ENVIRONMENTAL TAXATION IN THE UNITED STATES: THE LONG VIEW

by
Janet E. Milne[*]

The United States has a four-decade history of using the tax code to protect the environment. After reviewing the vocabulary of environmental tax policy, this Article explores the lessons one can learn about the design of environmental tax instruments from the federal government's experience, highlighting the tax on ozone-depleting chemicals, the gas guzzler tax, President Clinton's attempt to enact a broad-based energy tax, Superfund taxes, and the petroleum tax that funds the Oil Spill Liability Trust Fund. It underscores the federal government's recent reliance on tax expenditures, not tax increases, to improve energy efficiency and renewable energy. It concludes with thoughts about prospects for the future, including the repeal of environmentally damaging subsidies and the role of environmental tax policy in the portfolio of environmental instruments. By taking the long view, this Article does not provide a full inventory of federal environmental tax measures but instead identifies perspectives that might be relevant to the future development of environmental tax policy at the federal or state level, or in other countries.

[*] Professor of Law and Director of the Environmental Tax Policy Institute, Vermont Law School. A modified version of this Article will appear in ENVIRONMENTAL TAXATION IN EAST ASIA (Richard Cullen et al. eds., Edward Elgar Publishing Ltd., forthcoming 2011).

I. INTRODUCTION

> *The fight against pollution . . . is not a search for villains. For the most part, the damage done to our environment has not been the work of evil men, nor has it been the inevitable by-product either of advancing technology or of growing population. It results not so much from choices made, as from choices neglected; not from malign intention, but from failure to take into account the full consequences of our actions. Quite inadvertently, by ignoring environmental costs we have given an economic advantage to the careless polluter over his more conscientious rival.*
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> *President Richard M. Nixon, 1970*[1]

In 1920, A.C. Pigou quietly launched the effort to use tax systems to address environmental problems with his statement that it is "possible for the State, if it so chooses, to remove the divergence in any field [between trade and social net product] by 'extraordinary encouragements' or 'extraordinary restraints' upon investments in that field."[2] Although not confined to environmental problems, his concept has become synonymous with the principle of internalizing environmental externalities. Taxes that increase the cost of environmentally damaging activities can serve as "extraordinary restraints" that bring the external environmental costs back into the private sector's calculations. They can also reflect the polluter-pays principle[3] and the concept of least-cost abatement that evolved later in the 20th century.[4] On the other side of

[1] Special Message to the Congress on Environmental Quality, PUB. PAPERS 96, 96 (Feb. 10, 1970).

[2] A.C. PIGOU, THE ECONOMICS OF WELFARE 168 (1920).

[3] *See* EUROPEAN ENV'T AGENCY, USING THE MARKET FOR COST-EFFECTIVE ENVIRONMENTAL POLICY: MARKET-BASED INSTRUMENTS IN EUROPE 13 (2006), *available at* http://www.eea.europa.eu/publications/eea_report_2006_1; ORG. FOR ECON. CO-OPERATION & DEV., THE POLLUTER PAYS PRINCIPLE 6 (1975).

[4] STANLEY S. SURREY, PATHWAYS TO TAX REFORM: THE CONCEPT OF TAX EXPENDITURES 156 (1973); *see also* William J. Baumol & Wallace E. Oates, *The Use of Standards and Prices for Protection of the Environment*, 73 SWEDISH J. ECON. 42, 52–54 (1971) (showing how taxes can achieve least-cost abatement). For a discussion of these theories and how they affect the design of environmental taxes, see Janet E. Milne, *Environmental Taxation: Why Theory Matters*, *in* 1 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 3, 3–26 (Janet Milne et al. eds., 2003) [hereinafter Milne, *Environmental Taxation*].

Pigou's coin, environmental tax expenditures can serve as "extraordinary encouragements" for environmentally positive activities that otherwise might not occur, allowing society as the beneficiary to assume some of the cost.[5]

The United States government has a long history of exploring the imposition of environmental taxes on environmentally damaging activities. When the United States placed environmental protection on its policy agenda in the late 1960s and early 1970s, U.S. scholars and policy analysts were global leaders in exploring how Pigou's theory might be translated into environmental taxes designed to address specific environmental problems.[6] In the early 1970s, President Nixon proposed taxes on lead additives to gasoline and sulfur dioxide emissions,[7] and although unsuccessful, his efforts represented one of the early attempts to try to harness tax systems for environmental protection.

Later measures were more successful. For example, in the wake of the Oil Embargo, Congress enacted a tax on gas-guzzling cars in 1978,[8] and two years later a tax on chemicals to finance the Superfund, a fund dedicated to cleaning up hazardous waste sites.[9] Following the negotiation of the Montreal Protocol in the late 1980s, Congress imposed a tax on ozone-depleting chemicals,[10] and the idea of a broad-based energy tax was quietly, but seriously, discussed during negotiations over deficit reduction between Congress and the administration of President George Herbert Walker Bush in 1990. In 1993, discussions went public

[5] When describing extraordinary encouragements, Pigou referred to "bounties," which took the form of a variety of government support programs. PIGOU, *supra* note 2, at 169. The same concept would seem to apply to tax expenditures.

[6] *See, e.g.*, *Tax Recommendations of the President: Hearings Before the H. Comm. on Ways and Means*, 91st Cong. 369–79 (1970) (containing written testimony of the Rand Corp. proposing a smog tax); ALLEN V. KNEESE & BLAIR T. BOWER, MANAGING WATER QUALITY: ECONOMICS, TECHNOLOGY, INSTITUTIONS 315–18 (1968) (assessing water pollution charges); ALLEN V. KNEESE & CHARLES L. SCHULTZE, POLLUTION, PRICES, AND PUBLIC POLICY 87–104 (1975) (discussing water effluent charges, a smog tax, and President Nixon's proposal for a sulfur oxides tax); Baumol & Oates, *supra* note 4 (proposing a standards-based tax rate); Larry E. Ruff, *The Economic Common Sense of Pollution*, PUB. INTEREST, Spring 1970, at 69, *reprinted in* ECONOMICS OF THE ENVIRONMENT 20 (Robert Dorfman & Nancy S. Dorfman eds., 1993) (exploring how to set prices on pollution).

[7] *See* WILLIAM A. IRWIN & RICHARD A. LIROFF, ENVTL. PROT. AGENCY, EPA-600/5-74-026, ECONOMIC DISINCENTIVES FOR POLLUTION CONTROL: LEGAL, POLITICAL AND ADMINISTRATIVE DIMENSIONS 126–39 (1974); SURREY, *supra* note 4, at 164.

[8] Energy Tax Act of 1978, Pub. L. No. 95-618, § 201, 92 Stat. 3174, 3180 (codified at I.R.C. § 4064 (2006)).

[9] Hazardous Substance Response Revenue Act of 1980, Pub. L. No. 96-510, § 201, 94 Stat. 2767, 2796 (codified at I.R.C. §§ 4661–4662 (2006)).

[10] Revenue Reconciliation Act of 1989, Pub. L. No. 101-239, § 7506(a), 103 Stat. 2106, 2364 (codified at I.R.C. §§ 4681–4682 (2006)).

when President Clinton proposed a broad-based energy tax,[11] which generated intense national debate but ultimately failed to gather sufficient support for passage.

Since 1993, Congress has not seriously debated any significant new environmental taxes. Attention has turned instead to tax expenditures that reduce the cost of environmentally positive choices, building on a history of using environmental tax expenditures that started in the late 1960s. The federal economic stimulus legislation in late 2008 and early 2009 contained almost $80 billion in tax expenditures and direct spending for green investments.[12] The option of repealing tax expenditures for the oil and gas industry has also recently been placed on the table.

While this Article cannot provide a comprehensive inventory of environmental tax measures in the United States, it selects examples that illustrate lessons one might learn from the U.S. experience. It focuses primarily on federal measures and explores the use of both environmental taxes and environmental tax expenditures. After briefly discussing the definition of key terms in environmental tax policy and considering institutional questions that can influence the use of environmental taxation instruments (Parts II and III), the Article highlights lessons one can learn from the U.S. experience about the design features of environmental taxes—the choice of the tax base and tax rate (Part IV) and the use of the tax revenue (Part V). It then turns to the tax expenditure side of the equation, reviewing the extent to which the United States has used tax expenditures and their budgetary context (Part VI). It concludes with thoughts about the future use of environmental tax measures in the United States (Part VII) and themes that may be relevant to other countries as they consider the role of environmental taxation in their environmental portfolio (Part VIII).

[11] U.S. DEP'T OF TREASURY, OFFICE OF TAX POLICY, SPECIFICATIONS OF THE ADMINISTRATION'S MODIFIED BTU ENERGY TAX PROPOSAL, *reprinted in* TAX NOTES TODAY, April 6, 1993, *available at* LEXIS 93 TNT 74-11.

[12] *See* Janet E. Milne, *A Dark Recession, Red Ink and the Green Economy: Climate Change Tax Incentives in the US Economic Stimulus Legislation*, *in* 8 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 431, 433–34 (Claudia Dias Soares et al. eds., 2010) [hereinafter Milne, *A Dark Recession*]. For details about the cost of the tax expenditures over a ten-year period, see STAFF OF J. COMM. ON TAX'N, 111TH CONG., ESTIMATED BUDGET EFFECTS OF THE REVENUE PROVISIONS CONTAINED IN THE CONFERENCE AGREEMENT ON H.R. 1, THE "AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009," at 3 (Comm. Print 2009), and STAFF OF J. COMM. ON TAX'N, 110TH CONG., ESTIMATED BUDGET EFFECTS OF THE TAX PROVISIONS CONTAINED IN AN AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 1424, SCHEDULED FOR CONSIDERATION ON THE SENATE FLOOR ON OCT. 1, 2008, at 3–5 (Comm. Print 2008).

II. THE VOCABULARY OF ENVIRONMENTAL TAX POLICY

Before delving into the U.S. experience with environmental taxation, it is useful to briefly explore the vocabulary of environmental taxation and related tax and environmental initiatives. Although Pigou established the theoretical ideal for environmental taxes, few environmental taxes have succeeded in precisely internalizing the environmental costs or benefits of activities or products. One is usually dealing with the second-best situation, raising the issue of what constitutes an environmental tax. The Organisation for Economic Co-operation and Development (OECD) has chosen the term "environmentally related tax" and a definition that emphasizes the nature of what is being taxed and whether the taxpayer is receiving any benefit in return. It defines an environmentally related tax as: "any compulsory, *unrequited* payment to general government levied on tax-bases deemed to be of particular environmental relevance. Taxes are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments."[13] By accentuating the nature of the tax base and the fact that the payment is not a charge for services, the definition sidesteps the question of the extent of the environmental impact and whether any environmental impact flows from the imposition of the tax or the use of its revenue. This Article adopts this definition, but out of convenience refers to "environmental tax" rather than "environmentally related tax." It also uses "environmental tax expenditure" to refer to tax benefits provided for environmentally positive activities, and it uses "environmental taxation" to encompass both environmental taxes and environmental tax expenditures.

