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SECTION OF ENVIRONMENT ENERGY AND RESOURCES

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MESSAGE FROM THE CHAIR

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This issue of the newsletter—which focuses on greenhouse gas (GHG) trading—is being jointly published by the Innovation, Management Systems and Trading Committee and our committee. This is the kind of collaboration we have been advocating within the Section of Environment, Energy, and Resources and among ABA sections, and we are delighted to have the opportunity. Special thanks to Joseph Dawley and David Savage of the Innovation, Management Systems and Trading Committee for their outreach to us on this joint venture. This issue is largely a product of their work.

This issue of the newsletter spells out some of the fundamentals of GHG trading and provides a foundation for keeping up with developments as they unfold. First is an article by Dennis Hirsch that broadly describes the different types of emission trading systems and puts the emission trading components of the Kyoto Protocol in that context. Steve McMillen then provides a summary of, and update on the status of, the European Union's Emission Trading Scheme. Drew Bergman provides a similar synopsis of the Regional Greenhouse Gas Initiative being implemented by several Northeastern states in the absence of a nationally-led effort in the United States. Because emissions trading fundamentally involves commercial transactions, next is a basic primer on contracting in GHG gas credits from Michael Heintz. Finally, all of these articles touch briefly on the critical concept of "additionality" in GHG credit generation—the notion that credits may be generated only for reductions that are "additional" to reductions that would otherwise have occurred in the absence of the trading system. Dr. Mark Trexler, Laura Kosloff and Derik Broekhoof together help de-mystify this critical concept in their excellent article.

Several of the articles (those from Dennis Hirsch, Drew Bergman and Michael Heintz) are drawn from work from these authors that will appear in a book on global climate change and U.S. law (Michael B. Gerrard, editor) to be published by the Section of Environment, Energy, and Resources and American Bar Association in early 2007. We appreciate being able to share these authors' views in advance of the book's publication.

We are finalizing the details of our second annual national conference for lawyers on climate change in November in Washington, D.C. Stay tuned for further details, and enjoy the rest of your summer.

ABA Section of Environment, Energy, and Resources
14th Section Fall Meeting
San Diego, California
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See www.abanet.org/environ for details.

Sustainable Development, Ecosystems and Climate Change Committee Newsletter
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Michael V. Terrell, Editor

In this issue:

This newsletter is a publication of the ABA Section of Environment, Energy, and Resources, and reports on the activities of the committee. All persons interested in joining the Section or one of its committees should contact the Section of Environment, Energy, and Resources, American Bar Association,

THE KYOTO FLEXIBILITY MECHANISMS AND THE LAWYER'S ROLE

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The Kyoto Protocol establishes three "flexibility mechanisms" that employ emissions trading. These are International Emissions Trading (IET), the Clean Development Mechanism (CDM) and Joint Implementation (JI). The uninitiated can find it hard to distinguish among these programs and to understand how they relate to each other. This article will provide a relatively simple way to categorize the programs and so to understand them. It will begin by distinguishing between two different types of emissions trading programs: cap-and-trade systems, and baseline-credit programs. It will then show that IET is a cap-and-trade system, CDM is a baseline-credit system and JI is a combination of the two. Finally, it will explain how these distinctions are relevant to the role that lawyers can play in each of these programs.

Cap-and-Trade Systems v. Baseline Credit Systems

Emissions trading programs come in many different flavors. One of the most fundamental distinctions is between cap-and-trade systems and baseline-credit programs.

Under a cap-and-trade system the government sets a cap on the amount of a pollutant that can be emitted during a specific period of time. An example familiar to many American lawyers would be the Clean Air Act's Acid Rain Trading Program, which specifies how much sulfur dioxide (SO_2) covered facilities can collectively emit in the target year. The initial time period may be followed by a second one in which the emissions cap is lower. This is what is known as a "declining cap" program in which the collective target becomes more stringent over time. Once the cap has been set it is then distributed among emitters covered by the program. Some programs provide each covered emitter with a free allocation of emission rights usually

based on the source's historical rates of production or actual emissions. Others provide no initial allocation but instead auction the emission rights to the highest bidder. For the present explanation, we will assume a free allocation based on historical emissions since this format has greatest relevance for the Kyoto trading initiatives.

Such systems provide each covered emitter with an emissions allocation. Taken together, these allocations add up to the overall emissions cap. A given source's allocation consists of a certain number of emissions "allowances," where an allowance represents the right to emit one unit of pollution (*e.g.*, one ton of CO_2 or its equivalent). The system requires each facility to possess a sufficient number of allowances at the end of the specified time period (*e.g.*, the target year) to cover its actual emissions during that period. Facilities that do not possess sufficient allowances must pay a penalty. A covered emitter can achieve compliance and avoid such penalties by reducing its emissions to the point that they equal its allocation. Alternatively, it can purchase allowances from other covered parties that have reduced their emissions to a level *below* their allocation and so have excess allowances to sell. That is where trading comes in. Parties able reduce their emissions for less than the going price of an allowance have an incentive to do so in order to free up excess allowances and sell them for a profit. Parties that cannot do this have an incentive to purchase allowances instead of making reductions themselves. In theory, those who can reduce most cheaply should end up making the bulk of the reductions. This should allow society to achieve its air quality goals (as reflected in the emissions cap) in a more cost-effective manner.

Baseline-credit systems neither establish an emissions cap nor allocate emission rights to individual sources. Instead, they allow sources to "earn" emission reduction credits by reducing their emissions below a baseline level. These systems then allow sources to trade these credits to other emitters that can use them to comply with regulatory requirements. A familiar example is the Clean Air Act's nonattainment new source review (NNSR) offset program. Under this program, existing sources that reduce their emissions below baseline levels can generate emission reduction credits. They can then sell these credits to those seeking to build or modify a source for use in meeting the NNSR "offset" requirement.

In baseline-credit systems, environmental gains are achieved only where the reductions are below baseline levels, are actually achieved and are "additional" to those that would have occurred in the absence of the trading program. For this reason, such programs typically award "credit" only for those reductions that meet specified criteria with respect to baselines, "additionality" and enforceability. For example, the NNSR offset program awards credits for reductions that are creditable, quantifiable, federally enforceable and permanent. Only where a reduction meets these requirements does it "count" for the purposes of generating credits. Few such requirements exist in cap-and-trade programs where the key goal is for all emitters to hold sufficient allowances to cover their emissions and the system is largely indifferent to how the goal is achieved.

This difference between baseline-credit and cap-and-trade systems affects the role of lawyers. Baseline-credit systems must contain rules that define each of the requirements listed above (*e.g.*, how to set the baseline, what counts as "additional," etc.) Lawyers can play an important role in interpreting and counseling clients on these often complex regulatory provisions. By contrast, cap-and-trade systems require few such rules and the lawyer's role is correspondingly reduced. This distinction affects the role that lawyers play in the Kyoto Flexibility Mechanisms.

