

Mainstreaming Environmental Markets

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Abstract: Mitigation banking is still opposed by many environmental groups because they see it as a way of enabling development, much as they once opposed emissions trading as being a ‘license to pollute’. At the same time environmental scientists strongly advocate a recognition of the financial value of conservation on private property in order to ensure that ‘ecosystem services’ provided by these properties continue. There are clear benefits from the use of market approaches to environmental improvement, but poor market design and implementation has led to failures and opened these approaches to criticism. Lessons from solid waste & materials policy, and from energy policy, may be relevant to market design for improvement of land and water resources and protection of endangered species.

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While mitigation banking¹ is a relatively new application of market based or incentive based regulation for environmental improvement, it is a logical extension of previous steps taken to protect and restore public goods. In a sense, all environmental regulation internalizes the cost of pollution, ‘take’, or other impact, by imposing a related cost on the economic actor producing the impact. Traditional ‘command and control’ regulation, however, imposes these costs in such a way that incentive for improvement in environmental performance is limited. Why would a rational actor invest in environmental improvement beyond the objective of compliance? We know this approach is flawed however: If emitting 11 parts per million of a substance makes one a criminal, then emitting 10 parts per million of the same substance can’t be “just fine” even though it is not against the law.

In the area of land management, the clear benefits of a market approach are:

- An incentive is provided for private landowners to invest in protection, enhancement, restoration and creation of environmental features on their property.

¹ Defined broadly, for the purposes of this paper, to include ‘Conservation Banking’ as well as more conventional water resource based ‘Mitigation Banking’. So: government certified preservation, enhancement, restoration or creation of environmental features on private property, including both wetland & stream features as well as habitat for endangered species.

- Successful completion of project design, approval and clear success criteria becomes a competitive advantage for suppliers of environmental services.
- Presence of competing service providers provides cost-effective procurement of environmental offsets for public and private sector projects that impact environmental features, and;
- A regulated industry of environmental service providers improves financial assurance, monitoring and enforcement, thus resulting in higher likelihood of ecological success.

However, there are a number of structural requirements needed for these benefits to be realized.

Required structural elements can be divided into the general categories of:

- *Predictable enforcement of environmental laws.* No one will mitigate the impact of a project on species habitat or water resources unless they have to. To do otherwise confers competitive disadvantage, as it adds project cost without adding commercial value to the project.
- *An incentive to achieve and surpass specific environmental objectives.* Landowners and investors in mitigation projects must be able to get a rate of return on the actions required (e.g. placing a conservation easement on their property, engineering stream restoration, or removing invasives from endangered species habitat), or they will not voluntarily take these actions.

Essentially, if you want to have the benefits of a market for environmental performance improvements, you have to let the market work.

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Object Lessons from Waste and Energy Policy

There are some similarities between the environmental and economic benefits of regional landfills and large-scale mitigation projects. The volume of material they can handle means higher revenue, which in turn means that these facilities can afford a higher level of environmental protection investment. They also reduce the cost and difficulty of monitoring and enforcement, as they reduce the number of small and substandard facilities requiring site visits. In 1972, there were some 25,000 landfills in the United States, many really no more than glorified town dumps and unlined quarries. Following the passage of RCRA Subtitle D, which greatly improved the environmental performance standards required to site a landfill, the number has shrunk to approximately 2,500.

At the same time, improved environmental standards conferred competitive advantage on those firms that had both the will and the means to invest in high quality environmental protection. In fact, environmental groups found themselves lobbying for these higher

standards alongside of the larger national companies, which was not exactly a commonplace occurrence.

In the area of materials policy, contracted service providers were traditionally provided financial incentives to collect and landfill (or incinerate) discarded materials, but not to recycle them. In the late 1980's, contract structures were changed to allow a return on investment from the provision of curbside recycling services. Over the past 25 years, recycling has gone from being a marginal activity provided by hippies at drop off centers, to a mainstream service provided to the vast majority of American homes.

While we continue to generate some 230 million tons of discarded material each year, nearly 30% (or 68 million tons) is now recycled, up from 6.4% in 1960.² The cost increases in environmental protection that led to investment in recycling services also resulted in waste prevention. In 2000, over 55 million tons of material was prevented from entering the waste stream through design, process and management changes.³ By 2001, there were nearly 10,000 residential curbside recycling programs in place across the U.S., and private waste companies had invested in the range of \$7 - 10B in recycling infrastructure over the past two decades⁴.

So: the solid waste sector provides us with examples of environmentally significant self-interested investment resulting from alignment of incentives and clear policy goals.

Not long ago, utilities were in the same position as solid waste companies before recycling incentives were provided. They were paid by the kilowatt produced, just as solid waste companies were paid by the ton disposed. As a result, it was in their fundamental self-interest for customers to use as much energy as possible. When contract incentive structures were provided by Public Utilities Commissions, companies could earn a return on investment by providing *energy efficiency* solutions for customers as well.^{5, 6} Specific actions invested in by utilities include rebates on energy efficient appliances, home improvements like insulation and double glazed windows, and even process consulting to energy intensive businesses.

