

# TAX REFORM AND THE ENVIRONMENT: WHY AND HOW?

*Working paper*

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“Taxes” and “the environment” are two concepts that typically are not uttered in the same sentence. Current events, however, may encourage us to more readily link them together over the coming years. The Bush Administration recently called for federal tax reform and the country is facing persistent budget deficits. In addition, the nation continues to encounter a number of environmental challenges including urban smog, water pollution, and climate change. This paper outlines four observations suggesting changes to the tax code that can help address all three of these issues; changes that improve not only *fiscal responsibility* but also *environmental quality*.

## **1. Taxes and the environment: A two way street**

The first observation is that there *is* a relationship between the federal tax code and the environment, *and* it’s a two way street. Tax policies impact many of the decisions that individuals and businesses make such as how much to work, spend, and save; where to start a new business; and when to make business investments. Often unrecognized, however, is the fact that tax policy *also* can influence how much we consume, how we use our natural resources, and how much pollution is released into our air and water.

Some tax policies have intended, positive impacts on the environment and human health. For example, since 1989 excise levies on ozone-depleting chemicals have played a role in reducing the production and use of chlorofluorocarbons.<sup>1</sup> Others have unintended, negative environmental effects. For instance, farmers who irrigate in the Great Plains get a tax deduction for extracting groundwater in volumes that *exceed* what is naturally replenished each year.<sup>2</sup> Thus farmers are receiving a tax break for being inefficient and for depleting a national asset, our aquifers.

Moreover, not only can fiscal policies impact environmental health, but also environmental policies can impact fiscal health. This refers to the fact that policies such as environmental levies can raise revenue. This is an important consideration as the Administration tackles fiscal policy issues such federal deficit reduction and tax reform.

Consider for a moment the budget deficit. It reached a record \$412 billion last year and many analysts expect that large deficits will continue, especially as baby boomers retire and collect Social Security and Medicare benefits.<sup>3</sup> Some observers have concluded that spending restraint alone will be insufficient to solve this problem.<sup>4</sup> Just six weeks ago, in fact, Federal Reserve Chairman Alan Greenspan stated that he expects new revenue measures to be part of any eventual agreement to reduce the deficit.<sup>5</sup> Environmental levies could be one such revenue measure.

Alternatively, consider the President's tax reform initiative. Some reform proposals being suggested include provisions to further shield savings and investment from taxation and to eliminate the AMT.<sup>6</sup> Since the President has stipulated that any reform must be "revenue neutral," there will be a need for a suite of counterbalancing revenue enhancements. Some of the environmental fiscal measures outlined below could be part of such a package.

## **2. Eliminating tax expenditures with adverse environmental impacts**

One action that policymakers could take to meet tax reform or deficit reduction goals is to eliminate a number of existing tax expenditures that are both fiscally and environmentally damaging. "Tax expenditures" are tax exemptions, deductions, loopholes, and so on. In other words, *subsidies* provided through the tax system. Most notable among these are provisions for mature industries such as oil, mining, timber, and automobiles. The tax code, for example, gives independent oil and gas producers as well as hard-rock mining companies income tax deductions reflecting the depletion of the non-renewable resources they extract.

This "percentage depletion allowance" works against common sense notions of free markets, innovation, environmental protection, and fiscal responsibility. For instance, although this provision may have made sense 90 years ago when originally implemented,<sup>7</sup> it doesn't now. These industries are clearly mature and should be governed by the free market. This subsidy also inhibits development of more efficient technologies and discourages recycling, which can be more efficient for aluminum and certain plastic resins relative to using virgin stock. By rewarding extractive activities beyond what is warranted by market demand, the provision encourages additional environmental damages such as groundwater contamination that we later have to clean up. And if *that's* not enough, the American public is paying for all of this, to the tune of nearly \$4 billion over the next five years.<sup>8</sup> There are many other similar provisions that could be eliminated and thereby simplify and improve the tax code.<sup>9</sup>

Some may argue that it is nearly impossible to eliminate tax expenditures such as these. It is difficult; behind every tax preference there is a powerful constituency. But such reform has been done before. Last October, for instance, Congress was able to significantly reduce the size of the infamous "SUV tax loophole".