International Emissions Trading

International Emissions Trading (IET) is a cap-and-trade program where the covered parties are nations, rather than facilities or companies. The Parties to the Kyoto Protocol (Protocol) commit to achieving during the first commitment period (2008-2012) a percentage reduction in their greenhouse gases (GHGs) emissions from 1990 levels. The Protocol lists these commitments in Annex B and these nations are referred to as "Annex B Parties." For example, Japan, an

Annex B Party, has agreed to reduce its GHG emissions by six percent from 1990 levels. This commitment can be translated into a specified number of tons of carbon dioxide (CO_2) or its equivalent that Japan is allowed to emit, on average, in each of the five commitment period years. This is, in essence, Japan's "allocation" under the Protocol. Japan holds this assigned amount in the form of Assigned Amount Units (AAUs) in its national account, where one AAU represents one ton of CO_2 or its equivalent in other GHG.

Under the IET program, Annex B Parties can transfer their AAUs to one another. Any such transfer results in an increase in the number of AAUs held in the acquiring Party's national account, and a corresponding decrease in that of the transferring Party. Each Annex B Party must reduce its commitment period emissions to its assigned amount as adjusted by these transfers. The incentives should work the same as in other cap-and-trade systems. Nations that can reduce their emissions for less than the going price of an AAU will have an incentive to do so in order to sell their excess AAUs for a profit. Nations that find it more expensive to reduce will be purchasers of AAUs. These exchanges will allow the desired emission reductions to be achieved for less cost than if every nation had to make emission reductions on its own.

Most Annex B Parties have decided to further allocate their AAUs to industrial sectors or individual facilities within their borders. They have set up national registry accounts in which such entities can hold their AAUs with the aggregate number of such holdings adding up to those of the nation as a whole. These entities can transfer their AAUs to other entities holding national registry accounts. Questions remain as to whether legal entities from non-Annex B nations (such as American companies) can hold accounts in an Annex B Party's national registry and transfer AAUs through the IET system. Lawyers may play a role in advising clients on such issues. They may also assist with the preparation of contracts and other transactional instruments relevant to the trade in AAUs. However, the transfers themselves are relatively straightforward and the lawyer's role is likely to be limited.

The Clean Development Mechanism

The Clean Development Mechanism (CDM) focuses on GHG reduction or removal projects in developing nations. Under the CDM, projects that reduce or remove GHG beyond baseline levels, and that serve a sustainable development purpose, generate credits known as Certified Emission Reductions (CERs). Annex B Parties can acquire these CERs, add them to their national account and transfer them to another Annex B Party. The CDM can thus be understood as a free-standing baseline-credit program that generates credits that can, in turn, be acquired and transferred by Annex B Parties.

As with other baseline-credit systems, the CDM awards credits only to those GHG reduction or removal projects that are certified as meeting program requirements (hence the term *Certified* Emission Reductions). There are many such conditions, including requirements that the reductions be below baseline levels, that they be properly monitored, and that they be additional to reductions that would have occurred in the absence of the project. The Parties to the Kyoto Protocol mapped out these requirements, in broad form, in the Marrakesh Accords (Accords). The Accords authorize the CDM Executive Board (EB) to further define and flesh out the requirements. The Accords are thus analogous to a U.S. environmental statute and the EB to a regulatory agency charged with translating the statute into regulatory language.

The EB's rulings can be quite complex. For example, the EB has promulgated guidelines on how to calculate a project baseline. It has also begun ruling on proposed baseline calculation methodologies and publishing those that it has approved. Project participants can rely on these "precedents" in developing their own project baselines. In short, the EB is rapidly developing an array of policies, guidance documents and rulings that potential project participants must follow in order to be sure that their reductions will ultimately be approved and yield CERs. Lawyers can play a significant role in understanding and counseling clients on these complex requirements.

Joint Implementation

Under Joint Implementation (JI), projects that reduce or remove GHGs beyond baseline levels can generate credits known as emission reduction units (ERUs). In this respect, the program resembles the CDM. However, JI differs from the CDM in two fundamental ways. First, JI projects occur not in a developing nation but in developed, Annex B countries. That is, JI allows emission reduction projects in one Annex B country to generate credits (ERUs) that can then be transferred to another Annex B nation, which can use them to cover its emissions.

The second main difference concerns the nature of the transfer between these Parties. As was explained above, the CDM program produces new emission reduction credits that are added to the Kyoto system. By contrast, when an Annex B Party hosts a JI project the resulting ERUs must be deducted from the host country's existing store of AAUs before they can be added to those of the purchasing Annex B nation. This follows from the fact that, under JI, both the transferring and the acquiring nations are Annex B Parties with their own assigned amounts. If the program were to create newly-minted credits that were added to the account of the acquiring nation *without* simultaneously being deducted from the host country's assigned amount, the program would lead to a net increase in the number of emission rights available to the two parties and so to an increase in the global cap. JI thus functions like a baseline-credit system in the generation of credits, but acts like a cap-and-trade system when it comes to the transfer of these credits (since they are deducted from one nation's account and added to another's).

As with other baseline-credit programs, JI requires that emission reductions meet program requirements before they will qualify as ERU. Project participants must make certain demonstrations, including that the reductions are below baseline, properly monitored, and additional to those that would otherwise have occurred. Where the host Party has in place a viable, transparent system for ensuring that it is going to meet its own Kyoto commitment it is authorized to make these determinations itself. Where the host Party does not meet these eligibility criteria an independent body known as the JI Supervisory Committee reviews the acceptability of the credits in accordance with its own policies. Like the CDM Executive Board, the JI Supervisory Committee is authorized to establish rules on subjects such as baselines, monitoring and additionality. Lawyers should have an important role to play in interpreting and counseling clients on these rules.

The distinction between cap-and-trade and baseline-credit emissions trading programs helps to explain the three Kyoto Flexibility Mechanisms. International Emission Trading is a pure cap-and-trade system for Annex B Parties and their authorized legal entities. The Clean Development Mechanism is a baseline-credit system in which developing nations can mint new credits that can then be transferred to, and used by, Annex B Parties. Joint Implementation is a hybrid system that allows Annex B Parties to generate credits by reducing emissions below baseline, and then to transfer these credits to other Annex B Parties in accordance with cap-and-trade principles. Generally speaking, baseline-credit programs impose more regulatory requirements than cap-and-trade systems. It follows that environmental lawyers will likely have a larger role to play in the Clean Development Mechanism and Joint Implementation programs than in International Emissions Trading.

