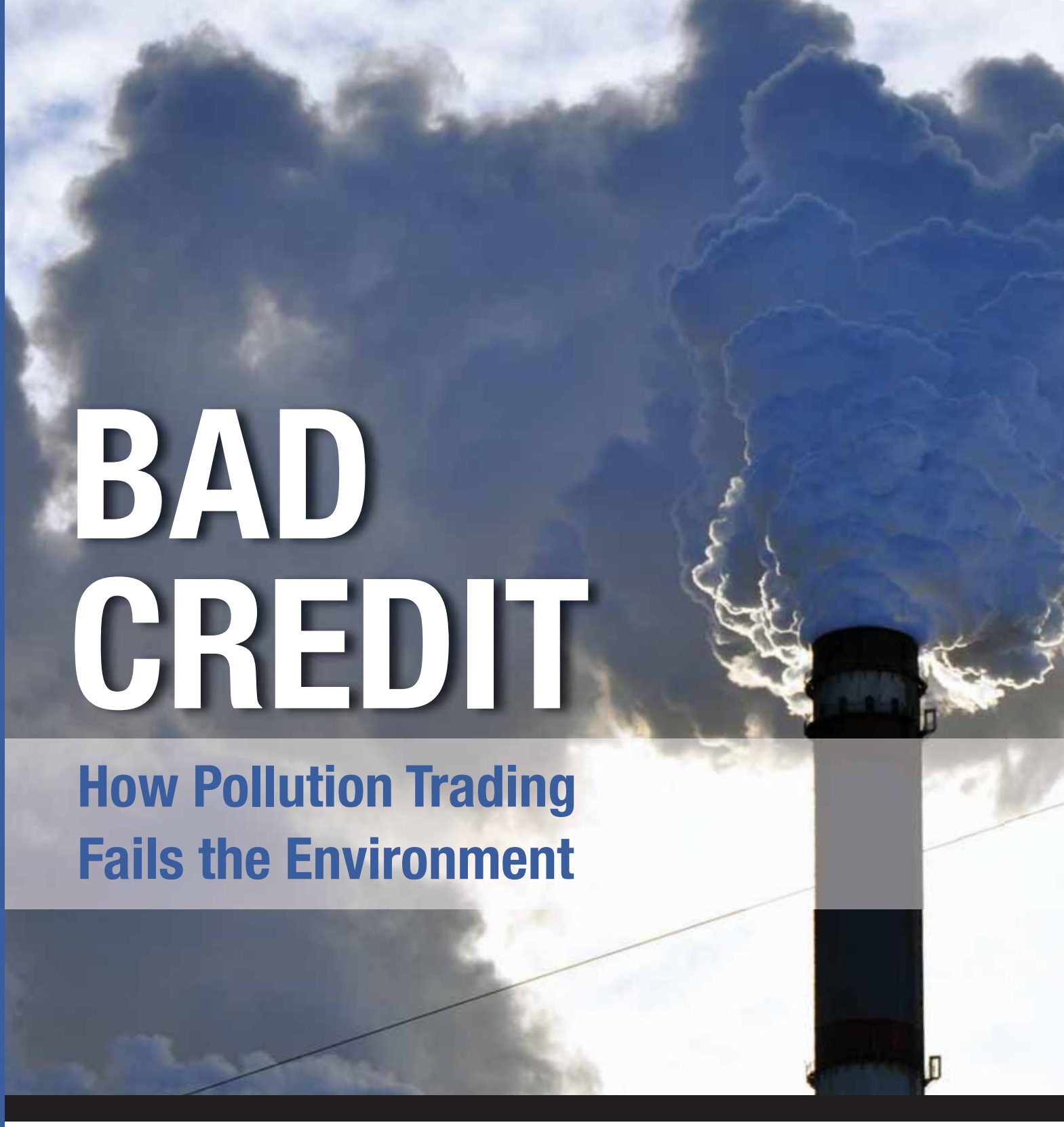

BAD CREDIT

How Pollution Trading Fails the Environment

food&waterwatch

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Food & Water Watch works to ensure the food, water and fish we consume is safe, accessible and sustainable. So we can all enjoy and trust in what we eat and drink, we help people take charge of where their food comes from, keep clean, affordable, public tap water flowing freely to our homes, protect the environmental quality of oceans, force government to do its job protecting citizens, and educate about the importance of keeping shared resources under public control.