## **3. Introducing pollution charges**

The third observation is that an additional opportunity for tax reform in a manner that improves not only fiscal responsibility but also environmental quality is to utilize pollution taxes or charges.<sup>10</sup> Political debates about taxes usually deal with the question of *how much* to tax. An equally important issue, however, is *what* to tax. Our taxes currently fall primarily on activities that make the economy productive: Work, savings, and investment. Such taxes can discourage people from pursuing these important activities. A better system would place more of the tax burden on activities that make the economy unproductive and that reduce our quality of life; activities such as pollution and resource waste.<sup>11</sup> In other words, things that society *wants* to discourage.

One way to do this is through pollution charges. These are fees on the amount of pollution that a firm or product releases into the air, water, or soil.<sup>12</sup> They are a means of tackling "market failures" that arise when businesses and consumers are not confronted with the full health and

environmental costs associated with their activities. If designed appropriately, a charge can address market failures by providing price signals that more accurately reflect these costs. Quite fairly, they make polluters pay for their damages and incorporate these costs into their decisions and product prices.

By affecting behavior through prices, pollution charges harness market forces to improve efficiency and environmental quality. Thus they can have several advantages relative to more traditional environmental policies that mandate polluters to cut emissions by exactly the same amount or with the same emission control technology.<sup>13</sup> For instance:

- Pollution charges encourage *cost-effective* emission reductions; companies that can cut back at little cost will while those facing higher costs will cut back less.
- They are *flexible*, allowing firms to make their *own* decisions on how to reduce emissions.
- They can stimulate *continuous technological innovation* for better pollution-control methods and cleaner inputs.
- In addition, pollution charges *generate revenue* that can be used to meet other objectives.<sup>14</sup>

Pollution charges are not new; they are being used in many OECD countries and several U.S. states.<sup>15</sup> Even China is using charges to address some of its environmental problems such as water pollution.<sup>16</sup>

When should pollution charges be used? Economists generally agree that they are an appropriate policy instrument for dealing with certain, but not all, types of environmental problems.<sup>17</sup> For instance:

- They are effective at addressing pollution caused by a large number of different sources, so many sources that permit trading or direct regulations would be difficult to administer.
- They are well suited for situations where emission reduction costs differ significantly between polluters, such that a “one-size-fits-all” policy would be inefficient.
- They are effective at addressing environmental problems where there is no single technical fix.
- Likewise, they are appropriate when the environmental problem is *not* in danger of reaching a catastrophic threshold in the near future. This is because charges do not guarantee a ceiling on the amount of pollution released, just on the cost of pollution control.
- From an implementation perspective, they are appropriate when emissions or the products associated with emissions are relatively easy to measure or monitor.

Given these conditions, which pollution charges could make sense nationwide? The following are a few examples:

### ***Nitrogen fertilizer charge***

One option is a pollution charge on fertilizers to address the growing problem of nutrient overloading in our waterways and coasts. The appearance of “dead zones” in places such as the Gulf of Mexico and the Chesapeake Bay has recently made headlines. Dead zones are vast regions of oxygen-depleted waters in which bottom-dwelling organisms die and fish are driven away. These zones damage shrimp, crab, and oyster communities as well as other industries such as commercial and sport fishing.

Dead zones are triggered by nutrient pollution, especially nitrogen, often from agricultural sources. Experts estimate that half the nitrogen overload in the Gulf of Mexico, for instance, comes from agricultural fertilizers and soil nitrogen from farmland in the Mississippi River basin.<sup>18</sup> A big part of the problem is that American farmers waste a lot of fertilizer. According to the National Academy of Sciences, approximately 20% of nitrogen applied to fields is not used by crops; instead, much ends up in lakes and coastal waterways via run-off and drainage.<sup>19</sup>

A nitrogen fertilizer charge, easily administered at the point of purchase, could help address this issue. It would create an incentive for farmers to eliminate inefficient fertilizer use yet still allow them to maintain yields.<sup>20</sup> Furthermore, it meets the criteria discussed above and may be one of the few practical approaches for tackling this issue given the large number of pollution sources. Modeling conducted by the World Resources Institute indicates that a charge incentivizing a 10% decrease in fertilizer usage could generate over \$3 billion per year.<sup>21</sup>

### ***Carbon levy***

A second pollution charge to consider is a levy on the carbon content of fossil fuels. The levy would be proportional to the amount of carbon dioxide that is released when coal, oil, and natural gas are burned for energy. A carbon levy would be a good, market-based first step for addressing the challenge of man-made climate change. In order to give individuals and businesses time to adjust, it could be phased in gradually and then the market could figure out the most efficient solutions.<sup>22</sup>

