Clinton’s carbon tax proposal); Thomas P. Lyon, *‘Green’ Firms Bearing Gifts*, 26 *REG.* 36, 39 (noting that “political resistance was fast and powerful” to carbon tax proposals).

influence behavior significantly is easier said than done. In many cases, the charges have been intended more for revenue-raising than for serious behavior modification.

#### 4. FINANCIAL PAYMENTS

As noted above, government can discourage certain polluting activities through penalties or, equally, it can use subsidies to encourage beneficial activities. Just as government can use penalties to capture negative externalities and make bad activities more expensive, it can use payments to capture positive externalities and make good activities less expensive. In our commons, shepherds might be paid \$100 *not* to graze one of their sheep for a year. The shepherd is effectively being paid for not exercising her right to graze. In one example of this approach, California has embarked on a major program of tax benefits for property owners who install solar panels.<sup>20</sup> Paying “cash for clunkers” to get high-polluting older cars off the road is another example,<sup>21</sup> as is paying agricultural subsidies to farmers for setting aside cropland to prevent erosion or provide wildlife habitat.<sup>22</sup> This is the approach behind the popular strategy of payments for ecosystem services.<sup>23</sup>

Not all payment schemes benefit the environment, however. Quite the opposite, since many government subsidies actually encourage harmful activities. The *Green Scissors Report*, published annually by an alliance of environmental and conservative groups, identifies billions of dollars in subsidies whose elimination would both help the environment and reduce the federal budget deficit (such as subsidies for building logging roads on public lands).<sup>24</sup> In certain respects, perverse subsidies cost us twice—first, when we pay the initial tax to raise the funds needed for the subsidy and second, when we suffer the environmental damage encouraged by the subsidy.

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20. See David R. Baker, *State's Systems Top 1 Gigawatt Level*, S.F. CHRON., Jan. 11, 2013, at C1 (“California’s rebate program for businesses and homeowners who install solar panels has now funded enough systems to generate 1 gigawatt of electricity . . .”).

21. See e.g., ‘Cash for Clunkers’ Runs on Empty, STAR-NEWS, Aug. 1, 2009, at 1A (noting failure of federal “cash for clunkers” program).

22. See 16 U.S.C. §§ 3831–3835a (2012) (codifying agricultural subsidies).

23. See, e.g., James Salzman, *Creating Markets for Ecosystem Services: Notes from the Field*, 80 N.Y.U. L. REV. 870 (2005); J.B. RUHL ET AL., *THE LAW AND POLICY OF ECOSYSTEM SERVICES* (2007).

24. GREEN SCISSORS, <http://www.greenscissors.com> (last visited Jan. 19, 2013).

## 5. PERSUASION

If prescriptive regulation and market instruments represent “hard” regulatory approaches, then a softer approach may be found in laws requiring information production and dissemination. Sometimes described as *reflexive laws*, the theory behind such approaches is that the government can change people’s behavior by forcing them to think about the harm they are causing and by publicizing that harm.<sup>25</sup> In the context of the commons, the government might require shepherds to record and publish the number of sheep they graze, the amount of forage the sheep eat, or the days before the commons can no longer support grazing. The government also may try to educate the shepherds with brochures or presentations on the causes and dangers of overgrazing, or may sponsor a pilot project that demonstrates more effective ways to manage the commons.

The best-known example in the United States would be the environmental impact assessments required under the National Environmental Policy Act. Requirements that agencies or developers prepare an environmental assessment for activities with significant impacts may be found all over the globe at local, national, and international levels.<sup>26</sup>

Information-based approaches are often used when there is inadequate political support to impose market or regulatory instruments, or when such instruments are ill-suited to the problem. In a number of cases, particularly in the case of pollution, requirements to collect and disseminate information have led to significant changes in the behavior of regulated parties, even in the absence of overt prescriptive regulation. The Toxic Release Inventory, for example, simply requires manufacturers who emit a number of substances to monitor, measure, and publicly report their annual emissions.<sup>27</sup> Whether because of “naming-and-shaming,” measuring emissions for the first time, or heightened consciousness, this persuasive instrument has led to significant reductions in emissions without the threat of fines or

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25. See generally Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV 1227 (1995).

26. See, e.g., California Environmental Quality Act, CAL. PUB. RES. CODE §§ 21000–21189.3 (West 2013) (local level); National Environmental Policy Act, 42 U.S.C. §§ 4321–4370(h) (2012) (national level); Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, 1989 U.N.T.S. 309 (international level).

27. 42 U.S.C. § 11023 (2013); see also *Toxics Release Inventory (TRI) Program*, ENVTL. PROT. AGENCY, <http://www.epa.gov/tri/> (last visited Mar. 2, 2013) (featuring searchable database of facilities disposing of toxic chemicals).

penalties. Persuasion instruments can also be used to “nudge” behavior toward energy efficiency, for example, by providing smiley-face encouragement on utility bills for better conservation than your neighbors.<sup>28</sup>

### PUTTING THE TOOLKIT TO WORK

While the examples above have used the case of grazing on the commons, one can apply this toolkit of regulatory instruments to virtually any environmental problem.<sup>29</sup> Taking climate change as an example, consider the range of legal instruments you could use to reduce greenhouse gas emissions, as well as their potential shortcomings. If you were head of the EPA, what would your proposed greenhouse gas reduction strategy look like?

