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*MDaniger Paper**Doniger Paper* *CMTS*

International Emissions Trading: Liability Options

Introduction

There is general agreement that rules under Article 17 should include reasonable linkages between the emissions trading system and the Annex B Parties' basic obligations to measure, report on, and control their emissions. Specifically, there is broad support for providing that a Party should not be able to transfer or acquire parts of assigned amounts (here called "assigned emissions units" or "AEUs") if they are not complying with the measurement and reporting requirements of Articles 5 and 7. There is also broad support for prohibiting a Party from making further transfers of AEUs if it has used up the entire balance of its assigned amount for the commitment period (i.e., no "deficit trading"). Details regarding these two conditions are addressed elsewhere (in the New Zealand paper).

These two conditions would effectively prohibit transfers of AEUs *after* a Party is determined to be in non-compliance. By themselves, however, the two conditions do not clearly address the status of AEUs that the Party has already transferred *before* a formal determination of its non-compliance.

A wide variety of liability rules could be considered to address this case. Will AEUs transferred before such a determination be free and clear of any consequences as a result of the originating Party's non-compliance? Or will such AEUs be called upon in some way to remedy that non-compliance? Different approaches will produce substantially different prospective incentives for buyer and seller Parties and for legal entities (e.g., private sector firms) involved in emissions trading. As explained below, a "pure seller responsibility" approach would minimize trading participants' transaction costs but at the risk of discouraging selling Party's compliance. A "pure buyer responsibility" approach would create strong compliance incentives but also may add costs or uncertainties that hinder the development of a working market. A hybrid solution may be possible that encourages compliance without creating unacceptable transaction costs.

Part I of this paper addresses alternative liability rules for potential cases of non-compliance by selling Parties with obligations to measure, report, and limit their emissions. Part II of the paper proposes concrete steps that the Parties could agree to take now to increase the likelihood that all Parties will in fact meet their obligations, thereby reducing the risks that the liability rule is designed to address.

I. Liability Rule Options

For ease of understanding, this section first evaluates potential liability rules for the case where a selling Party has met its measurement and reporting responsibilities, but exceeds its remaining emissions budget. The section then addresses cases where a Party's measurement and reporting is deficient.¹

A. Options for failure to meet the emission budget

Each Annex B Party has the obligation to hold enough assigned amount at the end of the first commitment period to cover its net emissions during that period.² Rules under Articles 7 and 17 need to clearly indicate from the outset what will happen to AEUs that a Party has previously sold if it has excess emissions at the end of the period. Specifically, the rules should determine what effect, if any, there will be on AEUs that the Party has previously transferred.

Potential liability rules could provide that previously traded AEUs are unaffected, placing total

responsibility for the excess emissions on the seller. Alternatively, they could provide that a portion of previously sold AEU's will be applied to cover the Party's excess emissions, effectively shifting non-compliance risks to buyers of those AEU's. Hybrid approaches could also be adopted.

The rules could also provide that any excess emissions that are not otherwise covered by AEU's from the first commitment period should be deducted, with a penalty, from the Party's assigned amount for the second period. A decision would be needed on whether the liability rule would come into play before the deduction-with-penalty, or vice versa.

Pure seller responsibility. The rules would provide that any AEU's transferred by a Party may be used (or re-transferred) by the acquiring Party at their full value, regardless whether the originating Party has retained enough to cover its own net emissions at the end of the commitment period. The selling Party would be solely responsible for its excess emissions. While further sales of AEU's would be prohibited once the selling Party's emissions had used up its entire assigned amount, past sales would be unaffected.

Pros:

- Lowest transaction costs for trading. Buying Parties and entities could acquire and use AEU's from any Party at face value and treat them as completely interchangeable. Buyers would bear no added costs to evaluate or insure against the possibility of the seller's non-compliance.

Cons:

- A Party could be encouraged to over-sell AEU's that it should retain to cover its own emissions later in the commitment period. Unremedied excess emissions would increase climate change risks, undermine the credibility of emissions trading, and weaken prospects for carrying out commitments for subsequent periods.
- Effectiveness of seller responsibility depends on a strong compliance and enforcement regime independent of the trading rules (e.g., as in the U.S. acid rain program). The Protocol does not yet include any specific consequences for non-compliance or define how non-compliance will be determined.
- Prohibiting further AEU transfers after non-compliance is determined, or requiring deductions from the second period budget, may not be sufficient incentives to prevent such over-selling.

Pure buyer responsibility. The rules would provide that if a selling Party has excess emissions exceeds at the end of the period, a portion of the AEU's the Party had previously sold would be applied to cover the shortfall. Two specific sub-options have been suggested: (1) All AEU's sold by that Party could be devalued by the amount needed to cover the Party's shortfall, or (2) AEU's sales by that Party could be retroactively canceled in reverse order until the Party's shortfall was covered. Purchasers would know in advance that they could later be required to obtain replacement AEU's to make up for those applied to cover a selling Party's shortfall. Market tools would develop to assess compliance risks associated with potential sellers (e.g., risk rating services like Moody's bond ratings). Buyers could manage risk by keeping mixed portfolios from different countries, holding options for extra AEU's, buying "replacement AEU" insurance, or escrowing partial payment contingent on the selling Party's performance. (Costa Rican "credits" are now being sold with an optional insurance package provided by Swiss banks). AEU's from different countries would trade at different prices, reflecting buyers' assessments of the risk of the originating Party's non-compliance.

Pros:

- Market would communicate strong compliance incentives to selling Parties because buyers will

pay more for AEU's from countries with solid compliance assurances, and less for AEU's from countries with greater compliance risks.

- Buyer Parties and entities have a variety of market tools to protect themselves against the risk of being thrown into non-compliance as a result of the devaluation of foreign AEU's.

Cons:

- Transaction costs would be raised. Uncertainties could inhibit market start-up.
- With new institutions and requirements, risks of Parties' non-compliance are difficult to predict. Without a "track record" for risk ratings, rating services may be neither very definitive nor well-trusted, and insurance may be expensive or even unavailable.
- Buyers may be unwilling to enter the market without steep discounts, if at all.

Diplomatically, greater reliance on market risk ratings lessens the system's dependence on Parties' willingness to make formal allegations of non-compliance, and on formal procedures for resolving such claims.

Hybrid options. Options can be developed that mix seller and buyer responsibility in different ways. Two such options are presented below.

(1) The "yellow light" rule. Trading would start under seller responsibility, but would switch to buyer liability if a Party's compliance with its budget (or with monitoring and reporting requirements) is formally questioned. AEU transfers could continue while an allegation of non-compliance is pending (i.e., while the "yellow light" is on), except that a buyer Party would be on notice that such AEU's were subject to devaluation or cancellation if a final determination of non-compliance is made. A version of the yellow light proposal was adopted in Article 6 on joint implementation.

Pros:

- No buyer risk when the selling Party's compliance is not in question. No uncertainty as to AEU's value and no need to discount for risk or bear additional cost for insurance.
- Communicates compliance incentive to selling Parties because buyers will pay less when the "yellow light" is on.

Cons:

- Implementation is highly dependent on specific action by the Parties. If there are delays in turning on the "yellow light" in appropriate circumstances, a selling Party with a compliance problem may continue, or even accelerate, its over-selling.
- If the "yellow light" can be triggered simply by a non-compliance allegation from any Party, trading could be undermined by unwarranted allegations made by a Party opposed to trading or seeking leverage on other issues. It will be difficult to negotiate limits on who may raise an allegation.
- Conversely, as with other kinds of sanctions, Parties may be reluctant to turn on the "yellow light" even when warranted.
- There is no established process for resolving allegations once raised.