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Executive Summary

For the past 25 years, emissions trading, known more recently as "cap-and-trade," has been promoted as the best strategy for solving pollution problems. Based on an obscure economic theory that gained prominence in the 1960s at the University of Chicago, it was embraced by the Reagan administration as a replacement for regulating air emissions. Since that time, it has gained acceptance among environmental organizations and the largest environmental funders.

Unfortunately, cap-and-trade can undermine existing environmental law while, as NASA scientist James Hansen observes, it "perpetuates the exact pollution it is supposed to eliminate."[1] Indeed, while existing pollution laws like the Clean Water Act call for the elimination of pollutants from our air and water, cap-and-trade begins by accepting the right of people to pollute and then paying them not to. In this sense, trading is like paying someone not to rob your house.

But cap-and-trade has problems even under its own skewed assumptions. It leads to price volatility for businesses and can often put the cost for pollution cleanup on those least able to afford it. Cap-and-trade too often relies on offsets, which have dubious value, and on a permit allocation scheme that benefits current polluters at the expense of everyone else. And all of this takes place in an environment that trades current problems for future pollution reductions, which are far from guaranteed to actually occur. Cap-and-trade substitutes economic abstractions that may or may not work for actual regulation and collective action to reduce environmental harm.

Introduction

Cap-and-trade is a radical shift in how environmental regulation works. Traditional environmental regulation, called by its detractors "command-and-control" regulation, relies on permission, prohibition, standard setting and enforcement to meet environmental ends.[2] Regulated sectors need to meet the standard set or face enforcement penalties. Most classic U.S. regulation, including the Clean Air Act, first enacted in 1970, and the Clean Water Act, first enacted in 1972, fits that mold.

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In contrast, cap-and-trade attempts to create markets in actual or potential pollution to create an economic incentive to pollute less.[3] Many, but not all, systems also include a cap, a system-wide limit to the amount of pollution that can be emitted. Instead of limiting what an individual plant may emit, each polluter is given an allocation of emissions. If it doesn't use up that allocation in a year, it may sell those emission allowances to another company that polluted more than its allocation.[4]

Cap-and-trade is commonly proposed by those who oppose simply regulating pollution as a more "free-market" approach to environmental problems. The market is used to allocate costs, rather than using the performance-based indicator of meeting a regulated standard. Proposals for cap-and-trade systems range from using them to limit greenhouse gases to using them to control water pollution. The latter, sometimes called water quality trading, is currently being implemented as a way to meet U.S. Environmental Protection Agency-established Total Maximum Daily Load standards (TMDLs) in waterways.