Environmental taxation lies within the sphere of economic, or "market-based," instruments used for environmental protection.[14] The distinguishing feature of market-based approaches is that their implementation depends on harnessing private-sector financial calculations in the market on a day-to-day basis. Unlike command-and-control regulation, they do not require any one player to undertake a specific action; the choice is left to each player's market decision. Market-based economic instruments generally fall into two categories: price signals (tax-based price signals, environmental user fees or charges, tax expenditures, and other forms of government subsidy) and property-

[13] ORG. FOR ECON. CO-OPERATION & DEV., ENVIRONMENTALLY RELATED TAXES IN OECD COUNTRIES: ISSUES AND STRATEGIES 15 (2001).

[14] For a general discussion of economic instruments, see ORG. FOR ECON. CO-OPERATION & DEV., EVALUATING ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL POLICY 15–16 (1997). The OECD includes deposit-refund schemes which, for purposes of simplicity, this Article does not discuss.

based regimes (most notably permit trading regimes).[15] These two categories operate very differently, given the price and property distinction. The price signals involve one-on-one transactions between the private sector player—the taxpayer or fee-payer on the one hand, and the government on the other hand. The payment to the government or, in the case of tax expenditures or other subsidies, the claim of a benefit from the government is the operative mechanism. In the case of property-based regimes, such as permit trading, multiple parties can be involved. The government issues permits (the property-like interests it has created) to match the desired level of permitted pollution for any given year. Players acquire the permits, and they may sell the permits or keep them. Transactions then proceed until the permits in effect are returned to the government at the end of the year to match the polluters' allowed levels of emissions. Environmental taxes and permit regimes may coexist, as has happened with U.S. control of ozone-depleting chemicals, where both an environmental tax and a trading regime applied to the same chemicals.[16] Figure 1 highlights the role of market-based tax instruments in relation to other market-based approaches.

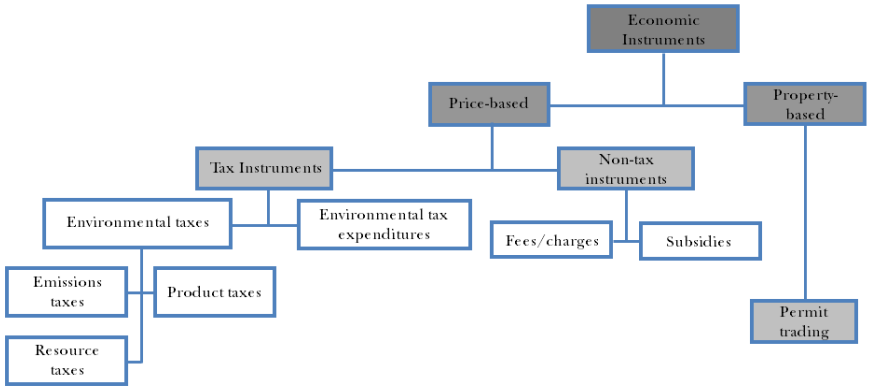

FIGURE 1: An Overview of Economic Instruments for Environmental Protection Highlighting the Role of Taxation

Price-based instruments are designed to achieve an environmental benefit, but they may also be part of larger fiscal policy packages. A number of European countries have engaged in "environmental tax reform" (also known as green tax reform or ecological tax reform),

[15] The price-versus-property distinction looks at the fundamental nature of the instrument the government is using, but it is important to remember that properly designed property-based regimes nonetheless will affect prices.

[16] David Harrison, Jr., *Tradable Permits for Air Pollution Control: The U.S. Experience*, *in* ORG. FOR ECON. CO-OPERATION & DEV., IMPLEMENTING DOMESTIC TRADABLE PERMITS FOR ENVIRONMENTAL PROTECTION 23, 31–33 (1999).

whereby the revenues from environmental taxes, in particular broad-based energy taxes, have been used to reduce other tax burdens, such as taxes on labor.[17] This revenue-neutral approach is sometimes characterized as providing a "double dividend"[18]—the first dividend of environmental protection and the second dividend of the economic benefits of tax reform. The United States has not yet engaged in environmental tax reform, but proposals have been introduced in Congress.[19] Although auctioned tradable permits fall outside the rubric of environmental tax reform, they could generate substantial new revenue for the government and similarly could be used to finance revenue-neutral tax reform.

The concept of "environmental fiscal reform" views the reform of price signals more broadly.[20] It can encompass environmental tax reform, but adds the question of repealing environmentally damaging tax expenditures, such as tax subsidies for the oil and gas industry, as well as non-tax governmental subsidies. It can also encourage the restructuring of fees and charges to improve their environmental effectiveness. In other words, it looks at a government's fiscal picture broadly to reform the fiscal flow of revenues in ways that will enhance environmental protection. Although the United States has not yet engaged in environmental tax reform, it has supported the repeal of environmentally damaging tax subsidies,[21] taking it part way down the road toward environmental fiscal reform.

Figure 2 provides a visual picture of the distinction between environmental tax reform and environmental fiscal reform, and the role of tax instruments in each. The placement of environmental tax expenditures within fiscal reform rather than environmental tax reform reflects the fact that the literature on environmental tax reform generally focuses on the tax-shifting concept, using environmental taxes to reduce other tax burdens.[22] Discussions of environmental fiscal reform, however, tend to focus on revenue-raising measures and overlook the role of

[17] *See, e.g.*, ORG. FOR ECON. CO-OPERATION & DEV., ENVIRONMENTAL TAXES AND GREEN TAX REFORM 23–27 (1997) (discussing revenue-neutral tax shifts in European countries).

[18] David Pearce, *The Role of Carbon Taxes in Adjusting to Global Warming*, 101 ECON. J. 938, 940 (1991).

[19] *See infra* text accompanying note 103.

[20] *See generally* ORG. FOR ECON. CO-OPERATION & DEV., ENVIRONMENTAL FISCAL REFORM FOR POVERTY REDUCTION (2005); WORLD BANK, ENVIRONMENTAL FISCAL REFORM: WHAT SHOULD BE DONE AND HOW TO ACHIEVE IT (2005).

[21] *See infra* text accompanying notes 142–46.

[22] *See, e.g.*, ORG. FOR ECON. CO-OPERATION & DEV., *supra* note 17, at 23–24. It is possible to use revenue from environmental taxes to offset the cost of environmentally oriented tax expenditures. This revenue-neutral matching, however, may not fall under the rubric of more general tax reform, which typically involves reducing the burden of taxes that are not environmentally related.

environmental tax expenditures,[23] leaving them somewhat intellectually homeless. For purposes of Figure 2, treating environmental tax expenditures as part of environmental fiscal reform seems appropriate, given environmental fiscal reform's focus on subsidies and the larger fiscal picture. It serves as a reminder of the presence of environmental tax expenditures in that fiscal picture.

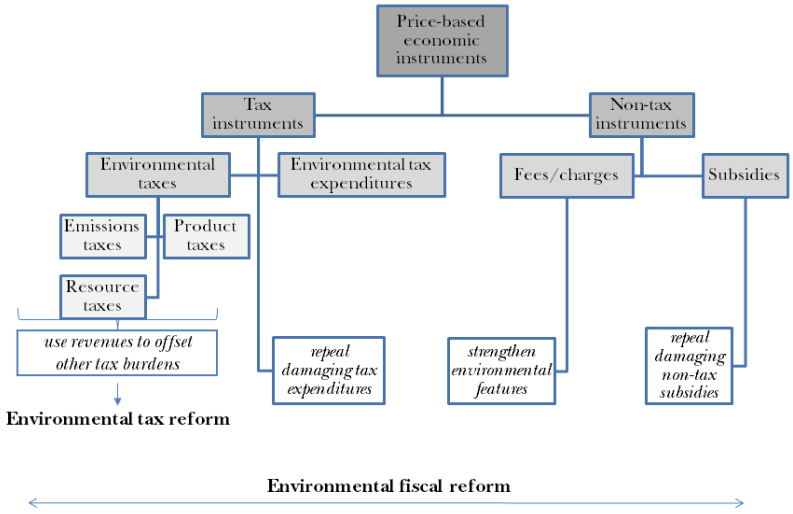

FIGURE 2: The Relationship Between Environmental Tax Reform and Environmental Fiscal Reform

III. INSTITUTIONAL CONSIDERATIONS

A. *The Structure of the Tax System*

The use of environmental taxation instruments in the United States is inevitably shaped by the nature of tax systems at different levels of government. The federal government relies on income taxes, excise taxes, estate taxes, and social security taxes, the first three of which are adaptable vehicles for environmental taxation instruments.[24] As a general but not absolute rule, environmental tax expenditures tend to lie within the income tax regime and pollution taxes often take the form of excise taxes. The estate tax contains tax expenditures for inheritances of

[23] ORG. FOR ECON. CO-OPERATION & DEV., *supra* note 20, at 12 (defining environmental fiscal reform as "a range of taxation and pricing measures which can raise fiscal revenues while furthering environmental goals"); WORLD BANK, *supra* note 20, at 1 (same).

[24] In 2010, individual income taxes generated $899 billion, corporate income taxes $191 billion, social security taxes $865 billion, excise taxes $67 billion, and estate and gift taxes $19 billion. OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES: BUDGET OF THE U.S. GOVERNMENT FISCAL YEAR 2012, at 171 (2011).

conservation-related lands. Most states also impose income taxes, excise or sales taxes, and estate or inheritance taxes, which can provide similar opportunities for environmental measures. Where states use the federal income tax principles to define state tax liability, environmental features of the federal tax code are silently wrapped into the state tax system.

At the state and local levels, the property tax—an annual tax on the value of real property—enters the picture. Not used by the federal government, it plays a significant role in generating revenue for municipal governments. Under state policies that apply to the municipalities, the property tax frequently serves as a vehicle for tax expenditures for undeveloped land, taking the form of reduced property tax assessments for agricultural or forest land, or protected conservation land.[25] With limited independent taxing authority,[26] municipalities may have less freedom to design and implement environmental taxes, but exceptions prove that this is not a flat rule. For example, Boulder, Colorado, has enacted a tax on electricity that funds the city's climate-action program.[27]

This allocation of taxing systems among the different levels of government means that the environmental tax message is not consistent nationwide. While the federal measures are broadly applicable, states decide which goals they will pursue through their tax policies. In addition, the variation in tax regimes from state to state (for example, some with income taxes and some without) naturally leads to deviations. The U.S. tax regime reflects the principle of federalism on which the country was founded: federal unity with substantial powers retained by the states. This inevitably means a lack of uniformity.