(2) A "two class" approach. Another mixed liability approach would allow Parties to transfer a specific (possibly small) percentage of their assigned amounts on a pure seller liability basis. The remainder of the Party's AEU's could be traded on a buyer liability basis. An alternative to picking a uniform specific percentage would be to provide that trading switches from seller to buyer responsibility

if a selling Party is consuming its assigned amount (through its own use and its transfers) at a more-than-proportional rate over the five year period.

Pros:

- Allows trading to start, possibly even before the first commitment period, on the basis of seller responsibility, with no buyer risks and low transaction costs.
- Provides the greater compliance incentives of buyer responsibility when transfers go beyond the specified amount.
- Provides a clear rule (under either variation) for the switch-over from seller to buyer responsibility that does not depend on subsequent actions by Parties. This may make it preferable to the "yellow light" proposal.
- May represent best chance for compromise between proponents seller and buyer responsibility.

Cons:

- Drawing the appropriate line for switching from seller to buyer responsibility may be difficult.

B. Options for Failure to Measure or Report on Emissions

The preceding discussion assumed compliance with Parties obligations to measure and report on emission under Articles 5 and 7. This section addresses liability in cases of non-compliance with these obligations. A Party that is found not to be implementing its measurement and reporting obligations should be barred from making further AEU transfers until it gets back into compliance. This rule, however, does not address how previously transferred AEU's should be treated.

A difficulty in this instance is that without accurate measurement and reporting, it cannot be determined at the end of the period what is the actual extent of a Party's excess emissions (or even whether the Party has in fact exceeded its emissions budget). A solution to this problem may be found in provisions of Article 5 that require the Parties to adopt "adjustments" to apply to a Party's emissions inventory when it does not use IPCC-sanctioned measurement methods. The Parties could agree on methodologies for making upward adjustments that to reported figures when there are deficiencies or gaps in a Party's measurements. These methodologies could include values to apply in cases of complete failures to report.

These adjustments would be applied at the end of the commitment period to determine whether a Party has excess emissions. From that point forward, the same liability rule would apply.

II. Potential Steps to Reduce Seller Compliance Risks and Promote Early Trading

Many proponents of trading are eager to get market activity going early, in part to send signals to all Parties on the value of early action to reduce emissions. Both trading proponents and those with reservations about trading, however, share concerns that not all Parties will have adequate measurement and reporting systems in place on a timely basis. For their part, potential sellers have expressed their interest in obtaining investment to fund the necessary measurement systems, and to begin specific investments in emission reducing actions, as soon as possible.

The Parties may have an opportunity to substantially accelerate development of needed measurement systems, promote early emission reductions, and get emissions trading and market activity going on an early basis. Success in this regard could substantially reduce Parties' compliance risks, lessening the importance of, and tension over, liability rules.

Potential buyer and seller Parties could begin to explore early arrangements for emissions trading. Trading could begin early on a contract basis and later make the transition to formal, official trades. Parties cannot undertake formal trading of AEU until the Protocol comes into force and until they have ratified it. In addition, Parties wanting to trade would have to meet the above-described preconditions for measurement and reporting, monitoring, reporting, and registration systems. Before the start of official trading, however, Parties could enter early arrangements allowing themselves or their private sector entities to make contracts for future delivery of AEU.

Such contracts could provide for payment now of a portion of the purchase price, with the balance due when the official trade occurs (i.e., when AEU are officially delivered). Sellers could agree to specifically dedicate negotiated amounts of the purchase price to paying for the development and deployment of the needed monitoring system, and making specific investments in projects or policy reforms to reduce or sequester GHG.

It is envisioned that funds for such contracts would come from private sector entities, not the buyer Party governments. Access to such contract arrangements could be limited to Umbrella Group members, or opened to all of Annex B.

This approach could substantially advance shared objectives of (1) promoting the establishment of national monitoring systems (2) assuring access to an adequate supply of AEU, and (3) promoting real project-level improvements and policy reforms that would mitigate emissions and expand the supply of inexpensive AEU. This approach could also meet some of the stated interests of Parties with reservations about trading by addressing the monitoring and compliance capabilities and promoting concrete emission reductions.³

To: David Doniger

From: Adele Morris

Re: Comments on emissions trading/liability

Date: 5/15/98

Thanks for the opportunity to comment on the papers. I'm also faxing over a markup; some of those comments are repeated here in case you can't read my handwriting. Please feel free to call to discuss my comments. I'm at 395-5012.

Recommended rewrite of paragraph 2, page 5:

Sellers' liability: A pure "sellers liability" system means that an AEU permit from any party may be used in its full value regardless of whether the originating party ultimately meets all of its commitments under the Protocol. This system is also known as "a ton is a ton."

Pros:

This system would provide the least transactions costs and relatively low uncertainty as to whether the U.S., as a likely net buyer, would be positioned to meet its target. The system is simple, and we have experience in the SO₂ program of how it could work. The economic analysis prepared by the Administration has assumed pure sellers' liability, as has the economic modeling community and others analyzing the economic impacts of the Kyoto agreement.

Cons:

The primary disadvantage to a sellers' liability system derives from the lack of any penalties in the Protocol for non-compliance. If buyers of permits would be taking a risk that the permits they bought would be invalid, the depression of the price due to that risk would build in an incentive to sellers to both comply and strongly advertise their compliance. A tendency to oversell would be reduced. The disadvantage of sellers' liability may be mitigated by an agreement that trading rights in subsequent commitment periods would be hindered for countries with poor compliance in the first period.

While we all agree that qualitatively the disadvantages to a sellers' liability system are important, it is impossible to anticipate the magnitude of the risk of significant noncompliance in a seller liability system and the costs associated with trying to avert that risk through buyer liability approaches.

Thoughts on preconditions:

Let's start with the preconditions to trade, since they seem simpler. Several questions arise when we look at the implementation of preconditions and/or red flags. My main point in this section is that we should temper our advocacy of preconditions with some understanding that they introduce a host of policy challenges.

Hypothetical: Suppose a U.S. firm buys Russian tons, and then the Russians fall out of compliance with the monitoring requirements.

Can the U.S. firm resell those tons to anyone else? If the U.S.-owned Russian tons are saleable under a red flag, and Russian-owned Russian tons aren't, then there's a strong incentive to trade early on for no other reason than to get the tons out of Russia before the system breaks down. If we limit initial sales, but allow resales, couldn't Russia just contract with a U.S. broker to hold its tons from the very beginning, making the precondition meaningless since all the tons would be resales? Detailed rules would be needed to prevent this sort of gaming.

If all other countries that own Russian tons under a red flag cannot trade those tons, then can they use them for their own compliance? This would probably depend on the buyer/seller liability problem.

Can a non-compliant Russia, for example, (or private broker therein) sell U.S. AEU's that they happen to own, or is it only their own Russian AEU's they can't sell? If they can sell U.S. AEU's but not Russian AEU's, then they may be able to just trade tons for tons with U.S. firms at the very beginning, and again the precondition becomes meaningless. Whether US firms would be willing to do this depends on the liability question.

I think we are, but just for the record let's always be clear that we're just talking about preconditions for international trading (not domestic trading).

Why can't a noncompliant party buy permits? The prohibition on selling makes much more sense.

If a government fails in its reporting requirements in ways that have nothing to do with the industry of one of its firms holding AEU's, is it necessarily obvious that the firm should be prevented from trading internationally?