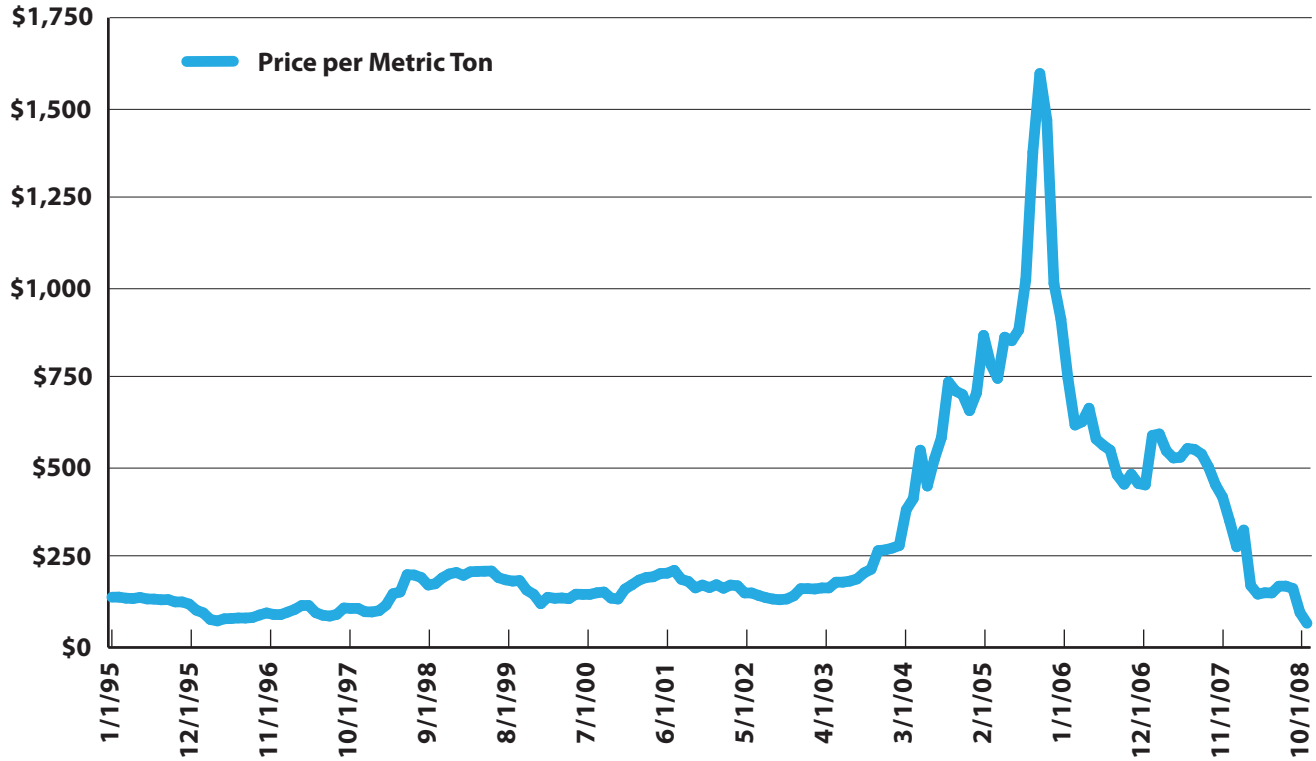
This report will investigate some of the weaknesses of cap-and-trade, examining it both from outside the idealized economic marketplace that supporters envision and from within its own intellectual constraints. From both perspectives, cap-and-trade fails at the most important environmental goal: creating a safer, more sustainable environment.

The Economics of Cap-and-Trade

Cap-and-trade does not actually prohibit polluters from polluting. It merely requires them to purchase the right to pollute more, usually called "credits." Proponents argue that the cost of purchasing those credits, and the ability to make a profit if a company can figure out a way to use fewer credits, will reduce emissions at a much lower cost than traditional regulation.[5] This is sometimes referred to as "internalizing the externalities."[6] The environmental and societal cost of damaging the environment is *external* to the trade in which the polluter is engaged.

Neither the producer nor the consumer of, for example, electricity is economically responsible for

Figure 1: SO_2 Monthly Emissions Prices



Source: Chicago Climate Exchange, "Historical Price and Volume"

the carbon dioxide, sulfur, nitrogen or mercury that a coal-fired power plant produces. Cap-and-trade proponents claim that, by forcing the polluter to buy credits, they make it part of the transaction, thus "internalizing" the external costs of pollution. But cap-and-trade doesn't internalize the costs of pollution, including health effects, since the cost of the effects of pollution is in no way related to the cost of pollution credits.