How much would this raise? Assume a price range of 5-25 U.S. dollars per metric ton of carbon.<sup>23</sup> The low end of this range reflects prices currently on the Chicago Climate Exchange<sup>24</sup> while the high end reflects the “cost cap” suggested by the National Commission on Energy Policy.<sup>25</sup> In terms of consumer prices, this translates into just 1-6 cents per gallon of gasoline.<sup>26</sup> Such a carbon levy would yield between about 8 and 38 billion dollars per year given current fossil fuel consumption levels.<sup>27</sup>

Energy-related levies have been politically controversial in this country. But new challenges call for new ways of thinking. For example, prior to becoming Chairman of the President’s Council of Economic Advisors, Gregory Mankiw argued in favor of increasing the gasoline tax to finance tax reform.<sup>28</sup> This spring, editors of the news magazine *The Economist* recommended levies on energy as a means of addressing America’s energy security issues.<sup>29</sup> Duke Energy, one the country’s largest electric utilities, publicly announced in April its support for a carbon levy.<sup>30</sup>

Furthermore, since January of this year, Americans have been living with what is essentially a 30 to 40 cent per gallon levy on gasoline, yet the country have outsourced the tax collection function to OPEC. Thus Americans receive absolutely no benefits: No revenue for deficit reduction, for assistance to low income households, or for technology R&D.

### ***Other candidates***

There are other candidates to consider, as well. For instance, pollution charges could be applied to airborne mercury emissions from industrial sources besides utilities.<sup>31</sup> The U.S. also could utilize user fees<sup>32</sup> for public lands and natural resources to a greater extent than we do today.

One area requiring further research is the broader consumption tax. Some proposals being made to the Advisory Panel on Tax Reform include value added taxes or a national sales tax. There

are mixed views on what implications a VAT would have for the environment. Does resource consumption decline due to higher consumer prices? Or do other factors lead to increased pollution? Little research to address such questions has been recently conducted.

#### **4. Incorporating into tax reform or deficit reduction packages**

Introducing new pollution charges in the U.S. would be a challenge in today's political climate. But this leads to the fourth and final observation, which is that initiatives to reform the tax code and to reduce budget deficits actually provide a timely opportunity for considering such charges. In both contexts, policymakers will have to make difficult tradeoffs and will be looking for new revenue measures. So why not consider fiscal policies that provide revenue and at the same time increase efficiency, stimulate technological innovation, protect human health, and improve environmental quality?

Consider tax reform for a moment. Revenue from pollution charges could be utilized to lower other distortionary taxes as part of an innovative, *revenue-neutral* tax reform package. For instance, revenue from the charges mentioned above could be part of a fiscal package that lowers payroll or marginal income tax rates. Alternatively, if the President's Advisory Panel on Tax Reform recommends eliminating the double taxation of corporate dividends, the foregone revenue could be offset by a carefully crafted carbon levy.

This essentially entails a *tax shift*. We reduce taxes on things we want more of—namely work and savings—and compensate by increasing taxes on things we want less of—namely pollution and waste. A tax shift could help mitigate the impact of pollution charges on low-income households, affected businesses, or others. Some tax shifts may be more beneficial in terms of economic efficiency while others better in terms of equity,<sup>33</sup> so policymakers should carefully consider the designs.

Alternatively, we could go *beyond* revenue-neutrality and use the proceeds from pollution charges to contribute to federal deficit reduction. This would help ensure that the government is able to meet commitments to important policy goals such as social and national security, and it would help us avoid passing the burden of higher taxes onto our children. Again, as Alan Greenspan and others have recently noted, new revenue measures likely will be part of an eventual deficit reduction package. Although they alone won't solve the deficit crisis, pollution charges could be an attractive part of the solution.

#### **Summary**

In conclusion, these four observations suggest that taxes and the environment have quite a bit to do with one another. First, fiscal policies impact environmental health while environmental policies can contribute to fiscal health; it's a two way street. Second, there are a number of current tax expenditures that, if eliminated, not only would improve the environment, but also would simplify the tax code, reduce the deficit, and improve market efficiency. Third, when considering *what* to tax, we should consider placing more of the burden on activities that make the economy unproductive and that reduce our quality of life, namely resource waste and pollution. Finally, we could incorporate revenue from pollution charges into tax reform or deficit reduction initiatives and thereby achieve both fiscal and environmental improvements.