What conditions do traders or governments in non-Annex B need to meet in order to trade?

Suppose governments do everything in their power to meet the monitoring and reporting requirements, but experience fraud or corruption in their implementation. Do they lose trading rights even in the face of good faith efforts to comply?

Buyer/Seller liability

Timely and efficient development of a trading system is critical. Although we acknowledge the disadvantages of the seller liability system, departures from it give us pause. We suggest additional careful analysis and retaining an open and flexible negotiating position on this subject for now. We also think a strong stance on buyer liability sends an impolitic message to our potential trading partners. Some of our concerns are outlined below.

Disadvantages and other issues related to both buyer liability systems:

Any departure from seller liability is necessarily more complicated. Under any departure from pure seller liability, the U.S. as a net buyer will likely experience greater uncertainty about its compliance position. It's not clear what additional costs the U.S. may experience in addition to greater transactions costs and impediments to the development of the trading system, but they could be significant.

The domestic system is more complicated if our annual retirement cannot fully rely on foreign permits. Domestically, how do we count sales amongst multinational firms that do business in compliant and non-compliant countries?

No country will be able to know for sure if they are in compliance until the compliance of all the countries from which they purchased permits have demonstrated their compliance, unless they have over-complied and/or purchased insurance from companies that have purchased extra permits (which amounts to the same thing). Resolving all this could take years after the first commitment period.

We need a resolution system for disputed tons regardless of which buyer liability system we introduce. If a seller has oversold by 10 tons, how is the liability spread across that seller and the myriad buyers? Surely the 10 ton violation isn't counted twice, throwing both buyers and sellers of those same tons out of compliance. But if only the buyers are penalized, what incentive did the seller have not to sell them as long as they got a positive price? Reliance on any moral suasion argument is in direct conflict with the premise that prompted the departure from sellers liability in the first place. If the liability is shared between buyer and seller, whatever disincentives for overselling that we do manage to put in place will be eroded by the amount of liability transferred to the buyer. To whatever extent buyers are penalized, we have the knotty problem distributing that penalty. Since the penalty won't be fully realized until after the commitment period, the system could change between the time of the transaction and the penalty phase. Thus the price would reflect the regulatory uncertainty as well.

Of course, buyers could engage in contingent contracts with specific performance requirements on the sellers. This adds another layer of complexity and transactions costs, not to mention raising contract enforcement problems. Liquidity of the market could be constrained.

Conclusion

The preconditions and liability elements could have important economic effects, with prices and volume depressed to reflect the risk related to buying tons of potentially noncompliant countries. We have no idea of the magnitude of these effects, nor of the problem we're trying to address. Given that the development of a trading system is so critical, we advise against proposing now the complications to it that buyer liability represents.

Adele C. Morris

05/26/98 07:59:19 PM

Record Type: Record

To: See the distribution list at the bottom of this message
cc: GREENFIEVA @ MS6820WPOA.us-state.gov @ INET @ LNGTWY
Subject: latest version of my rewrite of D. Doniger's liability paper

Hi Everyone,

The current plan, as I understand we (David Doniger, Victoria Greenfield and David Wilcox and I) agreed at the end of today's Sherman/Eizenstat meeting, is for me to produce a rewrite of the D. Doniger liability paper that fully represents my concerns and share it with everyone by noon Wednesday. In the interests of keeping everyone informed of where I'm at with it, please find attached the latest version of my rewrite, umbria3.wpd. Given my time constraints, I can't guarantee I'll be entirely comfortable with my own rewrite, but I'll do my best. Please feel free to send me comments on what I've written so far.

It is not yet clear whether our interagency differences can be worked out in time to send out a long version of the paper this week, but this is a crack at moving the process forward.

(Victoria and David W. -- I'm faxing this to you as well.)



UMBRLIA3.WPD

Adele

Message Sent To:

Jeffrey A. Frankel/CEA/EOP
Joseph E. Aldy/CEA/EOP
Randall W. Lutter/CEA/EOP
JONATHAN.GRUBER @ MS01.DO.treas.sprint.com @ INET @ LNGTWY
David.Wilcox @ Treas.sprint.com @ inet
PETER.KARPOFF
MARK.FRIEDRICHS @ hq.doe.gov @ inet
dbalzer @ state.gov @ inet
jpershin @ state.gov @ inet



"gruberj%DOM13.DOP07" <JONATHAN.GRUBER @
MS01.DO.treas.sprint.com>
05/26/98 10:23:33 PM

Record Type: Record

To: See the distribution list at the bottom of this message
cc: GREENFIEVA @ ms6820wpoa.us-state.gov
Subject: latest version of my rewrite of D. Doniger's liability paper -Reply

Date: 05/26/1998 08:37 pm (Tuesday)
From: Jonathan Gruber
To: EX.MAIL("/R=EOPMRX/R=LNGTWY/R=inet/R=hq.doe.gov/U=MARK.FRIEDRICHS
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"/R=EOPMRX/R=LNGTWY/U=PETER.KARPOFF/FFN=PETER.KARPOFF/@mr.eop.gov
", "Jeffrey_A._Frankel@oa.eop.gov", "Joseph_E._Aldy@oa.eop.gov",
"Randall_W._Lutter@oa.eop.gov"),
EX.MAIL("Adele_C._Morris@oa.eop.gov")
CC: EX.MAIL("GREENFIEVA@ms6820wpoa.us-state.gov"),
Subject: latest version of my rewrite of D. Doniger's liability paper
-Reply

Adele -

I'm sorry that I missed the meeting today at State. Can you send me a quick update on what happened?

Your rewrite of David Doniger's memo is quite good. My only comments are on pros and cons of buyer liability. To be fair, your pros are a bit too weak and your cons are a bit too lengthy. On the pros, there is basically one pro: it should increase incentives to comply. How much it increases incentives depends on the Mike Toman point (whether the other incentives to not comply are sufficiently large that this is irrelevant). But the direction of the effect is clear. A second pro (which is really a combination of your two pros) is that institutions MAY naturally emerge under this system to make compliance more self-enforcing.

on the cons:

- your first con is really the point that we don't understand the economic effects of this system (which incorporates your third con on having to buy extra permits). Unless price falls sufficiently to compensate for extra quantity purchased, you end up raising the total cost of compliance, invalidating all of our economic analysis. With risk averse agents, there will be overcompliance, raising costs.
- your second con is really two points, each powerful, and should be

separated. Try to make the message of the first point simpler here: there is a real risk with buyer liability of stunting the development of the market so that it never gets going, risking the entire treaty. This should incorporate your eighth con (about development of the market), which is somewhat redundant.

- your fifth con doesn't really make a substantive point and could be dropped.

Thanks for taking the lead on this.

Jon

Message Sent To:

"/R=EOPMRX/R=LNGTWY/R=inet/R=hq.doe.gov/U=MARK.FRIEDRICHS/FFN=MARK.FRIEDRICH S/" @ mr.eop.gov

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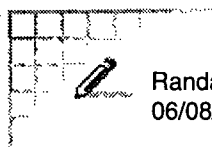
Adele C. Morris/CEA/EOP

Jeffrey A. Frankel/CEA/EOP

Joseph E. Aldy/CEA/EOP

Randall W. Lutter/CEA/EOP

Liability



Randall W. Lutter
06/08/98 09:29:51 AM

Record Type: Record

To: Joseph E. Aldy/CEA/EOP, Jeffrey A. Frankel/CEA/EOP, Adele C. Morris/CEA/EOP

cc:

Subject: OMTR strikes again!