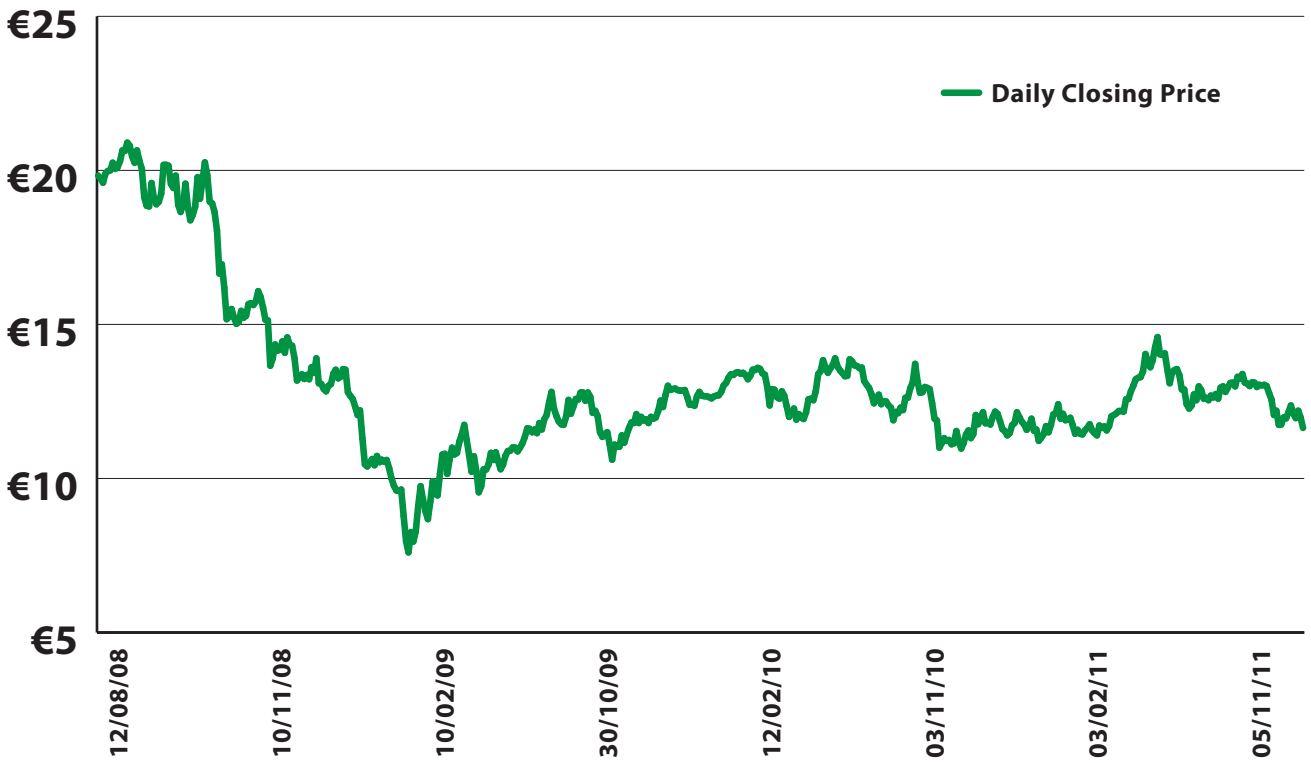
Cap-and-trade also does not force large polluters to actually clean up their emissions. They can, instead, simply pay for the right to pollute. Under the cap-and-trade component of the acid rain laws, sulfur dioxide (SO_2) emission credits were traded on a market. The U.S. EPA notes that, even at the December 2005 peak cost of SO_2 credits, larger energy companies were still buying allowances. This was because doing so was simply cheaper than cleaning up their technology.[7] Instead of investing in cleaner technology, large energy companies were simply polluting.

For cap-and-trade to work, one of the most important elements is the predictability of prices. Cap-and-trade proponents expect private industry to invest in pollution reductions in return for an opportunity to sell them at a profit.[8] But what happens when that profit dries up? And how do we expect investment when the true value of credits is unknown? Price volatility of pollution credits throws the system out of balance.

And those prices have been incredibly volatile. In the three months between February 1, 2008 and May 30, 2008, prices for greenhouse gas emissions credits on the Chicago Climate Exchange almost tripled, from $2.60 per metric ton to $7.39.[9] Similar volatility can be seen in the SO_2 trading regime, with a huge run-up in prices starting around November 2005. (See Figure 1.) Indeed, monthly average prices in SO_2 allowances more than doubled, from $715 per ton in January 2005 to $1,600 in January 2006.[10]

This wide variety of permit prices shows up throughout cap-and-trade's history. In the European Union, there has been a market for carbon as a greenhouse gas. Figure 2 shows the prices for an allowance to emit 1 metric ton of carbon in December 2011. On July 1, 2008, the market hit its high of €32.88. Within six months, on January 2, 2009, the same allowance had

Figure 2: December 2011 Allowance Settlement Price for Carbon in the EU



Source: BlueNext, "Closing Prices, BlueNext Spot EUA 08-12"

lost more than half of its value, and was trading at only €14.64.[11]

The problem with this wide variance in prices is that it fails to properly incentivize private companies to change their policies. If the promise of cap-and-trade is that early adopters of new, cleaner technology will reap a profit from doing so, they need to know the potential price for selling pollution credits they no longer need. Investments in clean air only make market sense if companies can predict the final cost and benefit. As Kevin Parker, chief executive for Deutsche Asset Management, said, "If you can't finance it and you can't insure it, it probably isn't going to get built."[12]

A company making a decision in July 2008 to reduce its emissions will not reap the benefit it planned. Knowing that prices are uncertain, it makes more sense for that company to hold off, to avoid making changes. This undermines the whole premise of cap-and-trade.