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The Sustainable Development, Ecosystems and Climate Change Committee welcomes the participation of members who are interested in preparing this newsletter. If you would like to lend a hand, please contact the editor Michael Terrell at mvt@vnf.com.

EUROPE'S GHG EMISSIONS TRADING SCHEME: ASSESSING THE FIRST YEAR

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The European Union (EU) Emission Trading Scheme (ETS) was created by a directive of the European Commission in order to develop a functional international carbon market to assist the 25 participating European Community nations (member states) and the EU meet their respective individual and collective Kyoto Protocol compliance targets. *See* Directive 2003/87/EC of the European Parliament and the Council of Oct. 13, 2003 (Directive). The EU must reduce greenhouse gases (GHGs) eight percent from 1990 levels by 2012. The ETS covers only carbon dioxide (CO_2) emissions during its first phase, which began on Jan. 1, 2005, and runs until Dec. 31, 2007.

A second phase, from 2008 to 2012, will parallel the first Kyoto Protocol compliance and reporting period and provide member states the primary free-market mechanism by which Kyoto GHG reduction targets can be met. Nearly 11,500 individual facilities are subject to the allowance trading provisions of the ETS, primarily energy-intensive facilities such as power plants, oil refineries, coke ovens, iron and steel plants, and factories making cement, glass, lime, brick, ceramics, and pulp and paper. These facilities represent approximately half of Europe's CO_2 emissions.

Before trading began on Jan. 1, 2005, each member state developed a National Allocation Plan (NAP) for approval by the European Commission. NAPs set member states' permitted levels of CO_2 emissions and detail how many allowances each facility receives individually. Under the NAPs, each facility was required to apply for a GHG emissions "permit," which among other things, requires a facility to surrender allowances equal to the total emissions of the facility in each calendar year. For some countries, the development and approval of NAPs was problematic, but the last 2005-2007 NAP was approved in June 2005 for Greece. NAPs could withhold up to 5 percent of allocable allowances for auction during the 2005-2007 period. Up to 10 percent of the allowances for the 2008-2012 period may be sold through auction as determined by each second phase NAP, which were due June 30, 2006. Second phase NAPs will have the benefit of incorporating the first verified CO_2 emissions data (*i.e.*, for 2005) required to be reported under the ETS, which was released on May 15, 2006.

ETS Operation

The ETS allows covered companies to buy and sell a variety of marketable instruments, including allowances issued by member states, futures on allowances to be issued during the second phase of the ETS and certified emissions reduction (CER) credits from Clean Development Mechanism (CDM) and Joint Implementation (JI) projects authorized by the Kyoto Protocol. The ability to buy and sell CERs on the ETS was a significant development for companies subject to the ETS and was made possible by the "Linking Directive" passed by the European Commission in 2004. *See* Directive 2004/101/EC of the European Parliament and of the Council of Oct. 27, 2004 amending Directive 2003/87/EC. The Linking Directive was intended to lower ETS compliance costs by offering facilities more options and liquidity in the ETS market. Many CDM projects are already in progress and forward contracts for CERs are actively traded among ETS market participants.

Transactions are recorded on national registries, which each member state is required to operate as part of the ETS. Additionally, all transactions are recorded on an EU-operated central registry called the Community Independent Transaction Log. Registries have been somewhat problematic during the ETS first phase and the European Commission will address certain issues during the next phase, including bringing online registries for the four member states that do not have operating registries (Cyprus, Luxembourg, Malta and Poland) and correcting technical problems with existing registries to ensure that all registries are accurately recording transactions.

Facilities must report their actual emissions for each calendar year, assure independent verification of

reported emissions and submit the report to the relevant member state by the following March 31. By the following April 30, each company must surrender a number of emission allowances equivalent to its verified emissions for the previous calendar year. Companies that do not surrender sufficient allowances to cover their actual emissions must pay a penalty of 40 per metric ton over their allocated emissions. The annual compliance cycle ends with the publication by each member state of verified emissions data and information on surrendered allowances for each facility on May 15, and the cancellation of surrendered allowances by June 30.

The first compliance cycle, for 2005, is nearly complete and has provided valuable insight into ETS operations. One important realization was that the release of verified emissions data can have a profound impact on the market price of CO_2. The trading Directive neither sets a price on ETS allowances nor imposes controls or safeguards on carbon prices, as would the proposed GHG cap-and-trade programs considered in the United States. The price is solely a function of supply and demand. Exercising this freedom, the ETS market during May 2006 reacted dramatically as member states began unofficially releasing emissions data showing that NAPs had over-estimated emissions, thus resulting in a sell-off of allowances and a corresponding drop in CO_2 allowance prices.

Despite recent market volatility, the ETS has been a relatively successful exercise in market-driven reductions of CO_2 emissions and demonstrates that an international carbon market is economically viable. There are currently five exchanges on which companies can buy and sell ETS allowances, including European Climate Exchange, European Energy Exchange, Energy Exchange Austria, Nord Pool and PowerNext. In the first five months of 2006 alone, the ETS trading volume of 338 million metric tons of CO_2 allowances far exceeded the approximately 262 million metric tons traded in all of 2005, which had an estimated value of more than €5 billion. Prices for a metric ton of CO_2 have varied greatly, with a low of €8.50 to a high of €21.50 in May 2006 alone.

Compliance and Market Performance

In addition to the 2005 verified CO_2 emissions data, the European Commission also released in May 2006 the compliance status of more than 9,400 facilities covered by the ETS in all but the four member states without trading registries. The compliance data showed that the 21 member states with active registries allocated in their NAPs an annual average of 1,829.5 million allowances to facilities in the ETS' first trading period, but that actual verified emissions were 1,785.3 million metric tons for 2005. Thus, member states beat their estimated emissions by over 40 million metric tons of CO_2. However, some groups have alleged that member states were too generous in granting companies CO_2 emission allowances for the 2005-2007 period in order to ensure that no penalties were issued and to allow relatively painless compliance, which in turn caused a decline in carbon prices, distorted the market and reduced the credibility of the ETS.

From an enforcement perspective, an impressive 8,980 facilities accounting for more than 99 percent of the allowances allocated under NAPs had fulfilled their obligations to report 2005 emissions. Although 849 facilities were identified as not having surrendered a sufficient number of emission allowances, many of these facilities have subsequently fulfilled their allowance surrender obligations and will therefore not be penalized.