Thus, environmental tax instruments reflect the characteristics of the tax regimes to which they are harnessed, and each instrument should not be analyzed in isolation but rather in light of its interactions with policies at the different levels of government. The fact that the discussion below focuses on federal environmental tax measures is not intended to suggest that states have not enacted measures that would affect an analysis of the role of tax policy in achieving environmental protection. It merely reflects a practical limitation on the scope of coverage possible in this analysis.

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[25] *See generally* Jane Malme, *Preferential Property Tax Treatment of Land* (Lincoln Inst. of Land Pol'y, Working Paper, 1993), *available at* http://www.lincolninst.edu/subcenters/property-valuation-and-taxation-library/dl/malme_2.pdf.

[26] Some cities have the authority to impose income taxes. *See, e.g.*, N.Y. TAX LAW § 1301 (McKinney 2008) (delegating such authority to cities in New York state with populations exceeding one million persons, which includes New York City).

[27] BOULDER, COLO., REV. CODE §§ 3-12-1 to -7 (2010), *available at* http://www.colocode.com/boulder2/chapter3-12.htm.

B. The Implications of Jurisdictional Turf

Jurisdictional divides within one level of government have significant implications for environmental taxation in the United States. In the legislative branch of the federal government, environmental committees within Congress have jurisdiction over environmental matters, while tax-writing committees have jurisdiction over "revenue measures." The tax writers are therefore in the position of controlling environmental policies executed through the tax code. Although the House of Representatives and Senate must vote on measures, committees shape the proposals that are presented for vote. Using the term "fee" rather than "tax" to describe a measure will not necessarily circumvent the tax-writing committees. For example, although the Superfund taxes started as fees in the infancy of their legislative history, the tax-writing committees nonetheless obtained jurisdiction over the measures.[28]

A parallel separation of power occurs at the executive level, where the Environmental Protection Agency, Department of Energy, and other agencies have regulatory authority over environmentally related programs, while the Department of the Treasury is responsible for tax matters. Because environmental taxation instruments fall within the Department of the Treasury, the Treasury—not the agencies of substantive environmental expertise—becomes the agent for administering the environmental taxation programs.

These jurisdictional divides yield several lessons. First, and very fundamentally, one should understand at the start who has the authority over the design and implementation of environmental taxation programs. Intuitions about the relevant players may not always be correct.

Second, the fragmentation of authority among different legislative committees and executive agencies may call for a higher level of coordination than normal institutional procedures may require. Tax writers should understand the environmental committees' agendas for environmental regulation, and vice versa, so that each considers how different policies might interrelate. Similarly, environmental and tax agencies should cooperate to maximize the benefit of the environmental taxation programs. Although environmental taxation measures are officially housed in the Department of the Treasury, their functions directly relate to environmental programs of other departments. They may be more likely to reach their full programmatic potential if they achieve a status akin to joint custody. In the last few years, non-tax agencies have increasingly been integrating environmental tax

[28] *See* Janet E. Milne, *New Instruments on Old Turf: The Institutional Challenges of Environmental Taxation*, *in* 5 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 139, 146–47 (Nathalie J. Chalifour et al. eds., 2008).

expenditures into their publications and web pages,[29] which is a positive step forward that still respects the Treasury's ultimate responsibility over tax instruments. Interagency task forces can also help cross the boundaries of agencies' expertise.[30]

Third, drafting techniques can import the knowledge of environmental experts into the tax arena, where tax writers and administrators may be less conversant with environmental technicalities. For example, Congress on occasion has statutorily required the Treasury and the agencies with environmental expertise to work together in designing the implementing details of environmental tax instruments, allowing the Treasury to benefit from the other agencies' expertise and encouraging the integration of tax instruments into the environmental agencies' agendas.[31]

The jurisdictional divides may be different in other countries. Where fragmentation of authority occurs, however, policymakers, administrators, and interested parties should consider how best to ensure that environmental taxation—a hybrid instrument—is sufficiently integrated into both the environmental and tax spheres during creation and administration.

C. The Implicit Influence of Historical Preferences

Institutional traditions may create an implicit preference for one type of environmental instrument over another that affects the use of environmental tax instruments. Although President Nixon wanted to pursue environmental taxes, environmental protection in the United States has been firmly rooted in a major command-and-control regulatory regime, which started in 1970 with the federal National Environmental Policy Act, the Clean Air Act, and the creation of the Environmental Protection Agency, and expanded from there.[32] The

[29] *See, e.g.*, U.S. ENVTL. PROT. AGENCY, EPA 500-F-03-223 BROWNFIELDS TAX INCENTIVE (2003), *available at* http://www.epa.gov/region04/brownfieldstoolkit/funding/brownfieldstaxincentives.pdf (providing guidance on federal tax incentives for cleaning up brownfields); *Business & Utilities Tax Incentives*, DEP'T OF ENERGY http://www.energy.gov/utilities_tax_incentives.htm (summarizing federal renewable energy tax incentives); *Combined Heat and Power Partnership: Funding Resources*, ENVTL. PROT. AGNECY, http://www.epa.gov/chp/funding/financial3.html (linking to descriptions of tax programs).

[30] *See, e.g.*, Aldo Looijenga & Bastiaan Gen, *Greening the Dutch Tax System: Selection Criteria Used by the Dutch Green Tax Commissions*, *in* 3 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION 403, 404, 416 (Alberto Cavaliere et al. eds., 2006) (describing representation from multiple agencies in Dutch government on Green Tax Commissions and inter-ministerial working group).

[31] *See, e.g.*, I.R.C. § 45L(d)(1) (2006) (requiring the Department of Treasury to consult with the Department of Energy about certification procedures for new energy efficient homes that qualify for tax credits); *id.* § 48A(d)(1) (2006) (requiring the Department of the Treasury to consult with the Department of Energy to design a program for the allocation of tax credits for carbon capture and sequestration).

[32] RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 67 (2004).

regulatory emphasis has not precluded the use of environmental tax instruments, but its historical dominance, which has generated institutional stakeholders, momentum, and entrenched environmental advocates, may have implicitly influenced views of environmental taxation.

The relationship between command-and-control regulation and market-based approaches has shifted somewhat in recent years. The U.S. government has become familiar with trading regimes, and it has relied heavily on federal tax expenditures designed to reduce reliance on fossil fuels. Market-based instruments are recognized increasingly as an alternative or complement to regulation, but trading regimes have had the upper hand over environmental taxes, in part because they carry more regulatory characteristics.[33] A country starting with a relatively clean policy slate at this point in time might assess the merits and role of environmental taxation differently than a country with a longstanding regulatory tradition; policymakers and stakeholders, including environmental NGOs, might be more receptive to environmental taxes.[34]

IV. DESIGN FEATURES OF ENVIRONMENTAL TAXES—THE TAX BASE AND TAX RATE

The basic design components of environmental taxes are quite simple and are common to most taxes:

Tax Base x Tax Rate = Tax Revenue

The *raison d'être* of environmental taxes lies in their environmental goal, and the choice of the tax base and tax rate reflect that goal, as can the use of the revenue. Like other taxes, however, the design details of environmental taxes are also shaped by traditional tax policy considerations, such as their economic impact, equity, and administrative feasibility, as well as calculations of political viability.[35] The design features of two U.S. environmental taxes and President Clinton's proposed energy tax illustrate how policy and political considerations affect the choice of the tax base and tax rate. Part V below considers the question of how to use the revenue from environmental taxes.

[33] *See* ERIC POOLEY, THE CLIMATE WAR 18, 57, 88 (2010) (citing, in part, the advantages of a regulatory cap on emissions in political decisions to pursue a federal cap-and-trade program for carbon dioxide in the United States).

[34] The U.S. political preference for cap-and-trade programs for carbon dioxide over carbon taxes also sprang in part from the bruising experience with President Clinton's proposed Btu tax in 1993. Memories of that defeat were too recent for many proponents of climate change policies. *Id.* at 87–88. Other countries without this history might view broad-based energy taxes differently.

[35] ORG. FOR ECON. CO-OPERATION & DEV., ENVIRONMENTAL POLICY: HOW TO APPLY ECONOMIC INSTRUMENTS 18–19 (1991).

A. The Ozone-Depleting Chemicals Tax—A Useful Model

The federal excise tax on ozone-depleting chemicals[36] offers a positive example of design features of an environmental tax.[37] It was enacted to help address the problem of emissions of ozone-depleting chemicals that erode the stratospheric ozone layer and leave the earth more vulnerable to ultraviolet radiation. Under the international Montreal Protocol,[38] countries agreed to phase out the use of key ozone-depleting chemicals, and the U.S. federal excise tax supplements U.S. obligations under the Protocol.

The tax neatly correlates the tax base and the tax rate to the environmental problem. The tax base consists of 20 chemicals known to have ozone-depleting characteristics. By the same token, the tax base rightly excludes chemicals that will be entirely consumed in the manufacture of another chemical (feedstocks) and therefore will never be released into the atmosphere.[39] The tax rate varies according to the ozone-depleting potential of each chemical. An annually increasing base tax rate[40] is multiplied by the ozone-depleting factor for each chemical, using factors established in the international Montreal Protocol. For example, CFC-11 has an ozone-depleting factor of 1.0 whereas Halon-1301 has a factor of 10.0, causing the tax on the more potent Halon-1301 to be ten times greater.[41] Thus, the tax base and the tax rate link directly with the chemicals' potential to damage the environment.

From an administrative feasibility perspective, the tax was logically imposed on the manufacturers, producers, and importers of the chemicals at the time of their sale or use. This upstream taxable event facilitates the collection of the tax and yet is consistent with the environmental assumption that most non-feedstock ozone-depleting chemicals ultimately will be released into the atmosphere at some point in the life of the final products. Placing the collection point at the more environmentally precise point of emission would not have been administratively feasible. In a finessing detail, the annual increases in the tax rate apply to chemicals that have already passed the collection point

[36] I.R.C. §§ 4681–4682 (2006).

[37] *See* Thomas A. Barthold, *Issues in the Design of Environmental Excise Taxes*, 8 J. ECON. PERSPECTIVES 133, 136–38 (1994) (discussing design features of tax on ozone-depleting chemicals).

[38] Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, S. TREATY DOC. NO. 100-10.

[39] I.R.C. § 4682(d)(2). Chemicals that are "recovered in the United States as part of a recycling process" are also exempt. *Id.* § 4682(d)(1).

[40] The base amount was adjusted by statute from the original amount of $1.37 per pound in 1990 to $5.35 per pound for years after 1995, and the base amount automatically increases 45 cents per year. *See id.* § 4681(b)(1)(B) (showing 1995 base amount); *id.* § 4681(b)(1)(B) (Supp. II 1990) (showing original 1990 base amount). The base amount was $11.65 per pound in 2009.