OMTR is EPA's Open Market Trading Rule, which had several difficulties including buyer liability. It has not resulted in any cost-savings.

----- Forwarded by Randall W. Lutter/CEA/EOP on 06/08/98 09:24 AM -----



Richard P. Theroux

06/08/98 09:19:26 AM



Record Type: Record

To: Richard B. Belzer/OMB/EOP, Randall W. Lutter/CEA/EOP

cc:

Subject: OMTR strikes again!

----- Forwarded by Richard P. Theroux/OMB/EOP on 06/08/98 09:22 AM -----

BNA

Daily Report for Executives

No. 109

Monday June 8, 1998

Regulation, Law & Economics

Climate Change

Joint Liability Proposed for Buyers, Sellers in Global Emission Trading

BONN--Attorneys specializing in international law proposed a system June 5 for buyers and sellers of greenhouse gas emission allowances to share liability for their trades.

Nations meeting here are just beginning to discuss how a new international trading system for greenhouse gas emissions, established under the December 1997 Kyoto Protocol, would operate. They have yet to decide who would be liable if the country selling allowances exceeds its emission quota under the protocol, thus rendering worthless at least some of the allowances it sold on the international market.

The Washington, D.C.-based Center for International Environmental Law and Euronatura, a law center based in Lisbon, are proposing a system for buyers and sellers to share liability.

Green, Yellow, Red Lights

Nuno LaCasta of Euronatura likened the proposed liability system to a traffic light with green, yellow, and red lights.

Under a green light, trading could proceed without restrictions, with the seller responsible for ensuring that it could meet its emission limits under the Kyoto Protocol, he said.

Actual or potential problems about the seller meeting its Kyoto Protocol targets would trigger a yellow light, he said. A red light would signal that the selling country would have to stop transferring emission offset allowances because it was unlikely to meet its emission limitations under the protocol, LaCasta said.

Donald Goldberg of the Center for International Environmental Law said selling nations would have a strong incentive to operate under a green light. By assuming liability for trades--prices of their allowances would probably be higher than those sold under a yellow light.

The price of offsets sold by a country with a yellow light would probably be significantly lower since the buyer would run a risk that the emission credits would turn out to be worthless, he said.

While speculators might buy up offsets sold under a yellow light, countries and companies that want certainty that the credits they purchase would remain useful would turn to green-light sellers, Goldberg said.

Copies of the joint liability proposal, "Responsibility for Non-Compliance Under the Kyoto Protocol's Mechanisms for Cooperative Mechanism," may be requested from the Center for International Environmental Law, 1367 Connecticut Ave. N.W., Suite 300, Washington, D.C. 20036; (202) 785-8700.

By Cheryl Hogue

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Umbrella Paper Distributed Internationally

Allocation of Risk under International Emissions Trading

Introduction

- To comply with the Protocol, each Annex I Party has the obligation to hold enough tonnes of carbon dioxide equivalent at the end of the first commitment period to cover its net emissions during that period.
- Rules under Article 17 should indicate clearly from the outset what will happen to tonnes that a Party has previously transferred if it has excess emissions at the end of the commitment period. (This paper focuses on excess emissions; however, failure to comply with measurement and reporting obligations also needs to be addressed.)
- Different approaches to the allocation of risk as between the selling and buying Parties could produce substantially different prospective incentives for selling and buying Parties and other entities (e.g., private sector firms) involved in international emissions trading.
- Because those incentives have potentially large implications for the economic and environmental consequences of the trading system, careful consideration must be given to the various advantages and disadvantages created by the different approaches before one is chosen.
- This paper briefly outlines possible approaches, but much more analytical work is necessary to explore the options.
- In addition, consultations with potential private sector participants could help us understand the effects of the risks and uncertainties associated with different approaches, as well as the extent to which they may impede the development of the trading system.

Basic Options

- The rules could provide that previously transferred tonnes are unaffected, placing total responsibility for the excess emissions on the selling Party.
 - Under this option, a selling Party could be required to make up its shortfall, by acquiring tonnes from others or by deducting its excess emissions, with a penalty, from its assigned amount for the second commitment period.

- Alternatively, the rules could provide that previously sold tonnes will be applied to cover the selling Party's excess emissions, effectively shifting non-compliance risks to the buying Party of those tonnes.
- Hybrid approaches could be possible.

Discussion

1. Selling Party Bears Risk

- As noted above, under such an approach, the rules would provide that any tonnes transferred by a party may be used (or re-transferred) by the acquiring Party at their full value (i.e., a tonne is always equal to a tonne), regardless of whether the originating Party had retained enough tonnes to cover its own net emissions at the end of the commitment period.
- The selling Party would be solely responsible for its excess emissions.
- While further sales of tonnes could be prohibited once the selling Party's emissions had used up its entire assigned amount after adjustments for trading, past sales would be unaffected.
- Consequences for the selling Party would depend upon the trading rules and the more general non-compliance rules. The rules could require the selling Party to make up the excess emissions -- by acquiring that number of tonnes from others within a specified period of time after the end of the commitment period, by deducting that number of tonnes (with a penalty) from its assigned amount for the following commitment period, or by some other means. They could also preclude the Party from participating in trading in the subsequent commitment period.

Implications

- Likely to be the simplest system, providing relative certainty for buyers.
 - Buying Parties (and their entities) could acquire and use tonnes from any Annex B Party at face value and treat them as completely interchangeable. Buyers would bear no added costs to evaluate or purchase additional tonnes to protect against the possibility of the selling Party's non-compliance.
- To the extent that a selling Party with market power oversells, thereby reducing the price of tons, the market itself would provide an incentive for that Party to comply.

- Unless trading or non-compliance rules create consequences for a Party that oversells, this approach may not provide sufficient incentive for a selling Party to retain enough tonnes to cover its own emissions.

-- As such, there could be negative environmental consequences.

- Others?

2. Buying Party Bears Risk

- Under such an approach, the rules would provide that if a selling Party does not possess enough tonnes to cover its emissions at the end of the commitment period, tonnes that the Party had previously sold would be applied to cover the shortfall.

-- In other words, tonnes sold abroad would be applied to the excess emissions of the selling Party rather than the buying Party.

- There are several approaches to how (and which) tonnes could be devalued (reclaimed) to cover the excess emissions, for example, all tonnes could be devalued by an equal share or tonnes could be devalued on the basis of their transfer date.
- To the extent that buyers may not be able to apply their tonnes purchased from a non-complying Party, the tonnes from different Parties would potentially trade at different prices, reflecting buyers' assessment of the risk of the originating Party's non-compliance.

Implications

- Selling Parties would have a price incentive to demonstrate compliance, because buyers would pay more for tonnes from Parties with solid compliance assurances (although the magnitude of the price incentive is uncertain).
- Would create risks for buyers, who would not know whether the tonnes they acquired are fully valid until the end of (or perhaps after) the commitment period.

-- However, buyers might manage risk in numerous ways, such as: creating portfolios of tonnes from different Parties, trading through contracts that are contingent on the performance of the selling Party, using the services of risk-raters (akin to Moody's bond ratings), etc.

- Such an approach could impede development of the trading system by: overburdening a fledgling market with excess risk; raising transaction costs (e.g., to get risk information); potentially requiring buyers to buy extra tonnes to guard against a shortfall.

- Even if the selling Party gets only a discounted price, it might still have an incentive to oversell.
- The approach creates complex interdependencies, under which market prices for a Party's *own* tonnes may be weakened if it holds large numbers of tonnes from risky sellers.