Prescriptive regulation could take the form of emission controls, limiting the amount of greenhouse gases a source may emit. Regulations might mandate the use of certain pollution control technologies or other process design requirements (often referred to as best available technology or BAT).<sup>30</sup>

Financial penalties seem like a good potential fit as well. You could levy emission fees based on the amount of greenhouse gases emitted. These would encourage each actor to look for ways to reduce her emissions and to change her behavior according to how valuable the polluting activities are.<sup>31</sup> Conversely, you could rely on payments, providing tax credits for research and development on energy efficient technologies or tax deductions for energy-efficient purchases. You could even remove subsidies for oil and coal exploration.

Relying on property rights, you could establish a trading market for greenhouse gases. In the typical *cap-and-trade-program* for

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28. Mark Joseph Stern, *A Little Guilt, A Lot of Energy Savings: How Smiley Faces and Peer Pressure Can Save Money—and the Planet*, SLATE (Mar. 1, 2013), [http://www.slate.com/articles/technology/the\\_efficient\\_planet/2013/03/opower\\_using\\_smiley\\_faces\\_and\\_peer\\_pressure\\_to\\_save\\_the\\_planet.html](http://www.slate.com/articles/technology/the_efficient_planet/2013/03/opower_using_smiley_faces_and_peer_pressure_to_save_the_planet.html); RICHARD THALER & CASS SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* (2008).

29. Professor Melinda Benson, who used this model in class, has suggested a sixth P-Protest. It is not a likely strategy for governmental actions, but is a nice extension to non-state actors. Email from Melinda Harm Benson, Assistant Professor, University of New Mexico, to Author (Aug. 7, 2012) (on file with author).

30. *See, e.g.*, Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010) (to be codified at 40 C.F.R. pts. 51, 52, 70, 71) (subjecting certain stationary sources to best available control technology standards).

31. *See, e.g.*, Elizabeth Rosenthal, *Carbon Taxes Make Ireland Even Greener*, N.Y. TIMES, Dec. 28, 2012, at A1 (highlighting ways that Irish citizens have changed their environmental behavior as a result of taxes on fossil fuels).

pollution, policymakers would establish a socially desirable level of aggregate greenhouse gas emissions, determine a formula for initial allocation of emissions among sources, and issue or auction permits to members of the regulated community that entitle each bearer to emit a given quantity of that pollutant. The political battle would focus on the overall cap, how allocations are distributed, and which emitters are included in the trading market.<sup>32</sup>

Finally, persuasion through information disclosure might work well. You could, for example, require firms to collect and publish data on their greenhouse gas emissions on the web. Similarly, you might create an *eco-labeling* program, providing a seal of approval for those companies or goods that achieve significant greenhouse gas reductions.<sup>33</sup> The goal behind such programs is to provide green consumers with reliable information on which to base their purchases and favor environmentally friendlier companies in the marketplace. You could also promote websites that allow people to calculate their carbon footprint.<sup>34</sup>

The Five P's could also apply to conserving an endangered species, perhaps a rare bird. Prescriptive regulation might ban actions that kill or harm the birds, or degrade their habitat.<sup>35</sup> Property rights could be used to create a trading program where breeding pairs became the currency of exchange—landowners who modified their habitat so it was less attractive to the birds could mitigate their actions by purchasing credit for breeding pairs that had been established by entrepreneurs in other areas. This “species banking” could create an incentive for entrepreneurs to convert farmland, for example, into endangered species habitat.<sup>36</sup> Financial penalties could be imposed on landowners who make habitat less attractive to local endangered species. Conversely, payments could be made to landowners who improve

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32. See, e.g., American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009) (as passed by House of Representatives, June 26, 2009) (proposing emissions trading program); see also John M. Broder, *House Passes Bill to Address Threat of Climate Change*, N.Y. TIMES, June 27, 2009, at A1 (outlining politically disputed portions of Waxman-Markey legislation).

33. See, e.g., ECOLABEL INDEX, <http://www.ecolabelindex.com> (last visited Jan. 19, 2013) (providing global ecolabel information to “increas[e] transparency and help[] buyers and sellers use them more effectively”).

34. See, e.g., *What's My Carbon Footprint?*, NATURE CONSERVANCY, <http://www.nature.org/greenliving/carboncalculator/index.htm> (last visited Jan. 19, 2013) (allowing users to calculate their carbon footprints).

35. See 16 U.S.C. § 1538 (2012) (making it unlawful to “take” any endangered species).

36. See *About Us*, SPECIESBANKING.COM, [http://global.speciesbanking.com/pages/about\\_us](http://global.speciesbanking.com/pages/about_us) (last visited Feb. 3, 2013) (explaining concept of species banking).

habitat to make it more attractive to breeding pairs. And persuasion could be used by highlighting the natural heritage of local biodiversity.

To be sure, this framework cannot perfectly capture the dizzying range of all environmental policy. The vast majority of instruments, however, do fit easily within the Five P's framework. As a result, a teacher can easily share the broad range of policy options with students. They, in turn, can then assess which instrument or combination of instruments best fits the particular situation. Using the Five P's approach in the classroom can make the taxonomy, relative strengths, and comparative weaknesses of instrument choices clear to students.

Based on the experience of the DELPF editors and my former students over the years, the details of Section 9 of the Endangered Species Act or the liability requirements under Superfund fade away soon after the course ends. The Five P's, though, have stayed with them. If their experience is any guide, the Five P's framework can strengthen students' understanding of environmental law and policy in a simple manner they are likely to remember long after their final exam.