These actions are justified by their cost-effectiveness. U.S. utilities and their customers spend approximately \$5B per year on energy efficiency investment, with an average cost of 2 cents per kilowatt-hour (kWh). In contrast, each kWh delivered by a power plant costs something on the average of 5 cents.⁷ The key lesson here is that it is often cheaper

² Municipal Waste in the United States, EPA (<http://www.epa.gov/epaoswer/non-hw/muncpl/pubs/msw-sum01.pdf>)

³ Ibid

⁴ Private communication, Waste Management Inc. government affairs office, 4/21/04

⁵ For a fabulous description of the process by which E2 investment became allowable by one Utilities Commission, see *Dynamos and Virgins* (Random House, 1984) by David Roe, who happens to be the grandson of the founder of Pacific Gas & Electric.

⁶ For a complete run-down on US energy efficiency data, see "Measuring Energy Efficiency in the U.S. Economy: A Beginning" published by the US Department of Energy (<http://www.eia.doe.gov/emeu/efficiency/contents.html>)

⁷ Rocky Mt. Institute (<http://www.rmi.org/sitepages/pid321.php>)

to prevent a problem than to create one and clean up afterwards. Sending a cost signal to those that impact natural features on the land will result in more careful site selection and design to avoid such impacts.

While some have argued that recycling and energy efficiency advances ‘enable’ continued consumption of materials and energy, the critical consensus in the environmental community is that these activities are positive contributions towards the vision of a sustainable society, and should be supported. Similarly, while mitigation banking clearly ‘enables’ development, the environmental ethics question hinges on whether or not the total production of ecosystem services was increased or decreased through the combined results of the development and the associated mitigation.

More broadly, if we accept that production of goods and services will in fact impact the environment, and that we will in fact continue to produce goods and services, the fundamental question is: How can we produce goods and services in a manner fundamentally aligned with natural systems? This is the question at the heart of the challenge posed by the word “sustainability”, and it provides guidance for thinking about what types of mitigation are ultimately acceptable.

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Case Studies in Mitigation Banking Best Practices

While mitigation banking has been actively practiced in the US for over two decades, the latest generation of programs increasingly demonstrates the principle of "reliable compensation for verifiable conservation action". The following are examples of specific variations in the approach to providing incentives.

Case Study 1

North Carolina Ecosystem Enhancement Program: Government as ‘wholesale’ buyer

The North Carolina EEP is an example of government acting as a consolidated purchaser of environmental improvement results through a competitive procurement process. The program intends to provide programmatic mitigation and develop watershed level protection and enhancement to replace *functions* prior to these impacts occurring. The EEP is being developed and administered in conjunction with the US Army Corps of Engineers (USACE).

As impacts are identified, the NC DOT contracts with private firms to facilitate a wetland or stream mitigation projects that are planned, designed, constructed and monitored on property acquired by that firm. This process includes the following steps:

- solicit proposals from interested contractors,
- review qualifications and prequalify contractors (currently 30 listed),
- identify mitigation needs by location, habitat type, and amount,
- issue Request for Proposals to qualified contractors,
- review proposals,

- conduct site visits with NCDOT staff,
- evaluate and select appropriate sites based on price and potential, and
- negotiate and enter into contracts with selected firms.

Evaluation of contractors' proposals is done by NCDOT environmental staff based on two criteria - technical quality and cost. After a selection is made, the contractor's proposal is made part of permit applications. Currently this program has executed thirteen contracts that involve 1975 acres, 848 wetland credits, and 31,025 feet of stream restoration, at a total cost of \$31,520,100.

There remain a number of key defects in this 'market' for environmental services, which continue to prevent truly efficient and effective performance. One defect is the continued presence of 'in lieu fee' mitigation options for those that impact wetlands, streams and habitat. Even more problematic is regulatory agency acceptance of 'ad hoc' mitigation of impacts. Neither in lieu fees nor ad hoc projects result in predictable, measurable offset of impacts.⁸ The history of in lieu fee programs is that relatively modest mitigation is actually achieved, and that what is achieved occurs well after the impact. The history of ad hoc approaches is that the work is done without regard to meaningful success criteria and long-term monitoring and maintenance and that a collection of relatively small projects provide limited ecosystem benefits.

Another major issue is the lack of ongoing analysis comparing ecological impact with ecological restoration resulting from projects. Ecological success criteria are implicit in the EEP goals, described as 'watershed-need based ecosystem enhancement', and the program is clearly moving in the direction of more explicit replacement of ecological functions lost through the utilization of functional assessments.⁹

Case Study 2

Florida Water Management Districts: Government enabled 'retail' market¹⁰

The Florida Legislature passed rules for development of private mitigation banking in 1993¹¹. In 1996, SB 1986 was passed directing the state Department of Transportation (DOT) and the Department of Environmental Protection (DEP) to address impacts of transportation infrastructure development on a regional rather than project-by-project basis. Water Management Districts are given the responsibility to develop regional mitigation plans, and to establish the technical, legal and financial criteria for evaluating mitigation bank proposals. The law clearly states that private parties can establish banks as long as:

⁸ See Wetlands Protection: Assessments Needed to Determine Effectiveness of In-Lieu-Fee Mitigation, US General Accounting Office Report to Congressional Requesters, May 2001

⁹ "North Carolina's Ecosystem Enhancement Program: A new approach to mitigation"; presentation by Bill Gilmore of NCDENR at National Mitigation Banking Conference, New Orleans, 03/04.