-- Private sellers could be adversely affected by the purchasing decisions of private buyers in the same country. In other words, a buyer of tonnes from Party A, in deciding how much to pay for tonnes from Party B, would need to take into account whether Party B was likely to comply. To the extent that Party B (including through its private sector) had acquired tonnes from Party C (a compliance risk), tonnes from Party B could be devalued.

- Others?

3. Hybrid Options

- Hybrid options could be possible.
- There appear to be at least three ways in which a hybrid approach might work:
 - The mixed allocation could be decided up front.
 - A pure buyer or seller allocation could apply initially, but could later switch under certain circumstances (such as under a "yellow light" scheme).
 - A selling Party could be given the option to choose, including up front: 1) to make up its excess emissions by either acquiring tonnes or deducting them from the next commitment period (in which case previously transferred tonnes would retain their full value), or 2) not to make up its excess emissions (in which case the risk would switch to the buying Party).
- Further consideration would need to be given to ensure that hybrid options were designed to mitigate concerns raised by pure buyer/seller options.

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United States Department of State
OFFICE OF THE
Under Secretary of State
for Economic, Business, and
Agricultural Affairs

Washington, D.C. 20520-7512

FAX COVER SHEET

Date: 7/14/98

Pages to follow: _____

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FROM: C. Anne Pence
Telephone: (202) 647-7513
Fax: (202) 647-9763

SUBJECT: Revised Doniger plus Canada
attached. AP

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CUN LMB-UK

NO. 1974

P. 2

delivery date : Tuesday 14 July 1998 08:24:48
message-id :
1152:irish*jennifer\$\$extott.15\$gc+eaitc.aec5\$telecom.canada\$ca
send date : Monday 13 July 1998 23:26:36

from : IRISH Jennifer -AGE

to : - INTERNET Template / Modele
cc : - INTERNET Template / Modele
CHARLTON Paul -WSHDC -EN -CBS
HEINBECKER Paul -MPH

subject : URGENT MESSAGE: G-8

Importance : Immed/DlvBy
Sensitivity : PROTECTED A

JP: Hope this arrives safe and sound.... Further to my voice-mail last evening, we seek State's quick reactions to paper we were tasked with tabling on emissions trading for G-8 discussions. We elected to take a more neutral approach: categorizing issues where there are divergences, where positions remain to be solidified, and areas most promising for early agreement (including common handling of G77 problem child). EU and Umbrella Group positions are cited fairly neutrally to facilitate discussion and possible agreement on outstanding areas. Before it goes to Brits, Paul Heinbecker wanted to be assured that US would be comfortable with this approach. Please advise soonest. (UK is keen to have paper in hand soonest...). Many thanks.

For Paul Charlton: Grateful your efforts to solicit quick turnaround -- preferably before noon so it still has a chance of being received by LDN by COB Tuesday. (Jonathan Pershing or Dan Reifsnnyder likely best contacts). Thanks.

Cheers, Jennifer Irish

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*Canada Paper***International emissions trading issues****G-8 Ad hoc group on climate change****July 17, 1998****1. Introduction**

This paper outlines a number of the issues related to developing an international emissions trading system under the Kyoto Protocol. It is based on those issues identified in the two MISC documents¹ tabled at the SBSTA/SBI meetings in Bonn in June. In addition, there is the equity issue with respect to emission entitlements that has been raised by the Group of 77 plus China.

Effort at this meeting might be made to coordinate loosely an approach that would divide the issues into three areas: (1) areas of divergence + ceiling on the use of emissions trading and how to deal with the "surplus" assigned amounts (referred to by some as "hot air"); (2) areas where there may differences, but where views have not solidified -- competitiveness and liability issues; and (3) areas most promising for early agreement + verification and monitoring issues, and handling the G77+China push for an equitable allocation of emission "entitlements".

The G-8 might also wish to discuss the implications and repercussions of each issue and various options.

2. Areas of divergence**2.1 Supplementarity**

The Kyoto Protocol states that emissions trading "shall be supplemental to domestic actions"; no quantitative limit is attached to the word "supplemental" in the Protocol itself. There are two views on this issue:

- No restrictions on the quantity of tradeable units¹ able to be transferred or acquired
- Set a "concrete ceiling" on the use of emissions trading (and on the other flexibility mechanisms) to meet a Party's commitment.

¹ The term "tradeable units" will be used, as the paper tabled by Canada on behalf of nine countries (hereafter referred to as the "UG paper") uses the term "assigned amount units" and the term used in the paper tabled by the UK on behalf of the EC, its member states, and others (hereafter referred to as the "EU paper") uses the term "parts of assigned amounts units".

There could be discussions of potential alternative ways of addressing this concern, such as the reporting requirements on domestic actions under Article 8.]

2.2 Environmental effectiveness

There is some concern that some Annex B Parties have current emissions that are below their assigned amounts and that the "surplus" assigned amount will be traded, allowing other Parties to increase their emissions above their assigned amounts. These "surplus" units have been referred to as "hot air". Again, there are two views on the issue.

- The Kyoto Protocol assigned amounts define the amount that can be traded
 - These are the limits that were negotiated in Kyoto and those negotiations should not be reopened
 - Total Annex I emissions will still be limited to at least 5 per cent below 1990 levels

- Require net transfers by a Party not to be "greater than the amount of emissions reduction by that Party as a result of domestic action"

- emissions trading should ensure that "real" emissions reductions occur
- trading of the "surplus" units should not lead to overall reductions being lower than would otherwise have been the case

To what extent can we distinguish between planning factors that result in reductions?

How does this relate to the "at least 5%"?

3. Areas for further elaboration

3.1 Ensuring a competitive market

There is a shared interest in ensuring a competitive market for tradeable units. The EU paper identifies three options: an international auction; prior notification to the UNFCCC Secretariat; use of existing financial institutions such as brokers or exchanges. The UG paper leans towards the use of existing financial institutions, with the addition of a system to record ownership and transfers of tradeable units.

Experience with existing commodity and securities markets suggests an exchange (rather than "over-the-counter" through brokers)¹ might be the most open and

¹ An exception to this statement is the currency markets, which work through brokers rather than a formal exchange.

Currently, hybrid approaches are also common (Merc + Side trade)

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transparent mechanism if existing institutions are used, although design details would need to be further elaborated.

Concern has also been raised about the allocation of tradeable units to legal entities and whether different domestic allocation schemes (for example, allocating units at no charge versus an auction allocation system) might lead to unjustifiable discrimination or a disguised restriction on international trade. An alternative view is that the rules and guidelines of an international emissions trading system should not prejudge a domestic allocation system and that the issue of competitiveness is sufficiently addressed by Article 3.5 of the Convention.

3.2 Allocation of risk/liability between buyer and seller

Drop discussion

This issue has been identified in both papers as one that needs further discussion and elaboration. The issue is not so much determining liability on the part of legal entities, because existing financial institutions and domestic legislation can deal with that. Rather, the issue is determining the liability of the Parties to the Protocol. A difficulty arises because a Party's compliance with Article 3 of the Protocol cannot be determined until after the end of the commitment period. This implies that neither the buyer nor the seller can be certain at the time of the transaction that the tradeable unit purchased will be surplus to the seller's compliance requirements come the end of the period.

Would not provide??