So who *does* benefit from this change in price? It is no surprise that the same investment houses that made a profit from the deregulation of the housing and finance sectors and the energy sector have supported cap-and-trade legislation. Insurance giant AIG joined in, with then-Chief Executive Martin Sullivan describing how AIG "can help shape a broad-based cap-and-trade legislative proposal, bringing to this critical endeavor a unique business perspective on the business opportunities and risks that climate change poses for our industry."[13] Energy-trading company Enron also saw the profit potential in a cap-and-trade market, touting that a cap-and-trade solution in energy would be "good for Enron stock."[14] At the same time, Enron was trying to spread its influence across the political spectrum, donating a total of $1.16 million in unregulated "soft money" to political parties in 2000.[15]

Others have rushed to join the gold rush in cap-and-trade markets. In 2005, the first hedge funds specializing in climate change opened, but by 2008 there were 90 hedge funds and 80 private equity funds in the sector.[16] The growth of the market and volume increases are staggering. In 2007, the global market in carbon was $64 billion.[17] By 2008, it had almost

doubled to $118 billion, according to an investment analysis and research group.[18] This rapidly expanded market lends itself to regulatory capture by the same financial interests that have, in addition to their publicly acknowledged role in the U.S. housing market collapse, fueled the global food crisis.[19]

Additionally, speculation drives up the cost to the consumer. In oil, for example, it is estimated that the average U.S. household spent almost $600 more than they otherwise would have on gasoline in 2011 due to excessive speculation in the oil market.[20] Investigations have found effects in the market for wheat, which undercuts both the producers and consumers of wheat.[21] Introducing this same speculation into the newfound "market" for clean air and water subjects a basic human right to clean air and clean water to similar stresses.

If prices go too high too quickly, the boom can squeeze energy producers and their customers. When prices rise, producers frequently shift costs to consumers. But prices for energy are relatively inelastic; price changes do not change the amount of energy that consumers demand.[22] This means that the effect of unexpected cost increases will be borne disproportionately by the least fortunate. While U.S. homes with a median income spend 5 percent of their income on energy costs, households living in poverty spend 25 percent of their income on energy.[23] Without some way to offset those cost increases, cap-and-trade schemes can be very regressive.

The price volatility also expands the likelihood of some form of "banking" being a part of any cap-and-trade system. Given the possibility of significant changes in the cost of emission, corporations whose profits are dependent on those costs need to be able to bank credits for next year if they are unused and to borrow credits to pollute when needed. Economists claim that this will smooth abatement costs across time.[24]

However, this approach requires "incorporating banking, borrowing, and adjustments to the quantity of outstanding credits."[25] The regulator must behave like a central bank. Unfortunately, our recent experience of central banking, manifested most obviously by the recent worldwide credit crisis, is that it is highly complex and poorly understood by economists.[26] Theoretical models have difficulty dealing with the competition for contracts between energy producers, investors and speculators.[27] Practical ways of dealing with this competition, including discount windows, reserve requirements and open market operations, do not have results that should make us more sanguine about these difficulties.[28]

In sum, speculation has had dangerous effects on markets for food, for energy and for credit. Introducing those effects to environmental regulation threatens to spread the dangers that have threatened the world economy to new sectors, and to consumers of energy. Cap-and-trade is a dangerous fiscal experiment at a time when we have reason to doubt fiscal policy and fear the potential for abuse in under-regulated or deregulated arenas.

Offsets: The Hidden Lie of Cap-and-Trade

In order to meet the need for cuts to emissions, most cap-and-trade schemes rely on "offsets." Offsets allow a company to capture the reductions in emissions from a different, often non-regulated, sector

and pay for it, thus applying it to the emission reduction goals for the regulated sector.[29] For example, if we want to reduce the total amount of carbon emitted, the argument goes, we can either reduce it by reducing the emissions from power plants or reduce it by not cutting down a forest that is absorbing carbon emissions. If we then pay the forest owner for not cutting down the forest, proponents argue, we include the cost of emission reduction in the sector we are looking at and achieve the same carbon reduction. Similarly, proponents suggest that "point source" water pollution sources, such as industrial or sewage treatment plants, should purchase credits from non-point sources, such as agricultural runoff, to ensure that the total flowing into a body of water should not exceed a maximum load.