As countries began to report their actual 2005 emissions data in spring 2006, the ETS market reacted and the price of allowances decreased by nearly 60 percent. Carbon trading analysts have stressed that the recent fall in the price of carbon allowances is not likely to affect the long-term performance of the ETS. In fact, the over-estimation of CO_2 emissions and the corresponding allocation of allowances, coupled with falling prices as actual verified CO_2 emissions were reported in May 2006, will likely lead to lower allocations in NAPs for the second phase of the ETS, which may increase carbon allowance demand and price. In addition, the price drop could reduce the amount of speculative capital entering the market during the remainder of the first phase, which would tend to raise prices.

The recent ETS market performance does not alter the overall attributes of, or the "business case" for, the ETS, and could potentially make ETS healthier going forward. In fact, carbon prices rebounded after the May 2006 release of verified emissions data and CO_2 allowance prices for compliance with calendar years 2006 and 2007 are currently more in line with the prices of CERs from CDM projects sold in the form of forward contracts and with futures for allowances for calendar years in the second ETS period beginning in 2008.

The Next Phase

A major issue to be addressed going forward involves structuring the ETS to produce actual CO_2 emissions reductions, which did not occur in 2005. As major GHG emissions reduction projects within industry sectors are expensive, and thus unlikely to occur at this stage of Kyoto Protocol implementation, fuel-switching has emerged as the primary option to reduce CO_2 emissions, especially for power generators, and thus the spread between gas and coal prices is a significant driver of CO_2 allowance costs. If oil and gas prices are high, as they were in 2005, the power sector will rely on coal to produce power, the price of CO_2 allowances on the ETS market will increase, and overall CO_2 emissions are not likely to decrease. Nonetheless, some observers indicate that had the ETS not existed in 2005, the EU power sector may have emitted up to 100 million metric tons more CO_2 than it did.

The first phase of the ETS was not designed to result in substantial reductions in CO_2 emissions. The original price estimates for the 2005-2007 period were between US$5-$10, consistent with the testing period concept to prepare for the Kyoto Protocol's first commitment period running from 2008-2012. That CO_2 allowance prices increased beyond three times the estimate was somewhat unexpected. The high prices were attributable to several factors, including concern that countries would need more reductions than expected, substantial increases in oil and gas prices, a shortage of near-term reductions from developing countries and speculation that prices would continue to rise indefinitely.

This and other issues identified so far will become "lessons learned" to be resolved during the 2008-2012 period, an arguably much more important time for the ETS because it coincides with the first reporting and compliance period of the now-active Kyoto Protocol. The EU has set the latter half of 2006 as a period to review and make adjustments to the trading Directive in order to improve the operation of the ETS. The main purpose of the review is to ensure that the ETS delivers the most cost-effective and efficient medium and long-term emission reductions going forward. Other issues the EU will address for the 2008-2012 period include, gearing trading periods toward long-term certainty in order to stabilize the ETS, harmonizing member states' interpretations of the trading Directive (for example, whether to allow banking of allowances from one period to the next), developing a consistent method of accounting and verifying trades, including other GHGs and other sectors such as aviation, and whether to reduce CO_2 allowance quotas for member states.

Preparation for the ETS second trading period is already well under way. As required by the trading Directive, member states are developing NAPs that must be submitted by June 30, 2006 for review and approval by the European Commission (Commission). The Commission has indicated that it will hold member states to the deadline, unlike the first trading period currently underway, where the last NAP was approved well after trading had already begun. The recently released 2005 emissions data provides independently verified facility-level data for the first time and offers member states important objective and transparent information to set national caps and allocate allowances to facilities. The EU will also be making extensive use of the 2005 emissions data during its NAP approval process. It is expected that member states will allocate fewer allowances to facilities under the 2008-2012 NAPs in order to reflect the overestimation of CO_2 emissions in the first round NAPs. As a result, prices for futures on allowances for the 2008 compliance period have been increasing from their relatively consistent range of €20 per metric ton of CO_2.

Linkages to United States

The United States is not unaware of the ETS or its relative success. In Congress, Sens. Bingaman and Domenici released a white paper in February 2006 that sought input on whether a U.S. GHG cap-and-trade system should be designed to interface with other trading systems such as the ETS. At the state level, the Regional Greenhouse Gas Initiative model rule allows CO_2 offset allowances to be awarded to a company that "sponsors" a CO_2 emissions credit retirement, including the permanent retirement of GHG allowances or credits issued under international programs such as the ETS.

U.S. companies with European operations are already participating in the ETS and may seek to take advantage of GHG emissions reductions here, if possible under the ETS. For example, on May 4, 2006, the Chicago Climate Exchange (CCX) announced that one of its members, Baxter Healthcare Corporation (Baxter), completed the first ever transaction linking its U.S.-based GHG emission trading systems with the ETS. CCX is a GHG emission reduction and trading system unique in the United States. because, although membership is voluntary, GHG emissions reductions for members are governed by legally binding rules. Further, CCX is the sole owner of the European Climate Exchange, which is one of the five trading platforms utilized by the ETS.

The transaction facilitated by CCX concerned the transfer from Baxter's Irish facility of an excess 100 metric tons of CO_2 allowances from the ETS to Baxter's CCX registry account through an intermediary CCX registry account in the United Kingdom. Upon successfully canceling the ETS allowances in the CCX intermediary account and crediting an equal number of allowances in Baxter's U.S. CCX account, the U.S. and ETS trading platforms were effectively linked. The significance of this transfer is wide-ranging, as any CCX member company with operations in a ETS member state could accomplish a similar transfer.

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REGIONAL GREENHOUSE GAS INITIATIVE: THE FIRST MANDATORY GREENHOUSE GAS TRADING PROGRAM IN THE UNITED STATES

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The Regional Greenhouse Gas Initiative (RGGI) is a regional greenhouse gas trading system established by seven states in the Northeast and Mid-Atlantic region of the country: Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York and Vermont. In addition, Maryland is required by state law to become a full participant in RGGI by June 30, 2007. As the first mandatory carbon dioxide (CO_2) mitigation trading system in the United States, RGGI was essentially developed out of whole cloth. After much research and discussion, the RGGI states released a Memorandum of Understanding (MOU) on Dec. 20, 2005 signed by all seven governors that describes the essential elements of the trading system. (The MOU can be found at www.rggi.org/docs/mou_12_20_05.pdf.) Based on the MOU, RGGI's Staff Working Group (SWG) issued a Draft Model Rule on March 23, 2006 that forms the basis for individual state rulemakings to implement RGGI. (The Draft Model Rule can be found at www.rggi.org/docs/public_review_draft_mr.pdf.) This article describes the basic elements of the trading system as set forth in the Draft Model Rule.

Program Design Choice

RGGI is a cap-and-trade system, with aspects of a baseline-credit program based on the generation of credits from CO_2 mitigation projects. It establishes a regional CO_2 emissions cap and regulates CO_2 emissions from fossil fuel-fired electricity generating units having a rated capacity of 25 megawatts (MW) or more, referred to as "CO_2 budget units." Each state is given an annual initial base budget of a certain number of tons of CO_2 for each of the years from 2009-2014.