If the buyer is responsible for the validity of the tradeable unit and is relying on the purchase to achieve compliance, failure on the part of the seller to meet its commitment means the buyer's purchased units are no longer valid. This risk of seller default may even be so high that no buyers would be willing to enter the market. One possibility to offset this risk is that the buyer might insist on insurance (that would replace the invalidated transactions with valid tradeable units) to cover this risk.

If the seller is responsible for the validity of the tradeable unit, the buyer's purchased units remain the buyer's. If the seller does not meet its commitment, the seller incurs penalties for non-compliance. This is administratively simpler, but could increase the probability of non-compliance, especially in the absence of strong penalties.

A hybrid system, where the risk posed by invalid transactions is distributed over time between the buyer and seller has also been proposed. In this case, if the seller appeared likely to have a problem implementing its commitment, buyers would be on notice that any units purchased might not be used to meet the buyer's commitment until compliance of the seller is sorted out. If the seller is found in non-compliance, then the last units sold would be returned to the seller until it was in compliance.

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4. Areas of potential early agreement

4.1 Verification, monitoring, and reporting issues

There seems to be common agreement that legal entities authorized by such Parties (such as companies, private individuals, societies, industry groups, brokers), as well as Parties, can participate in an international emissions trading system.

There seems to be agreement on some of the conditions that should be met before a Party can trade. These include:

- Compliance with Articles 5 and 7 of the Kyoto Protocol
- Establishment of a national system for recording assigned amounts and accounting for and tracking tradeable units held or traded by the Party and/or its legal entities.
- Compliance with rules of the emissions trading system

There is disagreement with respect to compliance under Article 18, however. One view is that a compliance regime under Article 18 must be adopted and ratified before a Party can participate in an emissions trading system. The opposing view is that an emissions trading system with effective monitoring and verification features should not be delayed pending the adoption of an Article 18 compliance regime.

With respect to institutional and reporting mechanisms, there seems to be general agreement that: (1) existing financial/commodity market institutions and mechanisms should be used where possible; (2) trades should be reported, at least annually, by Parties to the UNFCCC Secretariat or an authority designated by the COP; and (3) Parties need set up a national recording system to record tradeable units issued by the Party; to record transfers and acquisitions of tradeable units by the Party, including those devolved to legal entities; and to provide verification of ownership of the tradeable units.

It has also been suggested by some that Parties should have a grace period (e.g., three months) to come into compliance at the end of the commitment period and following finalization of emissions inventories.

4.2 G77+China equity issue

The G77+China view that allocations in emissions trading should be based on per capita entitlements. Annex I countries appear to be unanimous that the basis for emissions trading under Article 17 of the Protocol is the quantified emission reduction and limitation commitments established under Article 3 and Annex B. Given the

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questions tabled by the G77+China on this issue, a common strategy for dealing with the G77+China on this issue might be discussed.

A related issue is the allocation of emission rights and entitlements in the *longer term*, as developing countries start to take on commitments. In the EU+Switzerland response to the G77+China question on emission rights and entitlements, it was suggested that allocation of commitments lead to a "convergence of emissions levels based on appropriate indicators". It remains unclear what the appropriate indicators might be and, more broadly, whether there is agreement within the G-8 on this issue. This might be clarified and discussed further by the G-8 ad hoc group on climate change.

¹ FCCC/SB/1998/MISC.1/Add.1/Rev.1, tabled by Canada on behalf of nine countries, and FCCC/SB/1998/MISC.1/Add.3/Rev.1, tabled by the United Kingdom on behalf of the European Community, its member states, and nine other countries.

Doniger Paper

re state "how to help all Annex B Parties develop the capacity to meet..."
U.S. Non-Paper on Emissions Trading Issues

Apart from several high-profile differences of position, the papers on emissions trading put forward in Bonn by the Umbrella Group and by the European Union reveal a great deal of common ground on how the international emissions trading system should be constructed. It should be possible to work towards Annex I-wide agreement by COP4 on a number of technical issues:

- How to move forward to elaborate additional guidelines under Articles 5 and 7 for estimating and reporting national emissions inventories.
- How to construct and link together national registries to keep track of transfers and acquisitions of units of assigned amounts.
- How to allow both governmental bodies and private sector entities to engage in such transfers and acquisitions.

Domestic issue -
does this
affect
being in
the firm?

It should also be possible to work by COP4 toward better understanding, and possibly agreement, on two other issues:

- How the risk of a Party's noncompliance should affect future and past transfers and acquisitions (i.e., seller, buyer, or hybrid liability structures).
- How to make effective linkages between trading and compliance within the Article 17 rules themselves.

This non-paper suggests how progress might be made on these issues in the context of the G-8 process. Progress on these points at COP4 is of great importance in order to sustain momentum within the negotiating process. Specifically, it should be our goal to reach Annex I-wide agreement on some or all of these items by COP4 in order to demonstrate continued forward movement. Doing so by then will also help us resolve our higher profile differences on trading, address legitimate questions raised by non-Annex I Parties and nongovernmental organizations, and put us on a path to adopt rules and guidelines for all the flexibility mechanisms no later than COP5.

(1) Measurement and Reporting Issues

The Umbrella and EU papers both propose linkages between Parties' eligibility to trade and their compliance with Articles 5 and 7 on emissions measurement and reporting. Both papers thus recognize that a credible international emissions trading system depends on strong national measurement and reporting regimes, and that the trading rules can be used to strengthen incentives for such regimes. Building on this common ground, the most productive step forward would be to work jointly (1) to flesh out the key Article 5 and 7 requirements, and (2) to help all Annex B Parties develop the capability to meet those requirements.

Articles 5 and 7 require the adoption of guidelines for national systems for emissions estimation and guidelines for supplementary reporting, building upon the existing reporting guidelines and IPCC methodologies. In Bonn this June, the SBSTA asked the IPCC to complete ongoing work to refine existing methodologies (especially addressing uncertainties in such

methodologies), and to develop a set of recommended "best practices" for emissions inventories. These recommendations could address inconsistencies in Parties' current reports by giving guidance on high-quality approaches to such issues as: monitoring techniques; survey and sampling techniques; development of appropriate emission factors; data quality assurance; documentation; institutional and regulatory infrastructure; and public participation.

G-8 action item: Establish an expert coordinating group to work together on these guidelines within the IPCC workgroup process and SBSTA. The goal should be to complete work by the IPCC and SBSTA in time to adopt Article 5 and 7 guidelines at COP5. A COP4 decision establishing this deadline would be desirable.

(2) National Registries and International Reporting

Both the Umbrella and EU papers identify the need for Parties to adopt national systems for rigorously tracking international transfers and acquisitions, and to make periodic reports on such transactions to the Secretariat or another designated authority. Both papers envision that traded units or parts of Party's assigned amounts would be identified by national origin and unique serial numbers.

The U.S. suggests that tracking trade in units or parts of assigned amount could be accomplished by requiring each trading Party to maintain a national registry to record its international transfers and acquisitions. [National registries should be computerized record-keeping systems constructed according to a common internationally agreed design.] The national registry would be the means for keeping an official record of increases and decreases in a Party's assigned amount due to emissions trading. Parties should be required to report these transactions to the Secretariat at least annually (in coordination with Parties' regular annual national greenhouse gas emissions inventory) or even more frequently. The Secretariat should be tasked to synthesize these reports into an aggregate picture in a computerized form, compiling and cross-checking data on Parties' transfers and acquisitions, tracking changes in Parties' assigned amounts, making the resulting balances available for compliance determinations and public disclosure.

G-8 action item: A U.S. non-paper on the mechanics of national registries is attached and could be the basis for discussion of a common Annex I-wide approach. Reaching agreement on an appropriate registry system could be assigned to the group proposed under item 1.