¹⁰ For general information on Florida's mitigation banking programs, see *Florida Trend*, June 9, 2000 issue "Swamp Repair"; www.floridatrend.com or the Florida Department of Environmental Protection site under their 'Water Programs' section;

www.myflorida.com/environment/learn/waterprograms/mitigate/dotmit.html

¹¹ Environmental Reorganization Act of 1993 (Section 373.4135)

- The bank site meets ecological criteria
- The banker has sufficient legal interest to operate the bank, and
- The banker can meet financial responsibility requirements

As a result of this basic framework, a \$20M per year market has been established, with an average sales price of \$34,000 per credit, and approximately 50,000 acres of wetlands protected and restored.

The Florida program incorporates rigorous enforcement of both wetland and associated upland buffer mitigation requirements, resulting in consistent demand for conservation and restoration measures on private property. The program also provides ongoing analysis of impact vs. mitigation benefit, as well as explicit scientific success criteria through the 'Modified Wetland Rapid Assessment Program' (MWRAP).¹² The MWRAP reviews wildlife utilization; overstory/shrub canopy of desirable species; wetland vegetative ground cover of desirable species; adjacent upland/wetland buffer; field indicators of wetland hydrology; and water quality input and treatment.

Finally, under the Florida program, governmental sponsored impacts resulting from infrastructure build-out are provided by the private mitigation banking industry. The State department of transportation and county public works departments are required to obtain their mitigation needs from the water management districts, which in turn are required to obtain the mitigation credits from the ecosystem service providers whenever suitable credits are available. This combination of rigorous and uniform enforcement environmental regulations regarding both impacts and mitigation projects, and the avoidance of competitive government mitigation projects or price restrictions has resulted in a robust and efficient mitigation marketplace that fairly values ecosystem functions.

Case Study 3

Conservation Banking for Endangered Species Habitat

While Conservation Banking to mitigate Endangered Species Act related impacts is a relatively new practice compared to wetlands mitigation, new clarity in the regulatory framework is opening markets for private investment in habitat conservation.

In May of 2003, after banks were being established across the country under a variety of implementation approaches, the US Fish and Wildlife Service released conservation banking guidance at the federal level.¹³ This guidance outlines specific requirements for conservation banking agreements¹⁴, including:

- Meeting the conservation needs of one or more covered species
- Determining the service areas where credits may be used

¹² <http://www.epa.gov/owow/wetlands/bawwg/natmtg2001/frydenborg/frydendo.pdf>

¹³ For full details of the Federal Guidance, see <http://endangered.fws.gov/policies/conservation-banking.pdf>

¹⁴ From forthcoming publication by Marybeth Bauer, Jessica Fox and Michael Bean, "Landowners Bank on Conservation"

- Awarding credits for conservation outcomes rather than management actions
- Making conservation commitments on a permanent basis
- Provision of a management plan that provides assurance of long-term funding and provisions for remedial action.

To date, there are some 63 Conservation Banks in various stages of development, in the US, with approximately 50 in California, and the remainder primarily in the Southeast.

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As understanding and acceptance of Sustainability as an organizing principle for environmental policy increases, it will be essential to use markets for aligning the production of goods and services with natural systems. Mitigation banking, for wetland, stream and endangered species related impacts, is an essential component of this larger picture. In order for such mitigation banking to become an accepted mainstream feature of American life, and an accepted price signal guiding economic and development activities, it must evolve further. Essential elements include:

- *Clear and predictable enforcement of laws regulating impacts.* Those that impact environmental features must plan and budget for ‘internalizing the current externality’ of those impacts. Enforcement provides the demand for conservation actions, without which there will be no supply.
- *Leak-proof pricing.* No one will pay to buy credits from banks if they can make a deal with the regulator on an ‘ad hoc’ basis, if such ad hoc arrangements are cheaper because they lack monitoring and enforcement of meaningful long-term success criteria.
- *Sound science.* Success criteria can incorporate real flexibility for permittees through the intelligent use of credit ratios, currency types and service territory variations as long as ecological functionality is truly replaced.

When we look back twenty years from now, the most significant aspect of mitigation market development will not be the cost effective procurement of offsets for environmental impacts, as important as this is. The real object lesson here is the creation of a clear price signal that shows the economic value of conservation actions on private property. Each step in establishing markets for such conservation actions provides impetus to *avoid and minimize* environmental impact in order to reduce the now clear cost of mitigation. Each step concurrently provides impetus to *invest* in conservation actions on private property.

Just as price signals for emissions reductions, energy efficiency and waste reduction have resulted in environmental infrastructure at landfills, recycling investment, and energy efficiency innovation, mechanisms that enable a price signal for conservation of ecosystem services will foster investment in such services.