For the years 2015-2018, the state's annual base budget is calculated by a certain reduction in the earlier

baseline. Beginning with the annual allocations for the year 2015, each state's base annual CO_2 emissions budget will decline by 2.5 percent per year so that the state's base annual emissions budget for 2018 will be 10 percent below its initial base annual CO_2 emissions budget.

Each state may decide how to allocate allowances from its CO_2 emissions budget to a CO_2 budget unit. Each source that includes one or more CO_2 budget units, referred to as a "CO_2 budget source," must maintain its allowances in a compliance account and obtain a permit that contains all the CO_2 Budget Trading Program requirements that apply to that source. In addition to allocating allowances to CO_2 budget sources based on the source's emissions, a state may also award Early Reduction CO_2 Allowances (ERAs) for reductions in the source's CO_2 emissions achieved during the period from 2006 to 2008. The state will calculate the number of ERAs to be awarded to a source based on the extent CO_2 emissions in the baseline period (2003 to 2005) exceed CO_2 emissions in the early reduction period.

Each state must also reserve 25 percent of the base budget to the Consumer Benefit or Strategic Energy Purpose Account. Allowances will be sold or distributed from this general account to provide funds to promote energy efficient measures, mitigate electricity ratepayer impacts resulting from implementing RGGI, promote renewable or noncarbon emitting energy technologies, and stimulate or reward investment in developing innovative technologies that significantly abate carbon emissions.

A CO_2 budget unit is not the only entity that can hold an account to transfer allowances. Any person may establish a general account for the purpose of holding and transferring CO_2 allowances, for instance to hold credits generated from CO_2 emission offset projects. The general account must designate a CO_2 authorized account representative, who can legally bind each person with ownership interest in CO_2 allowances held in the general account regarding all matters pertaining to the CO_2 budget trading program. Each CO_2 allowance held in a compliance account or general account will remain there until the CO_2 allowance is deducted or transferred.

Program Implementation Rules

RGGI's Draft Model Rule has detailed implementation rules to guide states in setting up a system that complies with the MOU. A state may put its own regulatory gloss on the system as it integrates RGGI into its regulatory scheme, but the basic elements must apply to all the participating states for RGGI to function effectively.

Each state will establish one compliance account for each CO_2 budget source. The state deducts for compliance the CO_2 allowances available until the amount of CO_2 allowance is deducted equals the number of tons of total CO_2 emissions, less any CO_2 emissions attributable to the burning of biomass, from all CO_2 budget units at the CO_2 budget source for the control period. Each source must cover its emissions with CO_2 allowances at the allowance transfer deadline, which falls on the March 1 after the control period ends. A control period is a three-year period, unless extended because of high CO_2 allowance prices. Also on March 1 of every year, the CO_2 authorized account representative must submit a compliance certification report that certifies compliance with all emissions limitations, monitoring and reporting requirements.

The state may account for excess emissions by deducting from the CO_2 budget source's compliance account a number of CO_2 allowances, allocated for allocation years that occur after the control period in which the source has excess emissions, equal to three times the number of the source's excess emissions. In other words, if the source has excess emissions, it may use future allowances to achieve compliance but only by forfeiting some number of allowances at a 3-to-1 penalty. No CO_2 offset allowances may be deducted to account for the source's excess emissions. The CO_2 budget source may also be accessed fines or penalties under the applicable state law for excess emissions.

Each CO_2 budget unit must comply with the monitoring, recordkeeping and reporting requirements under the applicable sections of 40 C.F.R. Part 75. Part 75 is the U.S. Environmental Protection Agency

regulation that includes specific requirements for monitoring, recordkeeping and reporting CO_2 emissions. Each CO_2 budget unit must install and operate monitoring systems and successfully complete all certification tests and record quality assurance data by following Part 75. The CO_2 authorized account representative must submit quarterly reports that report the CO_2 mass emission data and heat input data for the CO_2 budget unit, and submit to the agency a compliance certification in support of each quarterly report based on a reasonable inquiry for those persons with a primary responsibility for ensuring that all the units' emissions are correctly monitored.

Offset Projects

Baseline-credit programs grant credit for reducing emissions below a specific baseline. RGGI incorporates a modified baseline-credit program within its cap-and-trade program by awarding credits or CO_2 allowances for CO_2 emissions offset projects or CO_2 emissions credit retirements that have reduced or avoided CO_2 (or CO_2 equivalent) emissions below where they would have been without the project. Thus, RGGI contains the additionality requirement that no CO_2 emissions offset allowances may be awarded to a project or CO_2 emissions credit retirement that is required pursuant to any local, state or federal law, regulation, administrative or judicial order. A state may award CO_2 emissions offset allowances to the sponsor of any of the following types of CO_2 emissions offset projects:

- Landfill methane capture and destruction
- Reduction in emissions of sulfur hexafluoride (SF_6)
- Sequestration of carbon due to afforestation
- Reduction or avoidance of CO_2 emissions from natural gas, oil or propane end-use combustion due to end-use energy efficiency
- Avoidance of methane emissions from agricultural manure management operations
- Reduction in emissions of methane from natural gas transmission and distribution equipment

In the event of high CO_2 allowance prices, the state may also award CO_2 offset allowances to the sponsor of a CO_2 emissions credit retirement, which include the permanent retirement of greenhouse gas (GHG) allowances or credits issued pursuant to any governmental mandatory carbon constraining program outside the United States that places a specific tonnage limit on GHG emissions, or certified GHG emissions reduction credits issued pursuant to a United Nations Framework Convention on Climate Change (UNFCCC) process. To receive a CO_2 emissions credit retirement, the sponsor must submit sufficient information to demonstrate that the credit issued through the UNFCCC process is equivalent to a RGGI CO_2 allowance and has been permanently and irrevocably retired. This provision thus ties RGGI to the Kyoto Protocol and the European Union's Emissions Trading Scheme (EU ETS) by allowing states to award CO_2 offset allowances to the holder of a compliance or general account that acquires and commits to never using the Kyoto Protocol or EU ETS credit.

Any person may be the sponsor of an eligible CO_2 emissions offset project or CO_2 emissions credit retirement. However, the sponsor of a CO_2 emissions offset project or CO_2 emissions credit retirement must establish a general account. The project sponsor also must submit a project application that contains the following information: the project sponsor's identification information, a project description, the emissions baseline determination, an explanation of how the projected reduction or avoidance of atmospheric loading of CO_2 (or CO_2 equivalent) or the sequestration of carbon is to be quantified, monitored and verified. The project sponsor also must include a statement and certification report drafted and signed by an independent certifier that expresses that the independent certifier has reviewed the application and evaluated the adequacy and validity of the information supplied by the project sponsor and the adequacy of the monitoring and verification plan.