[41] *Id.* §§ 4681(b), 4682(b); Montreal Protocol on Substances that Deplete the Ozone Layer, *supra* note 38, at 10 annex A.

but are still being held for the manufacture of future products (a tax on floor stocks).

The tax's design was also shaped by economic considerations, in particular the effect on competitiveness of U.S. industries. As indicated above, the tax base includes imported chemicals, and it also extends to imported products that contain or were made using ozone-depleting chemicals, thereby imposing a border tax adjustment that puts U.S.-manufactured chemicals and products on equal economic footing with imports. According to one study, the tax on imported products represented about $80 million, or 11% of the tax's total revenue, in 1993,[42] indicating that the border tax adjustment on products containing the chemicals was a significant feature of the tax. Regulations implementing the tax on imported chemicals and products offer a very useful example of how to address the details of a border tax adjustment, such as how to account for subsequent uses that are exempt and how to determine the amount of ozone-depleting chemicals associated with imported products.[43] This border tax adjustment is consistent with the tax's environmental rationale, although the same cannot be said of the partial exemption for exports of U.S.-manufactured ozone-depleting chemicals.[44]

The tax has generated an interesting and undesired, but perhaps not unforeseeable, consequence relevant to the administrative feasibility of the tax and its border tax adjustment. The combination of the substantial tax and the Montreal Protocol's phase-out requirements created an incentive to smuggle ozone-depleting chemicals into the United States from countries subject to more liberal phase-out rules and no tax. As a result, the government has brought charges based in part on multi-million dollar tax evasions.[45] Thus, the question of administrative feasibility can extend beyond the normal auditing procedures, which may be inevitable when dealing with high tax rates and non-harmonized international markets.

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[42] Sara P. Boroshok, *Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993*, STAT. OF INCOME BULL., Winter 1995–1996, at 7, 16.

[43] *See* 26 C.F.R. §§ 52.4681-1 to 52.4682-4 (2010). Border tax adjustments can raise the question of legality under the rules of the World Trade Organization, an issue beyond the scope of this paper. *See generally* U.N. ENV'T PROGRAMME & WORLD TRADE ORG., TRADE AND CLIMATE CHANGE, 98–110 (2009) (discussing application of trade rules to border tax adjustments).

[44] *See* I.R.C. § 4682(d)(3).

[45] *See* 1996 ATT'Y GEN. ANN. REP. 50 (noting joint enforcement efforts by the Environmental Protection Agency, Internal Revenue Service, and Customs Service); Press Release, U.S. Dep't of Justice, Miami Federal Grand Jury Indicts Four in Multi-Million Dollar "*Freon*" Excise Tax Fraud Scheme (Sept. 5, 1996), *available at* http://www.justice.gov/opa/pr/1996/Sept96/426tax.htm (discussing failure to pay $22 million in excise taxes on CFC-12 (freon)); Beth Daley & Ellen Barry, *Five Indicted in Coolant Smuggling Scheme Ring Evaded $20M in Excise Taxes, US Says*, BOSTON GLOBE, Aug. 1, 2001, at B1 (describing $20 million tax evasion and black market in freon).

B. The Gas Guzzler Tax—The Need to Update to Preserve the Environmental Effect

The federal excise tax on gas-guzzling vehicles[46] similarly employs an environmentally logical tax base and tax rate, but it contains design features that reduce its environmental effectiveness and serve as warnings to future tax writers. Although the tax was enacted in 1978 in response to concerns about reliance on imported oil following the Oil Embargo,[47] its existence today is directly relevant to the environmental problems caused by carbon dioxide and other emissions from motor vehicles' combustion of gasoline, including climate change.

The tax applies to automobiles based on their fuel economy, which is a significant factor contributing to the level of emissions,[48] and the tax rate appropriately increases as fuel economy decreases. The tax rate starts at $1,000 for vehicles with fuel economy less than 22.5 but more than 21.5 miles per gallon, and it rises with each one-mile decrease in fuel economy until it reaches $7,700 for vehicles with fuel economy less than 12.5 miles per gallon.[49] In terms of administrative feasibility, the tax is imposed on the manufacturer at the time of sale, but to preserve the environmental awareness and behavioral impact of the tax, dealers must place a notice about the tax on the sticker price for the car.[50]

The environmental effectiveness of the tax, however, has been eroded significantly by the fact that it does not apply to "non-passenger vehicles," a term that now encompasses sport utility vehicles (SUVs).[51] Part of the original 1978 law, this exemption was created long before SUVs were contemplated as a common choice for everyday travel, but the failure to amend the law to adjust to new circumstances has significantly undercut its force as an environmental instrument. In addition, the tax rates have not been increased since 1990, nor have the fuel economy thresholds been changed since 1978.[52] If an environmental tax is intended to serve a long-term environmental purpose, the tax rate should be indexed for inflation or adjusted periodically to preserve its incentive effect and policymakers should consider adjustments to the definitions and thresholds that determine the tax base.

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[46] I.R.C. § 4064.

[47] *See* S. REP. NO. 95-529, at 3, 6 (1977).

[48] Other factors, such as the distance driven per year, will also affect an automobile's emissions profile, so fuel economy is a convenient, but not necessarily the precisely perfect, tax base for a tax on vehicle emissions.

[49] I.R.C. § 4064.

[50] 40 C.F.R. § 600.306-86 (2010). Manufacturers have passed the tax cost on to purchasers. J. Yost Conner, Jr., *Revisiting CAFE: Market Incentives to Greater Automotive Efficiency*, 16 VA. ENVTL. L.J. 429, 435–36 (1997).

[51] *See* I.R.C. § 4064(b)(1)(B); Richard A. Westin, *The SUV Advantage*, 94 TAX NOTES 1360, 1361 (explaining that SUVs are not subject to the tax).

[52] *Compare* Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, § 11216(a), 104 Stat. 1388, 1388-437, *and* Energy Tax Act of 1978, Pub. L. No. 95-618, § 201(a), 92 Stat. 3174, 3180–81, *with* I.R.C. § 4064(a) (2006).

C. The Btu Tax Proposal—The Influence of Politics and Policy

President Clinton's proposal to enact a broad-based energy tax illustrates how politics and policy can temper the choice of the tax base and the tax rate.[53] When President Clinton assumed office in 1993, he was determined to reduce the federal deficit. His team immediately started considering energy taxes—a gas tax increase, a carbon tax, or an energy tax based on the energy content of fuels measured by British thermal units (a Btu tax).[54]

To some extent, the choice among these alternatives was influenced by political happenstance. A significant increase in the gas tax could have been politically problematic, given Clinton's opposition to a proposal to raise the gas tax by 50 cents per gallon during the presidential campaign,[55] as well as the perception that gas tax increases were politically volatile.[56] The environmentally preferable carbon tax would have had the most significant impact on coal, an industry lying in the constituency of the legendarily powerful Senator Robert Byrd from West Virginia.[57] The choice also involved the relative regional impacts of each alternative, a consideration carrying political, economic, and equity implications. A gas tax would have greater impact on regions where people must drive longer distances without public transit options, and a carbon tax would hit hardest the regions dependent on the coal economy or coal-fired energy sources.[58] Given these political and policy challenges, President Clinton settled on a tax based on the Btu content of energy (the Btu tax). Covering fossil fuels, nuclear power and hydropower,[59] it would have affected regions of the country relatively equally. According to the Administration's estimates, the tax would vary by region from 0.54% to 0.67% of taxpayers' disposable personal income, at most a 0.13% range.[60]

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[53] For a discussion of the Btu tax, see Janet E. Milne, *Carbon Taxes in the United States: The Context for the Future*, 10 VT. J. ENVTL. L. 1, 6–18 (2008) [hereinafter Milne, *Carbon Taxes in the United States*].

[54] *See, e.g.*, *Gore Says an Energy Tax Is Under Consideration*, WALL ST. J., Jan. 18, 1993, at A12; Matthew L. Wald, *Pondering an Energy Tax That Can't Please All the People*, N.Y. TIMES, Jan. 31, 1993, at F10; David Wessel, *Bentsen Sees Higher Taxes on Consuming*, WALL ST. J., Jan. 25, 1993, at A2; David Wessel & Rick Wartzman, *Clinton's Options: Tax Increases Seem Inevitable, Including Some on Middle Class*, WALL ST. J., Jan. 22, 1993, at A1.

[55] Timothy Noah, *Clinton Aides Seek Gasoline Tax Boost, New Carbon Levy*, WALL ST. J., Dec. 9, 1992, at A2.

[56] Wessel & Wartzman, *supra* note 54.

[57] Dawn Erlandson, *The Btu Tax Experience: What Happened and Why It Happened*, 12 PACE ENVTL. L. REV. 173, 175 (1994).

[58] *See* President Bill Clinton, State of the Union Address, *in* 139 CONG. REC. 2938 (1993); *Administration's Energy Tax Proposals: Hearings Before the S. Comm. on Fin.*, 103d Cong. 7 (1993) [hereinafter *Hearings*] (statement of Lloyd Bentsen, Secretary of the Treasury).

[59] U.S. DEP'T OF TREASURY, OFFICE OF TAX POLICY, *supra* note 11.

[60] *Hearings*, *supra* note 58, at 120.

The Btu tax rate was relatively modest, translating for example into $3.24 per barrel of oil.[61] It was not the product of a refined notion of the internalization of external costs, but rather seems to have been driven more by the extent to which the tax needed to contribute to the deficit-reduction goal (as discussed in Part V), as well as presumably concerns about the financial impact on individuals and industry. Even so, the tax was projected to provide a real, but modest, reduction in energy consumption, reducing anticipated growth by 7%.[62]

The Btu tax proposal also was accompanied by measures designed to address equity concerns. The tax was part of a larger budget bill that included spending and tax provisions to help low-income households that might otherwise suffer from the burden of the Btu tax.[63] The Administration was keenly aware of the need to consider those interests, both as a matter of policy and politics.

Even with these tempered design choices, the Btu tax did not survive. Louis XIV's financial minister has been quoted as saying, "[t]he art of taxation consists in so plucking the goose as to obtain the largest possible amount of feathers with the smallest possible amount of hissing."[64] The Clinton Administration encountered too much hissing. After a narrow victory in the House of Representatives, the tax failed to garner sufficient support for passage in the Senate,[65] defeated by Senators from oil- and gas-producing states and an opposition emboldened by the Administration's concessions.[66] The deficit-reduction package passed, but the Btu tax was replaced by a modest 4.3 cent increase in the gas tax[67] and other measures.