Unfortunately, there are a number of flaws to this plan. Offsets are difficult to measure and verify. Once measured, offsets can be illusory and are difficult to compare to what would be the case without them. In the first example above, the forest owner gets paid for not cutting down a forest, *even if she never intended to cut the forest down.* It is hard to know what effect we're having on pollution. Offsets also allow an industry to continue to pollute locally, thus spreading the benefits of pollution reduction while continuing to concentrate the harms. And they can be transitional, not guaranteed to continue for as long as the offset is sold. Offsets do not reduce pollution sufficiently, and instead act as a payment to continue to pollute.

Measuring and trading an offset is, by definition, trading in something that doesn't exist, a presence of an absence. Offsets that come from a non-regulated sector are touted as a way to meet emission reduction targets at the lowest cost.[30] But, since they come from unregulated sectors or other countries, by definition, offsets are not removing the domestic pollution they are designed to lower.

This can be especially true for pollutants that are deposited locally. For example, mercury is a neurotoxin that finds its way into the human body primarily through ingestion, mostly of fish and shellfish.[31] Mercury emissions often come from coal-burning power plants.[32] This leads to localized impacts, or "hot spots" near these plants.[33] Cap-and-trade approaches do

PHOTO BY HOLLINGSWORTH/USFWS

nothing to alleviate this risk, since permits can be purchased from far away, while pollution remains local. In contrast, actually controlling emissions on a plant-by-plant basis reduces the impact on those around the plant.[34] For those living close to a power plant, reductions in far-off mercury do not lower their exposure.

This is a crucial issue with offsets. They only make any sense in the context of a pollutant that is widely dispersed, with overall reductions achieving the desired effect. They make much less sense in any arena, such as water pollution, where locality of the pollutant is key.

However, even other offsets fail. The first problem is measuring an offset. To measure an offset, we must first assume that we know what would have happened without that offset. But that is difficult to know, and sometimes contradicts the logic of the offsets. Indeed, sometimes people are getting paid to do literally nothing.

For example, a Cape May, New Jersey, landfill started collecting the methane given off by rotting trash to sell as fuel. This was a profitable exercise. A decade

later, the landfill was able to sell the fuel and also sell "carbon credits" to individuals and companies.[35] The landfill generated no new carbon savings. It simply continued doing what it had already been doing, but now was able to recognize two revenue streams.

This same problem is replicated across trading schemes that include offsets. In order to control greenhouse gas emissions, the Kyoto Protocol established the Clean Development Mechanism (CDM) to pay developing countries to adopt less-polluting technologies. That might be building a more-efficient natural gas or hydroelectricity plant in place of a cheaper coal-burning plant. The market has been very popular. Indeed, in 2006, the U.K. wanted to allow greenhouse gas emitters to use CDMs to meet up to two-thirds of the country's emission reduction commitments under the Kyoto Protocol.[36]

But instead of actual emissions reductions, the largest individual contributor of credits was sequestering and destroying HFC-23. HFC-23 is a byproduct of making refrigeration gases. It is also a potent greenhouse gas. By 2007, manufacturers could make twice the amount simply by cleaning up the process than they could by actually making refrigerant. Yet HFC-23 was no longer needed. Manufacturers in the industrialized world had already reduced their emissions voluntarily. [37] Perversely, the CDM incentivized producers in the developing world to continue to make this refrigerant to cash in on the carbon savings instead of cleaning their emissions.

Offsets call into question the idea of "additionality," that is, whether a project reduces emissions from a "business-as-usual" baseline. Contrary to being a few projects that slip through the cracks, this is a systemic issue. Friends of the Earth and International Rivers looked at the CDM and found that, as of October 1, 2008, 76 percent of all CDM projects were already up and running when they were approved.[38] If the offsets had been truly additional, then the projects would not have gone forward without them. Instead, the offsets did not provide new reductions in emissions. They merely funneled money to projects that would have happened anyway.

In its investigation of offsets, the U.S. Government Accountability Office said, "[d]etermining additionality is inherently uncertain because, it may not be possible to know what would have happened in the future had the projects not been undertaken."[39] But without that determination, it is difficult or impossible to know if offsets work.