The award of quantities of CO_2 offset allowances or CO_2 emissions credit retirements to a project sponsor may be strictly limited based on whether the agency has declared a "stage one trigger event" or a "stage two trigger event." A "stage one trigger event" essentially is when the 12-month rolling average spot prices for CO_2 allowances is $7 or more. A "stage

two trigger event" essentially is when the 12-month rolling average spot price for CO_2 allowances is $10 or more.

If the project sponsor files the monitoring and verification report prior to the declaration of either a stage one trigger event or stage two trigger event during the current control period, then one CO_2 offset allowance will be awarded for each ton of demonstrated reduction in CO_2 emissions (or CO_2 equivalent) or sequestration of CO_2 from a CO_2 emissions offset project that was undertaken within a RGGI participating state, and one CO_2 offset allowance will be awarded for two tons of demonstrated reductions in CO_2 emissions or CO_2 equivalent or sequestration of CO_2 from a CO_2 emissions offset project that was undertaken within any state that is not a participating state. Thus, offset projects in states other than the RGGI participating states are eligible for allowances but at a discount.

If the project sponsor files the monitoring and verification report on or after the declaration of a stage one trigger event or on or after the declaration of a stage two trigger event during the current control period, then one CO_2 offset allowance will be awarded for each ton of demonstrated reduction in CO_2 emissions (or CO_2 equivalent) or sequestration of CO_2 from the CO_2 emissions offset project that was undertaken within any state, Mexico or Canada. In this way, CO_2 offset allowances can be more readily generated from projects throughout North America when the CO_2 offset allowance exceeds a certain price, thereby increasing the supply of CO_2 offset allowances and consequently using a market mechanism to reduce the price.

If the project sponsor files the appropriate CO_2 emissions credit retirement application required on or after the declaration of a stage two trigger event during the current control period, then one CO_2 offset allowance will be awarded for each ton of reduction in CO_2 (or CO_2 equivalent) or sequestration of CO_2 represented by the relevant credits or allowances recognized under the CO_2 emissions credit retirement requirements.

The number of CO_2 offset allowances that may be used for compliance is also strictly limited based on the cost of the CO_2 emissions. The number that may be deducted is no more than the number of tons representing 3.3 percent of the CO_2 budget source's CO_2 emissions for that control period unless:

- In the event of a stage one trigger event, 5 percent of the CO_2 budget source's CO_2 emissions can be deducted
- In the event of a stage two trigger event, 5 percent of the CO_2 budget source's CO_2 emissions for the first three years of a control period can be deducted and 20 percent of the CO_2 budget source's CO_2 emissions for each year after the third year of the control period can be deducted

A CO_2 budget source, then, can use more CO_2 offset allowances as the price of CO_2 offset allowances goes up above a certain level.

Next Steps

After issuance of the Draft Model Rule, the SWG held stakeholder meetings and requested written comments to be submitted by May 22, 2006. The SWG received numerous comments from a broad range of commentators, including some that suggest changes to particular provisions of the Draft Model Rule but in contrary ways. For instance, the Natural Resources Defense Council recommended that all allowances be used to benefit consumers, that allowances not be distributed for free and that the 25 percent set aside for consumer benefit be increased over time. The Edison Electric Institute, on the other hand, recommended that the 25 percent set aside for consumer benefit or strategic energy purposes be deleted because it increases the costs of compliance and constrains the effectiveness of emissions trading. The SWG will have to decide how to revise the Draft Model Rule based on the comments.

The SWG expects to issue a Final Model Rule in July 2006. Once the Final Model Rule is issued, each participating state must promulgate its own law or rule based on the Model Rule to implement RGGI. The

participating states hope to have RGGI in place as of Jan. 1, 2009.

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CONTRACTING FOR GREENHOUSE GAS EMISSIONS: AN OVERVIEW OF THE BASIC COMPONENTS OF TRADING AND TRANSFERRING

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Trading greenhouse gases (GHGs) in a free market raises questions about arranging for and accomplishing trades. Knowing the basics of contracting for GHG credits and allowances, like in any other sales transaction, is useful in accomplishing the goals of emissions trading. Although using an exchange is comparatively easier than direct trades or transfers without assistance, those wishing to engage in transactions of GHG credits and allowances must understand the background behind trading and the associated contracts. Although there is no single, standard GHG contract, there are several provisions and terms common to most contracts. This article discusses those commonalities and answers questions raised by free market trading of GHGs.

The Necessity of Contracting GHG Deals

Trading is currently underway in the United States for sulfur dioxide (SO_2) and nitrogen oxides (NO_x) under the Clean Air Act. Although not widespread, some emitters in the United States are beginning to use the system and take advantage of the accompanying opportunities. It is from this source that experience is being gained in the realm of emissions trading. Such experience can be easily transferred to GHG trading, given the similarities between the systems.

Contracts in emissions trading can take different forms and do not appear in a standard format. In GHG trading specifically, two types of contracts operate within the system, and generally exist in concert. First, the *derivative contract* is the routine credit or allowance for a set price arrangement. Derivative contracts are used for almost any form of agreement, including: futures transactions, the affirmative obligation to trade credits in the future at a set price; "spot trades," immediate transactions generally occurring within 3-5 days; and option terms to address market

volatility. Additional examples of derivative contracts are "forward settlements," agreements assuring continuing streams of allowances or credits over the course of time under a price arrangement, as well as options on a futures contract, which are available through an organized futures exchange in conjunction with a broker. Hybrid agreements, those agreements that are a combination of more standard contracts, are also possible, and are common when addressing emission reduction credits generated from Clean Development Mechanism (CDM) or Joint Implementation (JI) projects under the Kyoto Protocol.

Second, *master agreements* streamline the process for negotiating derivative agreements, and are becoming more and more common. Master agreements, created under individual GHG trading systems, are best described as overarching rules for trading within those systems. They set forth the legal relationships between parties to derivative agreements, define common terms specific to the trading scheme at issue and increase transaction efficiency. Master agreements generally include the governed derivative agreements as attachments to create a better link between the two. Potential traders should be aware of the existence of any master agreement in their trading jurisdiction before entering into a derivative agreement.

Contracting Terms and Conditions

After agreeing to the basic form of the contract, parties must then agree to the individual terms in the contract itself. Several trade groups created model emissions trading contracts among which commonalities are found. These commonalities are important ideas to consider while drafting emissions trading contracts. In many ways, GHG contracts are very similar to common goods and services contracts, and the following provisions appear in most, if not all, model emissions trading contracts.