(3) Facilitating Private Sector Participation

Both papers support the participation of sub-national entities, including private firms or individuals, in international emissions trading. Both acknowledge that trading by such entities must be under the responsibility of the Parties and that the Parties retain the obligation to comply with their national targets.

The U.S. believes market participation by legal entities in the context of Party responsibility for national compliance could be achieved using the national registry system and the national emissions measurement system. As indicated in the non-paper attached under item 2,

national registries can be used to record the holdings and trading activity of legal entities that are authorized to control portions of a Party's assigned amount. Specifically, international transfers and acquisitions between legal entities of different Parties would be made by moving specific units from the account of the selling entity in the registry of one Party, to the account of the buying entity in the registry of the other Party. These international transactions would be reported to the Secretariat.

The U.S. believes the same national emissions measurement and reporting systems discussed under item 1 should be used to establish a trading Party's compliance with its assigned amount, as increased or decreased by trading. While international emissions trading will change the size of a Party's assigned amount, it does not change the compliance question: Whether the Party's national aggregate emissions are within its adjusted assigned amount. Thus, it is not necessary for the trading rules to specify any different requirements for monitoring and reporting of emissions than those required under Articles 5 and 7.

G-8 action item: Agree to rely on national registry systems and Article 5 and 7 measurement and reporting systems as the means to implement private sector participation in emissions trading.

(4) Liability Issues

Both the Umbrella and EU papers identify the issue of liability -- how the risk of a Party's noncompliance should affect future and past transfers and acquisitions -- as a key question to be resolved. The EU paper suggests buyer liability but acknowledges complex issues that need further work. The Umbrella Group indicated in Bonn that it was considering these same issues and looking at the range of seller, buyer, and hybrid arrangements.

The key issue concerning all Parties appears to be how to assure that emissions trading does not cause or aggravate any Party's non-compliance with its assigned amount for the first commitment period. The question is what incentives are needed to assure that a Party will keep enough assigned amount to cover its own emissions and will not sell amounts that it should retain for its own use.

The U.S. suggests that this question can be usefully broken down into prospective and retrospective components. In the run-up to Kyoto, there was broad agreement among Annex I Parties on three important prospective incentives: (1) that a Party not complying with its obligations under Articles 5 and 7 should lose its eligibility to engage in any further emissions trading; (2) that if a Party has used up its holdings of assigned amount, it should lose its eligibility to make further transfers (although it should still be able to buy from others); and (3) that if a Party emits more than allowed in the first commitment period, it should be required to deduct the excess, with a substantial penalty, from its assignment for the second period. Parties need to consider whether these forward-looking limitations on trading provide sufficient incentives for compliance and sufficient protection against "over-selling." If so, then making buyer entities or Parties share in retrospective responsibility for a selling Party's non-compliance would not be necessary.

Retrospective buyer liability could add to the incentives against "over-selling" provided by prospective limitations on a selling Party's eligibility to trade. Under this approach, buyers are put on notice from the start that units purchased from abroad may later be transferred back to the originating Party if that Party is found to be in non-compliance. More consideration is needed of how market participants would assess and react to non-compliance risks associated with various selling Parties. And as the EU paper notes, it would also be necessary to understand how the compliance status of a buyer Party would be affected by a requirement to transfer back some of its acquisitions in order to address a shortfall on the selling Party's side.

A number of other approaches, including hybrids that combine aspects of seller and buyer liability, could be considered to address these problems.

G-8 action item: Task an expert group to work together towards agreement on a common approach to these risk and liability issues by COP4.

(5) Making Effective Compliance Linkages Under Article 17

The EU paper suggests that the linkages between emissions trading and compliance issues have to be addressed under Article 18, and that an amendment to the Protocol on binding consequences will be needed before emissions trading may begin. While sharing the same objectives, the Umbrella paper proposes that these linkages can be made effectively in the Article 17 rules themselves, without the unacceptable complexity and delay that attends the use of Article 18.

In the U.S. view, the Article 17 emissions trading rules can create all of the necessary compliance incentives. The threat of losing eligibility to trade can be made to serve as a strong deterrent to non-compliance. Given the importance of trading to buyers as a means of achieving cost-effective compliance, and to sellers as a valuable resource flow, the actual loss of eligibility would have a substantial economic impact. The impact of losing trading eligibility would be larger than most, if not all, potential binding consequences that were discussed prior to Kyoto.

The Article 18 amendment approach would not appear to offer any greater compliance incentives or remedies for non-compliance. Critically, however, it would take much longer to pursue an amendment under Article 18 than to implement effective rules under Article 17.

Clearly, work will be needed on Article 18 procedures for resolving issues of implementation that may arise from Parties' reports under Article 7 and in-depth reviews under Article 8. These procedures can be adopted by decision and do not require a Protocol amendment.

G-8 action item: Agree that compliance issues related to emissions trading should be pursued in the context of Article 17 rules.

Attachment: U.S. Non-Paper on National Registries

Article 17 of the Kyoto Protocol provides that each Annex B Party may transfer any part of its assigned amount (its target) to any other Annex B Party. Under Article 3, such transfers are added to or subtracted from the Parties' original assigned amounts.

To assure transparency, promote compliance, and build confidence in emissions trading, trading rules under Article 17 should require each trading Party to maintain a *national registry* to record its international transactions and to report them to the Secretariat as part of the regular annual national greenhouse gas emissions inventory. The Secretariat can then synthesize this information into an aggregate picture for several important purposes: (1) to compile and cross-check data on Parties' transfers and acquisitions; (2) to track trade-related changes in Parties' assigned amounts; and (3) to make the resulting balance (increased or decreased by international trading) available for compliance determinations and public disclosure at the end of the compliance period. Parties may also choose to consolidate their national registries for ease of administration.

This paper provides background on key design issues for national registries. It addresses how information in national registries can be reported to and synthesized by the Secretariat. On the basis of this background, simple rules for national registries and supplemental reporting can be developed for early agreement.

1. Q: Why require national registries?

A: National registries are needed for several important reasons. First, each of the Annex B Parties will need a registry to keep an official record of increases and decreases in its assigned amount due to emissions trading, and to report on such changes to the Secretariat. Second, registries can play a key role in facilitating emissions trading. National registries can be used to prove that a selling Party or one of its legal entities actually possesses, and has the right to transfer, the part of an assigned amount (hereafter called a "tradeable unit") that it offers for sale. Likewise, registries can be used to record and confirm the transfer of tradeable units from a seller to a buyer. Third, national registries (together with monitoring and reporting pursuant to Articles 5 and 7) can provide compliance data at the end of the commitment period.

2. Q: What is traded?

A: Like the targets themselves, transfers or acquisitions under Article 17 should be counted in tonnes of carbon dioxide equivalent. The unit of trade could be defined as one tonne of carbon dioxide equivalent, or another agreed amount (100 or 1000 tonnes). Each tradeable unit should be identified by its nation of origin and the commitment period for which it was issued. Each unit could also carry a unique serial number (e.g., NZ-001, US-005, etc.).

3. Q: What ministry or agency should maintain each Party's national registry?

A: Each Party should identify a single government ministry or agency which is responsible for accounting for the Party's assigned amount. That ministry or agency would be

responsible for maintaining a national registry (a computer database) containing all of its tradeable units. The registry would show increases or decreases in the size of the Party's assigned amount as a result of trading. It would also record what tradeable units have been acquired from or transferred to other Parties as the result of trading.