PHOTO BY PEDRO RAMIREZ, JR./USFWS

The uncertainty that the GAO cites is especially true in proposed water trading systems. The Clean Water Act does not regulate polluted agricultural runoff as carefully as it does other sources, since it excludes most row crops.[40] Additionally, even the agricultural runoff that is regulated under the Clean Water Act has been subject only to weak and ineffective regulation.[41] This makes it an attractive market as an offset to regulated point sources of water pollution. However, since the runoff is unregulated, it is also unmeasured. Establishing a true market would require quantifying all runoff from a farm and the overall agriculture sector. But there are over 2.2 million farms in the United States.[42] Currently, because of weather effects and farm management practices, there is no way to trace pollution back to a specific farm.[43] Establishing a trading regime between point source polluters and non-point source polluters would require a massive infrastructure investment to ensure that the offsets are real.

Offsets are also setting up a new market for actual fraud. *The Christian Science Monitor* and the New England Center for Investigative Reporting did an investigation of the $700 million carbon offset market and found widespread abuse. From forests that were never planted to false claims of certification, the new market for carbon offsets and "greenwashing" was proving too lucrative for scams to ignore.[44] The temptation of selling something that is never physically delivered has proven strong.

Offsets are unwieldy and do not lead to sufficient pollution reductions. They are subject to abuse and do not represent a realistic approach to pollution abatement. Any program relying on them is suspect.

Credits and Distribution

In any cap-and-trade scheme, one of the most important parts of the system is determining who will receive credits and at what price. Because cap-and-trade credits are a very valuable part of the system, they are subject to stresses that make the system unfair.

When a cap-and-trade system is implemented, there are two main options for distributing permit allocations. The initial allocation can be either given to polluters or auctioned.[45] Both have inherent difficulties.

If the initial allocation of credits is auctioned, the political effects are very strong. The pressure not to institute auctions in tough financial times can be overwhelming. This was the case in California, where a new law instituted stringent controls on greenhouse gases. The California Air Resources Board (CARB), in implementing the law, planned an auction for all emission credits in 2012.[46]

However, in June 2011, citing concerns that businesses would game the system, CARB pushed the auction back six months.[47] After further review, the CARB decided that only the first 10 percent of credits would be auctioned initially, with the remainder given to the current emitters.[48] A similar pattern was in effect in the 2009 battle over a national cap-and-trade scheme for greenhouse gases. Although, in 2008, then-candidate Barack Obama spoke of an auction for emission credits, when the actual bill called for an 85 percent giveaway of credits President Obama called it "a historic leap."[49] The bill ultimately did not pass the Senate, but it is instructive for the political perspective it gives.

This sort of "control of a regulation by the regulated" is not a surprise to anybody who has followed U.S. politics. There are a number of examples of "regulatory capture," in which a regulated industry gains control of the very agency that was supposed to regulate it.[50]

This problem becomes even more acute if the credits are simply given away. These pollution credits are valuable. Giving them away represents a massive gift to current polluters, while acting as a barrier to entry to future, possibly cleaner, enterprises. It amounts to a major subsidy of selected companies at taxpayer expense.

Lobbying of the federal government alone reached more than $3.5 billion in the United States in 2010, according to spending watchdog the Center for Responsive Politics.[51] Electric utilities alone spent over $1.5 billion on lobbying between 1998 and 2011, with the oil and gas industry kicking in almost another $1.2 billion over that same period.[52] Any pollution decision is going to be subject to strenuous lobbying by some of the most powerful sectors in the country. But allowing those lobbyists to create a special-interest windfall is both dangerous and unfair.

Acid Rain and Cap-and-Trade: A Poor Precedent

Cap-and-trade supporters frequently point to the ongoing success of the first large-scale test of cap-and-trade in acid rain reduction as a harbinger of its success in other contexts. Unfortunately, the comparison value to other cap-and-trade schemes is weak, and the precedent itself suffers from a comparison to other approaches.

Acid rain is used as the general term for a problem called acid deposition. Acid deposition happens when sulfur dioxide (SO_2) and/or nitrous oxides (NO_x) are released into the atmosphere, undergo chemical transformations and are dissolved in water droplets, falling to the ground as rain, snow or sleet.[53] The acidic precipitation can hurt water quality and vegetation.