Key actions to take under contract. Key actions include the timeline for taking actions under the agreement as well as performance and payment requirements, credit or allowance amounts, delivery methods, and other actions and commitments required under the agreement specific to the parties involved.

Key defined terms. Because emission trades generally use unique terms or involve cross-border agreements, a lengthy definition section can help to avoid confusion both during negotiations and later in the transaction. These sections are particularly important when conducting international transactions where key terms may have different meanings in different countries and cultures. Some frequently used and defined terms in emissions trading are call options, collars, strangle and strike price. Contracts may also set forth terms that would normally be expected in more common sales of goods agreements, but could be easily confused, including the allowance or credit to be transferred or traded, the currency under which the agreement is operating, events constituting default, baseline terms for CDM and JI agreements, and the GHGs that may be traded under the agreement.

Dispute resolution/choice of laws. Although more important in cross-border trades, dispute resolution and choice of laws clauses can help to avoid, or streamline, costly litigation in the event of a transaction problem. Furthermore, the selection of one jurisdiction's laws to govern the agreement over another could impact the structure or terms throughout the contract. It is always important to become familiar with the legal structure surrounding contracts and emissions trading, and this is especially true in international or cross-border agreements to avoid unnecessary legal complications at both the negotiation and execution stages. And, when dealing in international trades, it is equally important to know if the nations involved have a treaty in place for enforcing foreign judgments. Without such an agreement, a nation is not obligated to enforce a judgment from a foreign court against one of its citizens.

Certification provisions. When working with JI or CDM projects, certification of the produced GHG credits is essential to their marketability. The speculative nature of the resulting credits, Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs), call for increased protection against events that could negatively impact the transaction, including the credit not being certified or not being produced. As such, traders should strongly consider conditioning the sale of any CDM or JI credits on

certification, or otherwise adjust the price terms accordingly.

Force majeure and warranties. Force majeure clauses, as in other sales contracts, account for unanticipated events, legal impossibilities and other changed circumstances that may invalidate a transaction. In addition, warranty clauses help to define the expectations and authority each party brings to the agreement. Like choice of laws provisions, clearly stated warranties shape the contract and define the expectations of the parties.

Telephone confirmation and recording phone calls. Many model contracts include provisions on confirmation and recording in order to simplify the negotiation process, especially for international transactions. Further, master agreements may set time limits for responses and counter-offers during negotiations, thereby requiring special terms allowing telephone confirmation.

Other transaction considerations. Finally, depending on the nature of the contract, it is worth considering specific terms and conditions identified by various trade organizations. Examples of these terms include non-standard transfers and payment considerations, default provisions and recourse options in the event of default.

Emissions trading contracts can be long and complex. With proper planning and clear communication among all the parties, however, a well-drafted contract will prevent unnecessary complications later in the transaction. Care must be taken to avoid unnecessary complications in completing the transactions. Especially given the high potential for such complications in international trading, parties must have familiarity with contracting terms, local laws and master agreements governing the transactions. Such an understanding during the contracting process, will prevent complications in, or complete breakdowns of, emissions trading transactions.

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GREENHOUSE GAS EMISSIONS TRADING, ENVIRONMENT INTEGRITY AND PROJECT-BASED ADDITIONALITY: A THREE-LEGGED STOOL

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Greenhouse gas (GHG) emissions trading is likely to be an important element of any expanded national climate change policy. GHGs are ideally suited to emissions trading because of their global bubble, the diversity of mitigation sectors and the lack of "hot spots" that can create health concerns. Moreover, there is little question that emissions trading can reduce the costs of achieving a GHG emissions reduction target, perhaps by more than 50 percent. Most observers would also agree that emissions trading per se is not the objective; rather, the objective is to reduce GHG emissions. Any emissions trading program needs to be designed with environmental integrity in mind.

As reflected in current and planned GHG emissions trading programs, GHG offsets (carbon offsets) allow emitters to continue to emit GHGs in one place by procuring GHG "credits" from somewhere else. Conceptually, the need for carbon offsets to be "additional" is easy to understand. An offset credit allows emissions from capped sources to increase with the understanding that this increase is "offset" by a reduction from an uncapped source. If the offset reductions would have happened regardless of the availability of credits, then emissions from capped sectors are allowed to increase, without any compensating new reductions in the uncapped sector. Credited reductions must therefore be *additional* to reductions that would have occurred in the absence of the trading system if environmental integrity is to be maintained.

If policy mandates create an absolute cap on emissions, and the cap applies to all of the emissions sources and regions allowed to participate in the emissions trading program, additionality isn't an issue. But if reductions from regions and sectors not covered by the cap are eligible for trading, then additionality becomes important. And the characteristics that make GHGs so amenable to emissions trading, in particular their global reach and the diversity of mitigation options, almost guarantee that we will want to include uncapped sources in an emissions trading system.

Additionality has proven the most contentious issue in the design of GHG emissions trading programs. Market participants have been debating additionality for more than a decade, without making a great deal of progress in developing a consensus on additionality. There are many reasons that a reduction in emissions from a particular source might be "business as usual." A power plant might age so much that it is moved down the loading order. No-till agriculture might be implemented in response to a change in crop prices. Landfill methane might be collected and flared in response to safety concerns. A gas-fired power plant might be built instead of a coal-fired power plant because of public health concerns (unrelated to climate change). For emissions trading purposes, the question is whether the availability of offset credits is a decisive reason (although not necessarily the *only* reason) for the drop in emissions from a particular source. The question boils down to a kind of thought experiment: holding everything else constant, would the reduction have happened in the absence of the offset crediting mechanism (*i.e.*, if it were not eligible for offset credits)? If so, then the associated emissions reduction project is not additional; if not, then the project is additional.

Unfortunately, it is impossible to definitively answer this question. Even if we could read the minds of project developers, they themselves may not know what they would have done under different circumstances. It is not even a hypothetical question, since a hypothesis can be empirically tested. We are forced to seek a second-best solution, namely designing questions that *are* answerable. For additionality, these questions have taken the form of what are generally called "additionality tests."

The Statistics of Additionality

The debate over GHG project-based additionality often misses the fact that we have dealt with the challenge of testing for "additional" and "non-additional" outcomes many times before in different circumstances. We know that any test in almost any field—whether home pregnancy kits or eligibility screening for social welfare programs—will yield some false positive and false negative results.

Additionality testing does not differ from other testing; it is not perfect. Additionality tests will sometimes falsely indicate that a project is additional when the project would have occurred regardless of climate change concerns (*i.e.*, a false positive or phantom reduction). Alternatively, an additionality test may indicate that a proposed project is not additional when in fact it is (*i.e.*, a false negative or lost opportunity).