In sum, the tax on ozone-depleting chemicals provides a very useful example of design features that accommodate the environmental, economic, and administrative concerns. The gas guzzler tax has strong environmental features, but the passage of time and circumstances have diminished its environmental role, highlighting the need to ensure that environmental taxes are adjusted over time to preserve their environmental impact. The Btu tax proposal illustrates how the compromises of policies and politics can generate a tax design with more

[61] When fully phased in, the basic tax rate could have been 25.7 cents per million Btus, with a supplemental tax rate of 34.2 cents per million Btus for refined petroleum products. U.S. DEP'T OF TREASURY, OFFICE OF TAX POLICY, *supra* note 11. These rates translate into $5.57 per short ton of coal, $2.66 per thousand kilowatt hours of electricity, and $3.24 per barrel of refined petroleum products. *Id.*

[62] *Id.*

[63] *Hearings*, *supra* note 58, at 7.

[64] ALAN THEIN DURNING & YORAM BAUMAN, TAX SHIFT 13 (1998) (citing Jean Baptiste Colbert).

[65] *See* Milne, *Carbon Taxes in the United States*, *supra* note 53, at 9. For a discussion of the policies and politics of the tax proposal, see *id.* at 6–18.

[66] *Id.* at 12–13.

[67] STAFF OF J. COMM. ON TAX'N, 103D CONG., DESCRIPTION OF CHAIRMAN'S MARK ON REVENUE RECONCILIATION PROPOSALS 81 (Comm. Print 1993).

muted environmental credentials but which would still have been a defensible policy step in the right direction. Even with these models, environmental taxes in the United States in 2007 provided only 2.9% of federal tax revenues, compared to a weighted average of 5.2% for all OECD countries.[68]

V. THE REVENUE ISSUE

The revenue-raising function of taxes is axiomatic. Taxes exist to provide government with the revenue it needs to provide its government services. Environmental taxes will raise revenue, but policymakers must decide whether the environmental features of the tax primarily lie in the tax base and tax rate, freeing some or all of the revenues for non-environmental purposes, or whether the environmental character of the tax arises in whole or in part from the way in which its revenues are used. The decision about how to use the revenue from an environmental tax can be reduced to three basic choices or some combination thereof:

- dedicating the revenue to the environmental problem;
- using the revenues for some other governmental purpose, such as deficit reduction or increased spending (including the possibility of using revenue to address the equity and economic impacts of the tax); or
- using the revenues to reduce other tax burdens to achieve significant tax reform, often on a revenue-neutral basis.

To date, the United States has chosen the first two options but Congressional proposals illustrate how the third might be designed.

A. Revenue Dedication—The Superfund Taxes and the Tax on Petroleum

Three Superfund taxes[69] serve as leading examples of taxes that generate their environmental impact primarily through the use of their revenues. The tax base for each is somewhat associated with the environmental problem, but absent dedication of the revenue, it would be more difficult to classify the Superfund taxes as strong environmental taxes. Note, however, that dedication of revenue to the environmental problem need not necessarily suggest that a tax is not an independently strong environmental tax. In some instances, policymakers may choose to devote the revenues to the environmental problem to achieve enhanced or accelerated results.[70]

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[68] ORG. FOR ECON. CO-OPERATION & DEV. & EUROPEAN ENV'T AGENCY, ECONOMIC INSTRUMENTS DATABASE: MORE INFORMATION ON ENVIRONMENTALLY RELATED TAXES, FEES AND CHARGES, http://www2.oecd.org/ecoinst/queries/TaxInfo.htm (data available by clicking on graphs).

[69] I.R.C. §§ 59A, 4611, 4661, 4671 (2006).

[70] In fact, some controversy exists over the question of whether the Pigouvian theory of environmental taxation requires dedication of the revenue. Pigou's

The Superfund taxes were created to provide financing for the Superfund, a federal trust fund.[71] Part of a regulatory liability regime that requires operators or owners to be responsible for remediation of hazardous waste sites, the Superfund provides the federal government with funds to clean up abandoned sites.[72] One Superfund tax imposed an excise tax on 42 chemicals sold by manufacturers or imported into the United States, with tax rates varying by chemical from $0.22 to $4.87 per ton,[73] and a border tax adjustment for imported taxable substances.[74] The second tax applied to crude oil and imported petroleum products at the rate of $0.097 per barrel.[75] The third took a different approach, taxing corporations at a rate of 0.12% of their modified alternative minimum taxable income over $2 million.[76] By statute, the taxes expired at the end of 1995,[77] and efforts to reinstate them have been intertwined with difficult negotiations over the associated, ongoing liability regime for hazardous waste sites.[78]

The design of the Superfund taxes did not provide the tight correlation between the tax base and the resulting pollution evident in the tax on ozone-depleting chemicals. The taxed chemicals and products and the taxable income could not be traced directly to specific hazardous waste sites but rather served as a rough "guilt by association" proxy. In addition, the relatively low levels of tax were unlikely to significantly

discussion suggests that revenues should be used to repair the damage caused by the activity on which the tax is paid. PIGOU, *supra* note 2, at 168 & n.2; MIKAEL SKOU ANDERSEN, GOVERNANCE BY GREEN TAXES: MAKING POLLUTION PREVENTION PAY 36–37 (1994); Milne, *Environmental Taxation*, *supra* note 4, at 19. Some commentators, however, argue that it is not efficient to dedicate the revenues to the environmental problem. *See* WILLIAM J. BAUMOL & WALLACE E. OATES, THE THEORY OF ENVIRONMENTAL POLICY 23–24 (2d ed. 1988); Flip de Kam, *Discussion Paper for Conference of Environmental Fiscal Reform* 4–5 (Org. for Econ. Co-operation & Dev. 2002).

[71] I.R.C. § 9507(a).

[72] The Superfund was created by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (codified primarily at 42 U.S.C. §§ 9601–9675). While the law creates a liability regime for owners and operators of hazardous waste sites, the Superfund allows government to proceed with remediation in the absence of private action, but the government can seek recovery from responsible parties. *See generally* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-08-841R, SUPERFUND: FUNDING AND REPORTED COSTS OF ENFORCEMENT AND ADMINISTRATION ACTIVITIES (2008).

[73] I.R.C. §§ 4661–4662.

[74] *Id.* §§ 4671–4672.

[75] *Id.* §§ 4611–4612.

[76] *Id.* § 59A.

[77] *Id.* §§ 59A(e), 4611(e), 4661(c).

[78] *See generally* NAT'L COMM'N ON SUPERFUND, FINAL CONSENSUS REPORT (1994); Martina E. Cartwright, *Superfund: It's No Longer Super and It Isn't Much of a Fund*, 18 TUL. ENVTL. L.J. 299 (2005); Thomas A. Rhoads & Jason F. Shogren, *Current Issues in Superfund Amendment and Reauthorization: How is the Clinton Administration Handling Hazardous Waste?*, 8 DUKE ENVTL. L. & POL'Y F. 245 (1998); John H. Cushman, Jr., *Congress Foregoes Its Bid to Hasten Cleanup of Dumps*, N.Y. TIMES, Oct. 6, 1994, at A1.

influence behavior. The stronger environmental identity of the taxes instead derived from the dedication of their $19 billion cumulative revenue stream to cleaning up contaminated sites.[79] Supplemented by recoveries from responsible parties, the taxes generated approximately two-thirds of the Superfund's revenue though 1995.[80] Thus, the dedication of the revenue to environmental purposes gave heft to their environmental nature.[81]

Since 1995, governmental appropriations have served as a partial replacement, but the level of revenue flowing into the fund has fallen significantly in the absence of taxes.[82] With almost 1,600 hazardous waste sites on the National Priorities List, a prerequisite for Superfund assistance, and more than 47,000 sites potentially qualifying,[83] the need for revenue remains strong. President Barack Obama has called for reinstatement of the Superfund taxes,[84] but Congress has not yet accepted his invitation to act.

The BP Deepwater Horizon oil spill in the Gulf of Mexico in 2010 highlights the role of the tax on petroleum that funds the Oil Spill Liability Trust Fund. The tax is too low to generate a significant behavioral impact, but its revenues significantly enhance environmental protection. The Oil Pollution Act of 1990[85] created a legal liability regime for parties responsible for oil spills, requiring them to pay for removal costs and damages up to certain levels, and the Oil Spill Liability Trust Fund serves as a backstop source of relief. Financed by an 8-cents-per-barrel tax on crude oil produced in the United States and petroleum products imported into the United States,[86] the Trust Fund serves in effect as an industry-funded risk pool. The Trust Fund pays for the government's emergency costs for removing the oil, providing it with the ability to respond quickly without waiting for appropriations.[87] It also finances the assessment of damage to natural resources, the preparation and implementation of restoration plans, and the costs of economic and

[79] GAO-08-841R, *supra* note 72, at 8.

[80] *Id.* at 7.

[81] The federal gasoline tax provides another example of revenue dedication. I.R.C. § 4081(a)(2). Its tax rate of 18.4 cents per gallon is not high enough to significantly shape behavior, but small portions of its revenue are dedicated to environmental purposes. *See id.* § 9503(e) (Mass Transit Account within the Highway Trust Fund); *id.* § 9508 (Leaking Underground Storage Tank Trust Fund).

[82] GAO-08-841R, *supra* note 72, at 7–8.

[83] *Id.* at 1.

[84] OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES: BUDGET OF THE U.S. GOVERNMENT FISCAL YEAR 2011, at 175 (2010); OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES: BUDGET OF THE U.S. GOVERNMENT FISCAL YEAR 2010, at 267–68 (2009) [hereinafter OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES 2010].

[85] Pub. L. No. 101-380, 104 Stat. 484 (codified primarily at 33 U.S.C. §§ 2701–2762 (2006)).

[86] I.R.C. § 4611(c)(2)(B)(i) (Supp. II 2008).

[87] 33 U.S.C. § 2712(a)(1) (2006).

natural resource damages that the responsible parties do not pay due to legal limits on their liability or their inability to pay.[88]

The Oil Spill Liability Trust Fund played a crucial role in responding to the Gulf oil spill. Although the responsible parties are ultimately liable for all removal costs for spills from offshore facilities,[89] the federal government is able to draw upon the Trust Fund to pay for the costs of its emergency response and then seek reimbursement from the responsible parties. As of March 11, 2011, the National Pollution Funds Center, which administers the Trust Fund, had billed the responsible parties for $694.59 million in expenses,[90] which BP paid in full.[91] If the Coast Guard and other federal agencies had not been able to draw on the Trust Fund, they could have been hard-pressed to find the resources on short notice to cover the cost of the massive, immediate response. At the same time, the magnitude of the BP spill illustrates the Trust Fund's limits. Congress had to pass legislation authorizing special advances from the Fund.[92] In addition, the Trust Fund's $1 billion-per-incident cap on payments for removal costs, damage assessments, and uncompensated damages[93] would have severely limited relief if BP had not voluntarily assumed responsibility beyond the level of its legal responsibility.[94] Nevertheless, the tax plays a significant environmental role through the use of its revenues.