Recognizing the danger of acid rain, Congress passed Title IV of the Clean Air Act Amendments of 1990, which mandated reductions in total SO_2 and NO_x emissions.[54] The method chosen was a cap-and-trade mechanism in two phases, with stronger controls in Phase II than in Phase I.[55] This was the first large-scale implementation of a cap-and-trade scheme.

Proponents of cap-and-trade claim that the program worked. Between 1990 and 2001, U.S emissions of NO_x fell by 12.5 percent and emissions of SO_2 fell by 31.6 percent.[56] However, acid rain was uniquely amenable to the proposed solution, and, even in that context, it didn't work as well as needed, nor did it work as well as alternative approaches.

Acid rain was uniquely amenable to the solution because most of the anthropogenic sources were concentrated in one place. Approximately two-thirds of all SO_2 and one-quarter of all NO_x come from fossil fuel electric generation, especially coal-burning plants.[57] Cleaning those sources was all that was required for major progress in NO_x and SO_2 reductions. And those sources were already becoming cleaner. Between 1980 and 1990, before Title IV was even passed, emissions of NO_x fell by 5.7 percent while SO_2 emissions fell by 11 percent.[58]

Additionally, the acid rain program included no outside offsets.[59] Since the sources of the pollution were overwhelmingly point source polluters – defined by the EPA as "a stationary location or fixed facility from which pollutants are discharged or emitted," such as fossil fuel-burning power plants – it was not necessary to include outside sources for offsets. This makes cap-and-trade much easier to administer, since it does not require regulating non-point sources of pollution.

Moreover, the solution to the problem was already well known. Two EPA attorneys from the era point out that the reductions were primarily accomplished through switching to an affordable, available alternative fuel, namely low-sulfur coal.[60] And that coal was made even more affordable by railroad deregulation, which lowered the cost of shipping the fuel and made switching a cheap and easy solution.[61]

So acid rain was the perfect test case for cap-and-trade systems. Yet even in that perfect test, it failed when compared to other measures. The European Union mostly used a traditional mechanism for its first reductions in acid rain, setting regulatory limits on emissions largely through the Large Combustion Plant Directive.[62] Over the timeframe of 1990 to 2001, the EU was twice as successful in reducing its emissions of both NO_x and SO_2.[63] While the U.S. cap-and-trade scheme reduced NO_x and SO_2 by 12.5 percent and 31.6 percent, respectively, the EU's regulatory program reduced those pollutants by 26 percent and 64 percent.[64]

The U.S. cap-and-trade scheme even failed to meet the goals it had set itself. Generally, precipitation with a pH below about 5.3 is considered acid rain. In 2009, the EPA said that most rainfall in the eastern United States, the area most affected by acid rain, has a pH between 4.0 and 5.0.[65] Indeed, the George W. Bush administration attempted to strengthen the acid rain program by applying it to more areas. While the Clean Air Interstate Rule (CAIR) was struck down by the courts in 2008, the judiciary, recognizing the importance of increasing the reach of these laws, allowed the EPA to continue to apply the rule while writing its successor.[66]

Cap-and-trade proponents like to point to the acid rain program as the benchmark for market mechanisms in environmental policy. But a program that fails to exceed the efficacy of regulatory measures, that needs to be strengthened to meet the goal of eliminating acid rain, and that lacks the central role of offsets common to other cap-and-trade schemes

makes a poor benchmark, and is especially poorly suited to applications intended for tougher problems like water pollution.

Conclusion

As we've seen, cap-and-trade programs are not a sufficient replacement for regulation. Cap-and-trade has economic holes that make it difficult if not impossible to implement as currently designed. Offsets make the whole program problematic. And it doesn't work as well as alternative solutions. The most-referenced experience of cap-and-trade, and the program claimed most often as showing its promise – the U.S. acid rain program – points not to the successes of cap-and-trade, but to its failures. We should not be emulating that failure.

It is especially important that we not attempt to use cap-and-trade in water quality markets. Local pollution may not decrease under a cap-and-trade system, and non-point sources are a problem for cap-and-trade but play a major role in water quality issues. New regulations are needed to deal with hard-to-quantify non-point sources of pollution.

It is time for the environmental community to re-evaluate cap-and-trade schemes and to embrace the alternative solutions that can protect our shared resources–the global commons.

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