The relative proportions of false positives, false negatives and true results can vary depending on how a test is constructed and the nature of what is being tested. The relative proportions of phantom reductions and lost opportunities making up the final credit pool will depend not only on which additionality tests are employed (and how they are designed), but also on how many non-additional projects exist relative to additional projects. It is impossible to determine the proportions empirically. Nevertheless, projects that reduce emissions relative to historical levels occur all the time and for many reasons without regard for climate change mitigation; the relative number of these projects can be high.

An important principle of statistical testing is that as one tries to eliminate one potential testing error (*e.g.*, false positives) by modifying a test or testing procedure, one will increase the magnitude of the other error (*e.g.*, lost opportunities). In other words, if you are most concerned about minimizing the number of false positives coming out of a test, be prepared for more false negatives. This can in turn lead to outcomes such as higher credit prices, because the supply pool is diminished.

Arriving at an acceptable balance of false positives and false negatives is a key part of designing and choosing a particular testing process for GHG additionality. Defining the acceptable balance between phantom reductions and lost opportunities ultimately is a policy rather than a technical decision. The appropriate balance will depend on weighing competing objectives, including the costs of designing the program, the cost-effectiveness of the resulting credit pool and the proportion of phantom reductions determined to be acceptable.

Why Additionality Matters

Additionality can seem like an abstract concept. If just a few non-additional tons find their way into a trading system, would it materially undercut achievement of the underlying environmental objectives? Probably not. But is this an accurate reflection of where we are today with GHG markets?

Unfortunately, it is not. The number of emissions reductions occurring for reasons having nothing to do with GHG markets and crediting can be quite large. In the United States, for example, emissions per dollar of GDP are falling at a rate of about 1 percent per year, meaning there are tens of millions of tons of "business as usual" reductions that conceivably could enter GHG markets. The total number of available reductions from non-additional projects could swamp demand.

The situation is similar internationally. The volume of non-additional reductions totals hundreds of millions of tons of CO_2e per year, and could represent a large fraction of—or even exceed the magnitude of—reductions being mandated as part of an emissions trading program. In the presence of modest demand, and in the absence of an effective approach to additionality, the proportion of non-additional reductions supplying the international GHG markets could be very large.

Offset economics reinforces concern over non-additional credits dominating GHG markets. If one thinks of non-additional projects as those that are already going to occur without a trading system, then there is no incremental economic cost for them to "produce" GHG credits beyond the transaction costs associated with documenting and selling the reductions. This is obviously the lowest-risk approach to generating GHG credits for the trading system, and project developers will clearly be motivated to push these non-additional credits into the market.

Thus, if we are concerned about environmental integrity, if the trading system allows the import of emissions reduction credits from non-capped sectors and countries, and if demand is still relatively constrained, then project-based additionality does matter.

Developing Additionality Policy

The notion that there is a technical solution to the additionality challenge is a common one. There is little understanding of the similarities between additionality testing and other statistical testing, and of the inevitability of false positives and false negatives in any additionality testing process. Not surprisingly, there is even less understanding that policymakers ultimately must decide upon the "right" set of additionality tests according to the balance of objectives they wish to achieve for a given emissions trading system. Policymakers have three options: select the additionality standards they want and accept the resulting prices, determine the prices they are willing to accept and design the additionality standards accordingly, or combine these two approaches.

Several policy principles derive from an understanding of additionality statistics:

Principle No. 1: The objectives of additionality policy in the context of a particular emissions trading program need to be identified in advance in order to guide the development of the appropriate additionality tests. Key design questions include: how important is the environmental integrity of the program as opposed to other objectives, *e.g.*, simply establishing a trading system? What is politically acceptable, particularly with respect to the cost of credits under the trading system? How big a pool of offset-based credits is needed? Is the goal to develop a standard for the near-term GHG markets with limited demand, or to develop an additionality standard for a future, larger

GHG market? Once these questions are answered, it becomes possible to develop additionality standards that will advance the chosen policy decisions.

Principle No. 2: In order to understand whether offset-based emissions trading programs are supporting the integrity of the overall emissions reduction targets, it is necessary to understand the relative proportions of phantom reductions and lost opportunities to real reductions making it into the credit supply pool. The analysis necessary to develop such an understanding must be planned and budgeted as part of the development of the emissions trading system.

Principle No. 3: Additionality rules need to be adapted to market circumstances on an ongoing basis. In the face of significant changes in market supply or demand, static additionality tests cannot effectively balance the policy objectives of acceptably small magnitudes of phantom reductions and lost opportunities and the cost-effectiveness of the overall credit pool. Delivering a cost-effective pool of truly additional reductions in a 300 million-ton trading market is a different challenge than delivering a cost-effective pool of additional reductions in a five gigaton market. Additionality rules designed for a large market (or designed without attention to market size) can result in little or no environmental integrity during the "small market stage." Strict additionality tests could limit phantom reductions in a small market, but the price of credits could rapidly rise as demand rises (due to a shortage of supply). A single static additionality standard will not be appropriate for every level of demand.

Principle No. 4: The ideal goal is to pursue an additionality standard that gets us as close as possible to both a low phantom reduction risk and low lost opportunity risk. When offset-based credit demand is relatively low, this is politically easier to do given the existence of low-hanging fruit. For example, some potential mitigation sectors are likely to prove almost entirely additional (*e.g.*, coalmine methane flaring at abandoned mines); others will be almost entirely non-additional (*e.g.*, existing nuclear power installations). Many sectors will be characterized by a diverse range of additionality outcomes, making it difficult to differentiate between "true positive" and "false positive," as well as "true negative" and "false negative" reductions. When offset-demand is relatively low, supply could be constrained to sectors for which additionality is readily recognized. As the market expands, more sectors could be allowed into the market. This approach would avoid the complexity, if not the impossibility, of attempting to develop additionality standards that apply to all sectors. It is simply not possible to design such a system in a way that satisfies the objectives being pursued through additionality testing; the lower the demand, the harder it gets. The potential supply becomes too large very quickly, and non-additional credits threaten to swamp the market.

Conclusions

Additionality is pivotal to the environmental outcomes associated with GHG emissions trading programs that incorporate offsets from uncapped sectors or countries. In today's market, flooding the GHG market with non-additional reductions could occur if additionality is ignored in the design of emissions trading systems. It may be that simply establishing the emissions trading system is more important to policymakers than ensuring the market's near-term environmental integrity. But if that is the approach policymakers wish to take, it should be made transparently clear, so that in-depth debates over additionality rules can be largely avoided. More likely is that, without a dramatic change in direction, the additionality wars will continue.

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