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[88] *Id.* § 2712(a)(2), (4).

[89] *Id.* § 2702(a).

[90] *See Oil Spill Cost and Reimbursement Factsheet*, RESTORETHEGULF.GOV (Mar. 11, 2011, 2:00 PM), http://www.restorethegulf.gov/release/2011/03/11/oil-spill-cost-and-reimbursement-fact-sheet.

[91] *Id.*

[92] The Trust Fund ordinarily can only finance up to $150 million in emergency response a year—$50 million from its emergency fund plus $100 million available through an advance from the Fund—without going through the appropriations process. 33 U.S.C. § 2752(b). As a result, Congress had to pass legislation authorizing multiple advances to finance the federal response to the BP oil spill. Act of June 15, 2010, Pub. L. No. 111-191, § 1, 124 Stat. 1278, 1278. *See also* Supplemental Appropriations Act, Pub. L. No. 111-212, § 2001, 124 Stat. 2302, 2337 (2010) (slightly amending the advance language).

[93] The Trust Fund can only provide up to $1 billion per incident for removal costs, damage assessments and uncompensated damages, and only $500 million of that amount can be used for uncompensated natural resource damages. I.R.C. § 9509(c)(2)(A) (2006).

[94] Barring negligence or violations of law, BP's legal liability for all damages, including natural resource damages, is capped at $75 million under the Oil Pollution Act. 33 U.S.C. § 2704(a)(3), (c)(1). BP established a $20 billion fund to pay for economic damages from the oil spill. *See* Remarks Following a Meeting with BP Leadership, 2010 DAILY COMP. PRES. DOC. 503, at 1 (June 16, 2010). The $1 billion cap is logical in light of the relatively small size of the Trust Fund, which had a balance of $1.6 billion as of June 1, 2010. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-795T, OIL SPILLS: COST OF MAJOR SPILLS MAY IMPACT VIABILITY OF OIL SPILL LIABILITY TRUST FUND 12 (2010).

B. Revenue for Other Governmental Objectives

If dedication of the revenue is not an essential part of the environmental role of the tax, government can use the revenue for other purposes. Those purposes can provide independent and often important opportunities and momentum for environmental taxes, as illustrated by U.S. efforts to reduce the deficit in the late 1980s and early 1990s.

The tax on ozone-depleting chemicals was first enacted in 1989 as part of a comprehensive budget bill, designed to reduce the deficit by $14 billion,[95] and the tax on ozone-depleting chemicals contributed $4.3 billion toward that goal.[96] An amendment to the tax enacted the next year, which added three more chemicals to the tax base, was part of a nearly $500 billion deficit-reduction package.[97] The environmental demand for action on the ozone problem, industry's acquiescence to phasing out ozone-depleting chemicals,[98] and the call for deficit reduction coalesced to provide support for the tax.

In the largest experiment to date in using environmental taxes to reduce the deficit, President Bill Clinton presented his Btu tax proposal as a way to reduce emissions while also reducing the deficit.[99] The Btu tax would have contributed $70 billion toward the $500 billion goal.[100] Although the tax failed to pass, it illustrates how the demand for new,

[95] Statement on Signing the Omnibus Budget Reconciliation Act of 1989, 2 PUB. PAPERS 1718, 1718 (Dec. 19, 1989).

[96] STAFF OF J. COMM. ON TAX'N, 101ST CONG., ESTIMATED REVENUE EFFECTS OF CONFERENCE AGREEMENT ON REVENUE PROVISIONS OF H.R. 3299, THE OMNIBUS BUDGET RECONCILIATION ACT OF 1989 (Comm. Print 1989) (estimating five-year revenue impact). The 1989 budget bill also contained revenue-losing tax expenditures, so one could argue that some portion of the new revenues was used to fund those expenditures. Nevertheless, the tax on ozone-depleting chemicals was the second largest revenue raiser in the tax portion of the budget bill, which generated almost $25 billion in net revenues, so it was a significant contributor to the revenue stream. *Id.*

[97] Statement on Signing the Omnibus Budget Reconciliation Act of 1990, 2 PUB. PAPERS 1553, 1553 (Nov. 5, 1990) (estimating five-year budget impact). The amendment for ozone-depleting chemicals was estimated to generate $485 million. STAFF OF J. COMM. ON TAX'N, 101ST CONG., BUDGET RECONCILIATION (H.R. 5835) - REVENUE PROVISIONS AS REPORTED BY THE CONFEREES (Comm. Print 1990) (estimating five-year revenue impact).

[98] RICHARD ELLIOT BENEDICK, OZONE DIPLOMACY: NEW DIRECTIONS IN SAFEGUARDING THE PLANET 134–36 (1991).

[99] President Bill Clinton, State of the Union Address, *supra* note 58.

[100] STAFF OF J. COMM. ON TAX'N, 103D CONG., ESTIMATED BUDGET EFFECTS OF THE ADMINISTRATION'S REVENUE PROPOSALS CONTAINED IN THE FISCAL YEAR 1994 BUDGET (Comm. Print 1993). The deficit-reduction feature also allowed the Clinton Administration to address concerns about the impact of the tax on the economy and households. The Administration argued that reducing the deficit would strengthen the economy by lowering interest rates, which would reduce the cost of capital for businesses and mortgages for individuals. Those lower costs in turn would soften the economic impact of the Btu tax. Milne, *Carbon Taxes in the United States*, *supra* note 53, at 15–16.

undedicated revenue can provide the opportunity and initial momentum for an environmentally related tax.

Environmental taxes, of course, can generate funding for other policy objectives as well. A $1 billion expansion of the tax on ozone-depleting chemicals in 1992, for example, helped fund $1.3 billion in unrelated tax expenditures for energy conservation and alternative energy.[101]

C. Environmental Tax Reform

Another alternative is to use the revenue to fund offsetting tax relief on a largely revenue-neutral basis. The United States has not yet engaged in any major revenue-neutral tax shifts, but the concept is present in pending carbon tax proposals. Following the example of some European environmental tax reforms that have shifted tax burdens from payroll taxes to environmental taxes,[102] two carbon tax bills introduced in Congress in 2009 called for using the revenue from carbon taxes to reduce the burden of Social Security taxes[103] in order to provide economic benefits and address equity concerns. While Congress focused on cap-and-trade proposals for greenhouse gas emissions, these tax proposals lay fallow, but they serve as models for revenue-neutral, or near revenue-neutral, tax reform.

Thus, a strong environmental tax should achieve its environmental purpose through the design of its tax base and tax rate, leaving policymakers to decide how the revenue can best serve the government's purposes. The government may use some portion of the revenue to address the economic impact or equity of the tax; it may use the revenue for policy goals unrelated to the tax, including other environmental goals; it may engage in structural tax reform; or it may choose some combination. The government may find itself in a position where the revenue side of the equation—the demand for new revenues—is the force driving enactment of the tax. When the tax itself is not sufficiently strong to deliver the desired environmental benefits, however, dedication of some or all of the revenue to the environmental goal is necessary or advisable to maintain the environmental nature of the tax.

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[101] STAFF OF J. COMM. ON TAX'N, 102D CONG., ESTIMATED BUDGET EFFECTS OF CONFERENCE AGREEMENT FOR REVENUE-RELATED PROVISIONS OF H.R. 776 (Comm. Print 1992).

[102] *See generally* CARBON-ENERGY TAXATION: LESSONS FROM EUROPE (Mikael Skou Andersen & Paul Ekins eds., 2009); Mikael Skou Andersen, *Environmental and Economic Implications of Taxing and Trading Carbon: Some European Experiences*, 10 VT. J. ENVTL. L. 61, 70–73 (2008).

[103] *See* Raise Wages, Cut Carbon Act of 2009, H.R. 2380, 111th Cong. (2009); America's Energy Security Trust Fund Act of 2009, H.R. 1337, 111th Cong. (2009). House Bill 1337 is not quite revenue neutral. It would allocate a small portion of the revenues to a tax credit for clean energy technology and to transition assistance for industry.

VI. ENVIRONMENTAL TAX EXPENDITURES

Following the defeat of the Btu tax, the federal government has not enacted any new or significantly increased environmental taxes. The politics implicitly shifted toward environmental tax expenditures, in particular tax expenditures designed to reduce reliance on fossil fuels. Whether or not the timing was coincidental, tax expenditures are often the politically easier route—and a route well traveled in the first decade of the twenty-first century.

Environmental tax expenditures have resided in the federal tax code for decades. For example, legislation in 1969 provided deductions for pollution control facilities.[104] The Energy Tax Act of 1978 contained incentives for renewable energy,[105] as did the Energy Policy Act of 1992, which introduced tax incentives for alternative-fuel vehicles and the production tax credit for electricity produced from renewable sources, then primarily wind.[106] The use of tax expenditures escalated substantially under the administration of President George W. Bush, which was not interested in tax increases and saw tax incentives as a way to achieve energy goals, including reduced reliance on fossil fuels.[107] Comprehensive energy legislation in 2005 provided tax benefits for clean coal, energy efficient buildings and appliances, and alternative motor vehicles and motor fuels.[108] The economic stimulus legislation in late 2008 under President Bush[109] and early 2009 under President Obama[110] included about $38 billion in tax incentives for renewable energy, energy conservation, and low-carbon technologies.[111]

Tax expenditures now address a wide range of environmental issues, only briefly and partially identified in the following list:

- a tax deduction for environmental remediation of brownfields;[112]

[104] Tax Reform Act of 1969, Pub. L. No. 91-172, § 704(a), 83 Stat. 487, 667 (codified at I.R.C. § 169 (2006)).

[105] Pub. L. No. 95-618, § 101, 92 Stat. 3174, 3175–77.

[106] Pub. L. No. 102-486, 106 Stat. 2776.

[107] *See, e.g.*, NAT'L ENERGY POLICY DEV. GRP., RELIABLE, AFFORDABLE, AND ENVIRONMENTALLY SOUND ENERGY FOR AMERICA'S FUTURE 6-7 (2001) (outlining roles for multiple energy tax expenditures).

[108] Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1300–1364, 119 Stat. 594, 986–1060.

[109] Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, 122 Stat. 3765.

[110] American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115.

[111] STAFF OF J. COMM. ON TAX'N, 111TH CONG., *supra* note 12, at 2–4 (Comm. Print 2009); STAFF OF J. COMM. ON TAX'N, 110TH CONG., *supra* note 12, at 2–5. These estimates are based on a ten-year period.

[112] I.R.C. § 198 (2006).