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- <sup>1</sup> To meet its obligations under the Montreal Protocol, the U.S. established quantity restrictions on chlorofluorocarbons (CFCs) and halons accompanied by a trading system for CFC production rights. The U.S. also introduced a levy on ozone-depleting substances to further encourage the introduction of CFC substitutes and to prevent windfall profits from accruing to the private sector due to scarcity rents created by the quantity restrictions. There is some debate among economists regarding the relative impact of each policy measure. See Barthold, T. 1994. "Issues in the Design of Environmental Excise Taxes." *Journal of Economic Perspectives* 8 (1): 133-151.
- <sup>2</sup> Internal Revenue Service. 2004. *Farmer's Tax Guide*. Washington, DC.
- <sup>3</sup> Rivlin, A. and I. Sawhill (eds). 2004. *Restoring Fiscal Sanity*. Brookings Institution Press, Washington, DC.
- <sup>4</sup> For example, see comments by Bruce Bartlett in Krugman, P. "The Dishonesty Thing", *The New York Times*, September 10, 2004, page 25.
- <sup>5</sup> Henderson, N. "Greenspan Says He Expects a Tax Increase", *Washington Post*, April 22, 2005, page E01.
- <sup>6</sup> See Olson, P. "Tax Reform Materials." Memorandum for Secretary O'Neill. U.S. Department of the Treasury. November 7, 2002; Crutsinger, M. "Bush's Tax Overhaul May Be Incremental". Associated Press, December 21, 2004; Rozenberg, G. "America's Richest Expect Tax Cuts as Review Starts". *The Times* (London), February 14, 2005, page 42; Wolf, R. "Ending Alternative Minimum Tax Could Be Costly, Panel Leaders Warn." *USA Today*, May 18, 2005, page 2A.
- <sup>7</sup> Koplow, D. 2003. "Durante Way Off Base in Support for H.R. 6." Earth Track, Inc., Cambridge, MA.
- <sup>8</sup> Joint Committee of Taxation. 2005. *Estimates for Federal Tax Expenditures for Fiscal Years 2005-2009*. Washington, DC.
- <sup>9</sup> Nayak, N., Pica, E., and A. Roder. 2004. *Green Scissors Report 2004*. Friends of the Earth, Washington, DC.
- <sup>10</sup> While recognizing that there are legal distinctions between environmental taxes and fees, the author is using the generic term "charges" to broadly refer to both for the purpose of this paper. For an outline of these distinctions, see Repetto, R., R. Dower, R. Jenkins, and J. Geoghegan. 1992. *Green Fees: How a Tax Shift Can Work for the Environment and the Economy*. World Resources Institute, Washington, DC.
- <sup>11</sup> Repetto, R., R. Dower, R. Jenkins, and J. Geoghegan. 1992. *Green Fees: How a Tax Shift Can Work for the Environment and the Economy*. World Resources Institute, Washington, DC.
- <sup>12</sup> Pollution charges create incentives for firms to reduce emissions to the point where the incremental cost of reducing pollution (marginal abatement cost) is equal to the charge rate. In situations where directly measuring emission levels proves difficult or prohibitively expensive, pollution charges could be assessed on the product the use of which generates emissions. More information about pollution charges can be found in Portney, P. and R. Stavins (eds.). 2000. *Public Policies for Environmental Protection*. Second edition. Resources for the Future, Washington, DC.
- <sup>13</sup> Auctioned tradable pollution allowances/permits can offer the same listed advantages.
- <sup>14</sup> This is one respect in which pollution charges differ from tradable pollution allowances/permits that are distributed freely to polluters, as is the case in the U.S. sulfur dioxide cap-and-trade regime.
- <sup>15</sup> Stavins, R. 2001. *Experience with Market-based Environmental Policy Instruments*. Regulatory Policy Program Working Paper RPP-2001-11, Harvard University, Cambridge, MA.
- <sup>16</sup> Wang, H. and D. Wheeler. 1996. *Pricing Industrial Pollution in China: An Econometric Analysis of the Levy System*. World Bank, Washington, DC.
- <sup>17</sup> These and additional parameters can be found in Repetto, R., R. Dower, R. Jenkins, and J. Geoghegan. 1992. *Green Fees: How a Tax Shift Can Work for the Environment and the Economy*. World Resources Institute, Washington, DC.
- <sup>18</sup> Goolsby, D., W. Battaglin, G. Lawrence, R. Artz, B. Aulenbach, R. Hooper, D. Keeney, and G. Stensland. 1999. *Flux and Sources of Nutrients in the Mississippi-Atchafalya River Basin: Topic 3 Report for the Integrated Assessment of Hypoxia in the Gulf of Mexico*. NOAA Coastal Ocean Program Decision Analysis Series No. 17. Silver Spring, MD.
- <sup>19</sup> National Research Council. 1993. *Soil and Water Quality: An Agenda for Agriculture*. National Academy Press, Washington, DC.
- <sup>20</sup> National Research Council. 1993. *Soil and Water Quality: An Agenda for Agriculture*. National Academy Press, Washington, DC.