- a tax deduction for donations of conservation easements that permanently restrict development rights on land that serves a conservation purpose;[113]
- tax credits for energy efficient new homes, improvements to existing homes, and the manufacture of energy efficient appliances, as well as a tax deduction for energy efficient commercial buildings;[114]
- a tax credit for the production of electricity for resale from wind, biomass, geothermal or solar energy, municipal solid waste, and other sources;[115]
- a tax credit for businesses that use fuel cells, wind, solar, or geothermal energy to meet their on-premises needs;[116]
- tax credits for the purchasers of bonds issued for certain forestry conservation, renewable energy, or energy conservation projects;[117]
- tax credits for purchases of alternative fuel vehicles and for the installation of refueling infrastructure;[118]
- exclusions from income for employer-provided mass transit, van pool, and bicycle benefits;[119]
- tax credits for the production of biodiesel, renewable diesel,[120] and ethanol, including cellulosic ethanol;[121]
- tax credits for carbon capture and sequestration;[122]
- a tax credit for manufacturers' capital investments in manufacturing processes for a wide range of low-carbon technologies;[123]
- a tax credit for the production of low sulfur diesel fuel and a deduction for refiners' capital costs incurred to comply with low sulfur regulations.[124]

Although an extensive critique of these tax expenditures from a policy perspective lies beyond the scope of this analysis,[125] several trends

[113] *Id.* § 170 (Supp. III 2010).
[114] *Id.* §§ 25C, 25D, 45M, 179D.
[115] *Id.* § 45.
[116] *Id.* § 48 (2006 & Supp. III 2009).
[117] *Id.* §§ 54B, 54C, 54D (Supp. II 2008).
[118] *Id.* §§ 30, 30B, 30C, 179A (2006); I.R.C. § 30D (Supp. II 2008).
[119] *Id.* § 132 (2006 & Supp. II 2008).
[120] *Id.* § 40A.
[121] *Id.* § 40.
[122] *Id.* § 45Q (Supp. II 2008); I.R.C. §§ 48A, 48B (Supp. III 2010).
[123] *Id.* § 48C (Supp. III 2009).
[124] *Id.* § 45H (2006); *id.* § 179B.
[125] The use of tax expenditures rather than direct spending programs to achieve non-tax policy objectives has been the source of a longstanding debate. *See, e.g.*, SURREY, *supra* note 4, at 126–74 (analyzing the policy and administrative issues affecting the choice of instrument).

warrant highlighting. First, the federal government's budget rules directly influence the political ease with which tax expenditures are enacted. During the deficit-reduction years of the 1990s, federal budget procedures required revenue neutrality under a rule known as "pay-as-you-go."[126] Tax reductions, including tax expenditures, generally had to be offset by tax increases, which created an institutional restraint on the natural appetite for tax expenditures. For example, tax expenditures in the Energy Policy Act of 1992 had to be offset by revenue increases.[127] When the statutory pay-as-you-go budget rule lapsed in 2002, the Republican Congress and the President enacted significant tax cuts without finding offsetting revenues. These tax cuts included $14 billion in energy-related tax expenditures in the Energy Policy Act of 2005,[128] some environmentally positive and some not. Internal House and Senate procedures in effect in 2008 and early 2009[129] allowed Congress to enact an unprecedented $38 billion in carbon-reducing tax expenditures as part of its deficit-financed economic stimulus legislation on declaration that the situation was an emergency.[130] Without deficit financing, the political prospects of success for these tax expenditures might have been very different.

Thus, tax expenditures cannot be divorced from their fiscal consequences. Their feasibility will depend on internal rules and the political willingness of the government to find new revenue or spending cuts to pay for them, or to engage in deficit financing. Tax expenditures may be more politically popular than tax increases, but budget discipline may limit their use.

Second, from a design level, tax incentives increasingly are taking the form of tax credits rather than tax deductions. Tax credits offer the benefit of avoiding the fluctuating value of deductions, which depend on the taxpayer's marginal tax rate. U.S. environmental tax expenditures, however, are not refundable so their value may still be limited for some

[126] *See generally* ROBERT KEITH, CONG. RESEARCH SERV., RL 34300, PAY-AS-YOU-GO PROCEDURES FOR BUDGET ENFORCEMENT (2007).

[127] *See* STAFF OF J. COMM. ON TAX'N, 102D CONG., *supra* note 101, at 2.

[128] STAFF OF J. COMM. ON TAX'N, 109TH CONG., ESTIMATED BUDGET EFFECTS OF THE CONFERENCE AGREEMENT FOR TITLE XIII OF H.R. 6, THE "ENERGY TAX INCENTIVES ACT OF 2005," at 1–3 (2005).

[129] S. Con. Res. 21, 110th Cong. § 204 (2007); H.R. Rules, 110th Cong., r. XXI, cl. 10 (2008), *amended by* H.R. Res. 5, 111th Cong. § 2(j) (2009). Congress reinstated a statutory pay-as-you-go rule in 2010. Statutory Pay-As-You-Go Act of 2010, Pub. L. No. 111-139, 124 Stat. 8.

[130] H.R. REP. NO. 111-16, at 413 (2009) (Conf. Rep.); *see also* Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, 122 Stat. 3765. The cost of the energy tax incentives in the Act was offset by tax increases in part on the oil and gas industry (sections 401 and 402 of the Emergency Economic Stabilization Act), but their inclusion in a larger, deficit-financed package provided the political momentum for their passage.

taxpayers.[131] Third, a number of recent environmental tax expenditures contain caps limiting the aggregate dollar amount of tax credits available, which can both protect the government from open-ended exposure and allow it to exercise discretion in awarding the tax credits to the projects that seem to have the most merit.[132] With this capped feature, however, the tax credits operate more like grant programs, underscoring the question whether these benefits could be better delivered through traditional spending programs rather than through the tax code. Finally, from an environmental perspective, it is often difficult to determine the success of these tax expenditures. The federal government unfortunately has not engaged in systematic analysis of their behavioral impact or even systematic tracking of their actual cost.

VII. PATHS FORWARD IN THE UNITED STATES

Over the past two decades, the concept of using tax regimes to send environmentally positive messages has become increasingly accepted as a matter of practice in the United States, particularly with the growing reliance on tax expenditures. The arenas of tax policy and environmental policy are merging. In addition, the rationales for using tax instruments to address energy issues have evolved. The Oil Embargo in the 1970s triggered interest in energy-related tax provisions to increase energy independence. When climate change emerged as an environmental issue in the 1990s, it provided a second policy rationale that continues to increase in significance. At the end of the first decade of the new century, climate change has joined with the need to build a stronger post-recession economy, resulting in calls for a new, green economy.[133] This troika of converging goals—energy security, climate change, and economic growth through a green economy—may provide a broader base of support for using tax instruments.

Although market-based instruments have become part of common policy parlance, a key question for the future is whether the United States will favor cap-and-trade regimes over carbon taxes for addressing climate change. The environmental and fiscal magnitude[134] of an enacted carbon

[131] A refundable tax credit provides the full benefit to taxpayers even if they do not have enough tax liability to offset the tax credit. The government directly pays the taxpayer for the amount by which the tax credit exceeds the taxpayer's tax liability.

[132] *See, e.g.*, I.R.C. §§ 48A(d)(3), 48B(d)(1) (Supp. III 2010); I.R.C. § 54C(c) (Supp. II 2008).

[133] *See* Milne, *A Dark Recession*, *supra* note 12, at 431, 447.

[134] A carbon tax, even at a modest rate of $15 per ton of carbon dioxide, could generate about $80 billion per year. The U.S. Environmental Protection Agency estimates that carbon dioxide emissions from the combustion of fossil fuels in 2008 generated almost 5.6 billion tons of carbon dioxide equivalents. U.S. ENVTL. PROT. AGENCY, EPA 430-R-10-006, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2008, at ES-9 tbl.ES-3 (2010). Multiplying these emissions by $15 per ton yields a back-of-the-envelope estimate of $80 billion.

tax would represent a seismic step in the endorsement and implementation of environmental tax policy in the United States.[135] Congress to date has focused almost exclusively on cap-and-trade regimes for greenhouse gas emissions, but their history has been fraught with peril. In 2008, a cap-and-trade proposal was defeated in the Senate.[136] In July 2009, a somewhat different proposal narrowly passed in the House of Representatives,[137] but its momentum languished in the Senate in the waning months of 2009.[138] Opponents repeatedly labeled the cap-and-trade approach a tax,[139] diminishing cap-and-trade's perceived advantage as a non-tax instrument.[140] It remains to be seen whether the political gap between a trading regime and a carbon tax has narrowed sufficiently to swing the pendulum toward a carbon tax, the preferred outcome in the eyes of this author.[141] Even in the absence of a carbon tax, however, new environmental taxes have the potential to play an important policy role.

The future appetite for tax expenditures will depend largely on the question of whether or how to pay for the resulting lost revenue. Environmental tax expenditures have built momentum and supportive constituencies, so their use likely would continue if they could be fiscally

[135] Note that the two choices—cap-and-trade or a carbon tax—are not necessarily mutually exclusive. A trading regime could apply to just one sector, as in the European Union's emissions trading scheme, and some argue that a carbon tax could operate simultaneously with a cap-and-trade system. *See* Paul Ekins, *Carbon Taxes and Emissions Trading: Issues and Interactions*, *in* CARBON-ENERGY TAXATION: LESSONS FROM EUROPE, *supra* note 102, at 241, 253–54.

[136] The Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. (2008), failed to achieve cloture. 154 CONG. REC. S5334 (daily ed. June 6, 2008).

[137] The American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009), passed the House 219 to 212. 155 CONG. REC. H7686 (daily ed. June 26, 2009).

[138] The Clean Energy Jobs and American Power Act, S. 1733, 111th Cong. (2010), was reported out of the Senate Environment and Public Works Committee with a partisan vote but had not been brought to the Senate floor for debate as of September 2010. *See Bill Summary and Status, 111th Cong., S. 1733*, THOMAS, http://thomas.loc.gov/ (search for S. 1733 in the 111th Cong.).

[139] *See, e.g.*, 154 CONG. REC. S4879 (daily ed. June 2, 2008) (statement of Sen. Bond) (referring to Lieberman-Warner cap-and-trade bill as a "massive tax increase"); 154 CONG. REC. S4883 (daily ed. June 2, 2008) (statement of Sen. Inhofe) (citing columnist Robert Samuelson's "cap and tax" reference); 154 CONG. REC. S4933 (daily ed. June 3, 2008) (statement of Sen. Grassley) ("If it walks like a duck, talks like a duck, it is a duck. Well, this looks like a tax and talks like a tax."); 154 CONG. REC. S4937 (daily ed. June 3, 2008) (statement of Sen. Enzi) (citing columnist George Will's description of the cap-and-trade proposal as a carbon tax).