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<sup>21</sup> Greenhalgh, S. and A. Sauer. 2003. *Awakening the Dead Zone: An Investment for Agriculture, Water Quality, and Climate Change*. World Resources Institute, Washington, DC.

<sup>22</sup> See Burtraw, D. and P. Portney, "A Carbon Tax to Reduce the Deficit," in R. Morgenstern and P. Portney (eds.). 2004. *New Approaches on Energy and the Environment*, Resources for the Future, Washington, DC. In addition, to help allay concerns about global competitiveness, the U.S. could use "border tax adjustments" (BTAs) under which the domestic levy is applied on imports and rebated on exports. For further discussion about BTAs and allowance under WTO rules, see Hoerner, J.A. 1998. *The Role of Border Tax Adjustments in Environmental Taxation: Theory and U.S. Experience*. Working paper. Center for a Sustainable Economy, Washington, DC.

<sup>23</sup> Approximately \$1.35 - \$6.80 per metric ton of carbon dioxide equivalent.

<sup>24</sup> Chicago Climate Exchange. *Market Data*. Available on-line at: <http://www.chicagoclimatex.com/trading/stats/daily/index.html>. Accessed May 25, 2005.

<sup>25</sup> National Commission on Energy Policy. 2004. *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*. The National Commission on Energy Policy, Washington, DC.

<sup>26</sup> Calculation based on Energy Information Administration. "Quick Stats", U.S. Department of Energy, Washington, DC. Available online at <http://www.eia.doe.gov/neic/quickfacts/quickoil.html>; Burtraw, D. and P. Portney, "A Carbon Tax to Reduce the Deficit," in R. Morgenstern and P. Portney (eds.). 2004. *New Approaches on Energy and the Environment*, Resources for the Future, Washington, DC.

<sup>27</sup> Estimates are indicative only and are based on current U.S. carbon dioxide emissions by fossil fuel used for energy generation. U.S. Environmental Protection Agency. 2005. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003*, Table 3-3. U.S. Environmental Protection Agency, Washington, DC.

<sup>28</sup> Mankiw, N.G. 1999. "Gas Tax Now!" *Fortune* 139: 10, page 60.

<sup>29</sup> *The Economist*. 2005. "The Real Trouble with Oil." 375: 8424, page 9.

<sup>30</sup> Energy Washington Week, "Duke Push for Carbon Tax May Signal Shift Toward Nuclear Power", April 13, 2005.

<sup>31</sup> Emissions from non-utility industry sources and hazardous waste incinerators represent approximately 39% of U.S. airborne mercury emissions. A pollution charge could complement existing regulations of these sources, creating incentives for further emissions reductions. These sources are not covered by the recently announced EPA "mercury rule", which addresses coal-fired utility boilers.

<sup>32</sup> User fees are not "pollution charges" *per se* but rather are a different type of environmental charge. In the context of this paper, user fees are taxes assessed on access to or use of publicly held resources. The revenue raised by user fees usually funds specific direct expenditure programs. Candidate targets for introducing or increasing user fees include grazing rights on public lands, recreational use of national forests and other public lands.

<sup>33</sup> The impact on efficiency and equity will depend on how the revenue is recycled. Furthermore, the reader should note that although using the revenue from a pollution charge to lower marginal rates of other taxes can reduce the total economic cost of the environmental policy, it still may reduce welfare if the environmental benefits are not included in the economic calculations. Thus, environmental charges should be justified primarily for their environmental benefits, not reform of the tax system *per se*. For discussion of this issue and the "double dividend" debate, see Goulder, L. 1995. "Environmental Taxation and the Double Dividend: A Reader's Guide." *International Tax and Public Finance* 2: 157-183; and Parry, I. "Pollution, Taxes, and Revenue Recycling." *Journal of Environmental Economics and Management* 29: 64-77.