[140] POOLEY, *supra* note 33, at 87–88.

[141] An analysis of the relative merits of carbon taxes and trading regimes lies beyond the scope of this paper, but the author is particularly concerned about the lack of a stable price signal and the complexities of an enormous new trading market, especially given the role of derivatives. *See* Janet E. Milne, *Carbon Taxes Versus Cap-and-Trade: The Relative Burdens and Risks of Market-Based Administration*, *in* 7 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 445, 454–56 (Lin-Heng Lye et al. eds., 2009).

justified. With mounting concern over the record federal deficit and debt, however, deficit financing will be increasingly difficult, particularly if Congress applies pay-as-you-go rules with stringent procedural restraints. Proponents likely will need to find new revenue to offset the cost. A carbon tax or a cap-and-trade program that auctions emissions allowances could generate new revenue, some of which might be allocated to climate-related tax expenditures. Alternatively, Congress could repeal existing tax expenditures.

The repeal of environmentally damaging tax expenditures represents the third, and sometimes neglected, facet of environmental tax policy in the United States and an essential component of environmental fiscal reform. Often overshadowed by environmental taxes and environmental tax expenditures, the repeal of perverse incentives can certainly help correct price signals for polluting activities. A recent study found, for example, that the federal government provided $47 billion in tax expenditures for fossil fuels over a seven-year period.[142] Attention to this issue is increasing nationally and internationally. The economic stimulus legislation in late 2008 included $7 billion in cutbacks in tax expenditures for the oil and gas industry.[143] President Obama's budget for fiscal year 2011 called for eliminating tax benefits for domestic oil and gas production worth $36.5 billion over ten years,[144] a suggestion Congress has not yet enacted. To provide some perspective on these proposed repeals, the $3.6 billion average annual loss to industry would represent about 2% of the $174 billion value of oil and gas produced in 2009.[145] On the international front, the G-20 agreed at its meeting in Pittsburgh in September 2009, "[t]o phase out and rationalize over the medium term inefficient fossil fuel subsidies . . . . Inefficient fossil fuel subsidies encourage wasteful consumption, reduce our energy security, impede investment in clean energy sources and undermine efforts to deal with the threat of climate change."[146] These events suggest that the United States might look seriously at subsidy repeal in the coming years, aided by the quest for new revenue to support other endeavors.

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[142] ENVTL. LAW INST., ESTIMATING U.S. GOVERNMENT SUBSIDIES TO ENERGY SOURCES: 2002–2008, at 7–9 (2009). During the same period, tax expenditures for renewable energy totaled $18 billion. *Id.* at 21.

[143] STAFF OF J. COMM. ON TAX'N, 110TH CONG., *supra* note 12, at 5 (estimating ten-year revenue impact).

[144] U.S. DEP'T OF TREASURY, GENERAL EXPLANATIONS OF THE ADMINISTRATION'S FISCAL YEAR 2011 REVENUE PROPOSALS 151 (2010) (estimating cost over ten-year period). *See also* OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES 2010, *supra* note 84, at 269, 274 (2009) (proposing $31 billion repeal of tax expenditures for oil and gas companies).

[145] U.S. ENERGY INFO. ADMIN., DOE/EIA-0384 (2009), ANNUAL ENERGY REVIEW 2009, at 71 (2010).

[146] Pittsburgh Summit, Leaders' Statement 3 (Sept. 25, 2009) (emphasis omitted), *available at* http://www.pittsburghsummit.gov/documents/organization/129853.pdf.

Thus, revenue issues could drive the greenness of the tax code in the future. If government needs new sources of revenue to reduce the deficit, or to invest in the economy or the environment, it has the opportunity to turn to environmental taxes or the repeal of existing, environmentally damaging incentives. If it cannot find the revenue, it may need to curb its use of environmental tax expenditures. As reporters Woodward and Bernstein did during the Watergate investigation, we may follow the money.

A final factor is the question of the role of regulation in the future—whether the federal government will return to its 1970s roots and look more to regulation than market-based instruments. The Environmental Protection Agency has started using its authority under the Clean Air Act to regulate greenhouse gas emissions.[147] If resistance to a cap-and-trade regime or carbon tax continues in Congress, the Obama Administration can continue to use its regulatory authority to gain leverage for legislative action or to proceed in the absence of Congressional action. A dominantly regulatory approach could diminish the role of market-based instruments at least with respect to climate change, one of the most significant environmental issues of the early twenty-first century. One suspects, however, that the increasing national and global recognition of the importance of price signals will support the use of market-based instruments, particularly taxes or auctioned permits, for a range of environmental problems.

VIII. CONCLUDING OBSERVATIONS ABOUT ENVIRONMENTAL TAXATION

As President Nixon said in 1970, "by ignoring environmental costs we have given an economic advantage to the careless polluter over his more conscientious rival."[148] There are multiple ways to correct the economic imbalance—through Pigou's extraordinary restraints or extraordinary encouragements, regulations that impose costs and obligations, and other means.

The U.S. experience shows that the design of environmental taxes is technically feasible. As demonstrated by the ozone-depleting chemicals tax and the gas guzzler tax, one often can find an appropriate tax base that bears a sound correlation to the environmental problem. Even good designs, however, may require updating, such as expansions of the tax base when circumstances change or adjustments in the tax rate over time.

The end result often is not an idealized Pigouvian tax, but instead what one might consider a pragmatic Pigouvian approach—a second-best

[147] *See* Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (to be codified at 40 C.F.R. pts. 51, 52, 70, and 71).

[148] Special Message to the Congress on Environmental Quality, *supra* note 1, at 96.

tempered by equity, economic impact, administrative feasibility, and political considerations. These considerations are an inherent and proper part of the analysis of any tax, but they may place taxes at a perceived disadvantage relative to regulatory approaches. Regulatory instruments tend to disguise their non-environmental impacts, or at least lower their visibility to voters and consumers. Government should be concerned with the same issues because the impacts are no less real, and proponents of environmental taxes may need to ensure that both types of instruments are judged by the same standards.

A pragmatic approach is justifiable. Environmental taxes can take significant steps toward implementing and accentuating the polluter-pays principle and the internalization of externalities. By adjusting prices, they can influence behavior and send significant educational messages. Pragmatism may carry less cause for concern when the tax is designed to achieve long-term structural shifts. In that case, the government is not designing the tax rate to try to achieve shifts to known technologies on a least-cost-abatement basis,[149] where precision may be important to cost-effectiveness. Instead, it is sending a blunter signal for change in potentially unpredictable ways. In addition, tolerance may be higher where the revenues are allocated in part or in whole to the environmental problem, buttressing the environmental impact of the tax itself.

It is also important to place environmental taxes in their broader regulatory context. For example, the tax on ozone-depleting chemicals operates alongside the Montreal Protocol's mandates for phasing out the chemicals. While the environmentally positive results are not solely attributable to the injection of a tax into the private sector's decision-making process, studies of the ozone-depleting chemicals tax suggest that it did help accelerate the use of substitute chemicals.[150] In the environmental arena, where problems and solutions are often multi-faceted, problems often may require multiple instruments.

The presence of some degree of pragmatism and the presence of multi-faceted solutions enhance the need for *ex post* analyses to determine the effectiveness of the taxes standing alone, in relation to the use of their revenue, and in relation to any surrounding environmental

[149] *See, e.g.*, SURREY, *supra* note 4, at 156–57; Baumol & Oates, *supra* note 4, at 46.

[150] *See* J. Andrew Hoerner, *Tax Tools for Protecting the Atmosphere: The U.S. Ozone-Depleting Chemicals Tax*, *in* GREEN BUDGET REFORM 185, 191–93 (Robert Gale, Stephen Barg & Alexander Gillies eds., 1995); Sara P. Boroshok, *Environmental Excise Taxes, 1994–1995*, STAT. INCOME BULL., Spring 1997, at 99, 103. The tax also helped government capture the windfall from the regulatory phase-out that presumably would otherwise have gone to the industry. Similarly, the gas guzzler tax applies to vehicles that are also subject to federal fuel-economy standards for manufacturers' fleets of vehicles, 49 U.S.C. §§ 32901–32919 (2006), as well as other regulatory and tax measures that influence behavior. *See generally* Janet E. Milne, *The American Love Affair with Cars: The Mixed Beats of Taxation's Background Music*, *in* 3 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION, *supra* note 30, at 85.

regulations. Environmental taxes should not retain their environmental credentials merely by virtue of having environmentally oriented design features; they should prove their worth, just as environmental regulations must be enforced to have merit. Environmental protection is not well-served by paper tigers. *Ex post* studies of the effectiveness of tax signals are challenging because one must isolate the tax factors from other factors that contributed to decisions, yet they are a frequently-neglected essential in the United States. *Ex post* studies also could evaluate institutional aspects, such as the effectiveness with which the government has overcome the jurisdictional barriers between tax and environmental authorities.

As a matter of policy, environmental taxes generally seem preferable to environmental tax expenditures. Although sometimes politically more challenging, they place the cost on the polluters. They also avoid the problem of government picking winners and losers, which inevitably happens when choosing among technologies or practices that will qualify for tax expenditures. Tax expenditures nevertheless may serve a role, such as when government needs to further accelerate the deployment of technologies that are known but not yet assimilated into everyday commerce. Their use should be closely monitored, however, to ensure that they are serving as incentives, not rewards for activities that would occur in any event. They may be politically popular because they reduce tax burdens, but their real fiscal consequences in forgone revenues should carry a high burden for showing necessity. Again, the lack of systematic *ex post* accountability of their environmental effectiveness and fiscal impact is a glaring omission in the United States.

In the end, environmental taxation offers interesting opportunities. The two sides to its identity—the environmental side and the tax side—place it in a position of strength. Environmental taxation can harness the tax regime, a potent delivery system, to send a broad spectrum of negative or positive price signals, and the price signals it sends can penetrate into the corners of private decision-making. The motivation for enactment may come from the environmental goal or from the fiscal perspective—the desire for new revenues or the desire to deliver financial benefits—or both.[151] Environmental regulation is more rigid and monochromatic in nature, and it must rely primarily on the environmental motivation for enactment.

Environmental taxation faces its largest global test of policy and politics in the coming decade. As countries around the world consider policies for reducing greenhouse gas emissions, they will explicitly or implicitly decide whether and how to use environmental tax policy to address climate change. Given the multi-sectoral, multi-faceted nature of the issues, taxation undoubtedly will play a role among the range of policy instruments, although the size and nature of that role remains to

[151] By the same token, as noted above, the lost revenues from environmental tax expenditures can limit their use in times of fiscal restraint.

be seen. Regardless of environmental taxation's prominence in climate change, its versatility will allow it to continue to play a role in other spheres as well. The need for extraordinary restraints and encouragements will continue.