4. Q: What information should national registries contain?

A: That depends on whether a Party retains possession of its assigned amount (and the authority to make international trades) at the national level, or whether it devolves possession and trading authority to subsidiary levels of government (e.g., provinces or states) or to legal entities (e.g., private sector firms). If the Party retains possession and trading authority at the national level, then its registry should identify the designated ministry or agency and the tradeable units that it holds. When an international sale is made between two such Parties, it would be carried out by moving tradeable units from the registry of the selling Party to the registry of the buying Party.

If a Party chooses to devolve possession and trading authority to subsidiary levels of government or to legal entities, then its national registry should contain a separate account for each governmental body or legal entity that holds tradeable units, identifying the units it holds. Prospective buyers would use registry account information to identify *bona fide* sellers (i.e., to verify that sellers actually hold the tradeable units they are offering to sell). When an international sale is made between legal entities of different Parties, it would be carried out by moving tradeable units from the account of the selling entity in the registry of one Party, to the account of the buying entity in the registry of the other Party.

Registries would also accommodate transfers between the government of one Party and a legal entity in another Party. Parties that choose to implement domestic emissions trading could use the same system to facilitate and keep track of transfers between domestic legal entities.

In all of these cases, in order to provide transparency, promote compliance, and promote efficient emissions trading, the rules should provide that all of this data is public information.

5. Q: Should registries be paper ledgers or computer databases?

A: Given the huge volume of data to be handled and the wide availability and low cost of modern computer technology, national registries should be kept in the form of electronic databases. In order to facilitate international reporting as well as an efficient marketplace, the electronic registries should be built on a compatible design. With compatible electronic registries, both domestic and international transfers can be carried out at low cost and almost instantaneously.

6. Q: Is there any need for paper certificates for tradeable units?

A: With electronic registries there would be no need for Parties to issue paper certificates for tradeable units. Paper certificates can be counterfeited, stolen, or lost, imposing costs on both

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governmental bodies and entities to replace lost certificates, adjudicate conflicting claims, and insure against losses. Electronic account systems can give both the Parties and the private sector greater security and lower transaction costs. (The U.S. acid rain program uses an electronic registry system of this kind, with no paper certificates.)

7. **Q: Should registries use serial numbers to identify individual tradeable units?**

A: Identifying each tradeable unit with a serial number could provide increased certainty for transfers of tradeable units. Serial numbers could be used to prevent a given tradeable unit from being transferred by one seller to more than one buyer, whether by mistake or fraudulently. (The U.S. is continuing to examine whether there are alternatives to serialization that can accomplish this objective with less administrative burden.)

8. **Q: When should Party's registries be updated to reflect an international trade?**

A: As explained earlier, transfers and acquisitions would be officially carried out by removing tradeable units from an account in one Party's registry and adding them to an account in another Party's registry. In order to facilitate a smoothly working marketplace, the ministries or agencies designated to run national registries will have to make such subtractions and additions on demand. (The U.S. acid rain program makes such adjustments in registry accounts ~~on a same-day~~ *on a daily basis*.)

9. **Q: Can Parties or other entities make private contracts for trades without changing their registries?**

A: Buyers and sellers (including governments) could make a wide variety of contractual arrangements regarding future trades (e.g., agreements to transfer or acquire in the future). Rules under Article 17 would not need to address these contractual matters. International trades of portions of assigned amounts would be officially recognized and completed, however, only when tradeable units are removed from one Party's national registry and added to another's.

10. **Q: What information should be reported to the Secretariat, and how frequently?**

A: Rules under Articles 7 and 17 should require each Party to report the results of its transfers and acquisitions of tradeable units at least on an annual basis, together with the Party's annual emissions inventory. Reports should indicate the amount, country of origin, vintage, and (if they are required) serial numbers of tradeable units transferred to or acquired from each other Party. On the basis of these reports, the Secretariat can compile a synthesis report showing the trading activity among the Parties, keeping track of the location of all tradeable units, and showing the size of each Party's assigned amount, as adjusted by trading. The rules should provide that the contents of these syntheses reports, like the national registries, are public information.

There may be advantages to more frequent reporting to the Secretariat. For example, any discrepancies between national registries would be identified earlier and could be resolved in a more timely manner.

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Since Party-level information is all that is required to implement the Protocol, there would be no need for the Secretariat to receive information on the names of any private firms or other entities involved in transfers or acquisitions. Likewise, the details of trades between domestic entities within an Annex B Party would not need to be reported to the Secretariat. Price information also need not be reported for individual transactions; average prices will be revealed by private sector exchanges and brokerage services.

11. Q: Could a legal entity from one Party hold an account in the registry of another Party?

A: Parties may choose to allow foreign entities to maintain accounts in their registries. Thus, a multi-national company or a private broker might maintain holdings in the registries of several Parties. Likewise, a broker located in a non-Annex B country could have an account in the registry of an Annex B Party, at the Annex B Party's discretion.

12. Q: Could Parties choose to consolidate their national registries?

A: Some Parties may prefer to voluntarily consolidate their national registries with others in order to achieve cost savings and easier administration. The participating Parties' registries would then exist as distinct accounts in a single computer system, rather than as two or more separate systems. Making an international emissions trade then would require nothing more than moving tradeable units from one Party's account to another Party's account within the same electronic database. Parties might find this to be simpler than removing tradeable units from one country's computer system and entering them into another's. Such consolidation, however, would remain entirely voluntary.

07/14/98 13:54

11. Q: What rules might be important to ensure a credible trading system and limit non-compliance?

A: If Parties establish a rule which precludes "deficit trading," national registries could assist in implementing that provision. In order to limit overselling of tonnes tradable units, Parties should could determine and report to the Secretariat on an annual basis the number of tonnes tradable units needed to cover their cumulative net emissions for the budget period, as reported to the Secretariat pursuant to Article 7. That quantity of tonnes tradable units should be recorded in the Party's registry and could be thought of as the "Party's compliance reserve". Over the period, the balance of the compliance reserve would increase as cumulative emissions for the period rose. Although a Party would be allowed to fall below this compliance reserve during the budget period, only tonnes an amount of tradable units exceeding the Party's compliance reserve would be salable. Therefore, a Party who's tonne tradable unit balance was below the Party's compliance reserve would not be out of compliance but would not be able to sell any of it's tonnes tradable units internationally.

Emissions Trading; How to Apportion Liability for Compliance Failure

Compliance rules must be enforced to maintain integrity of the national emissions assignments. Trading in emission allowances involves a mix of characteristics from both commodity and bond market trading. Safeguarding the environmental values and the interests of trading participants requires a blend of practices from these two markets.

Trading raises the importance of enforcing compliance, since non-compliance is the route to financial profit and trading allows Parties to put into circulation some allowances that might lie dormant without the trading opportunity. Nevertheless, with trading the required compliance rules are the same ones needed for ordinary compliance. The integrity of emissions limits will be strengthened if Parties that fail to meet compliance requirements, especially if they are net sellers of allowances, can be held liable for their non-compliance.

In commodity trading, the concept is “what you see is what you get.” Once the commodity specification is written, conforming delivery is secured by the certainty of a secured cash penalty in the event of default. For trade in gold, for example, performance by the seller requires timely delivery of specification-grade gold. The delivered commodity itself is sufficient evidence of its own validity. By contrast, trading in bonds, representing a promise of the issuer’s performance, requires continual assessment of the underlying promise to pay, in order to determine value and prices. Trading in emission allowances can be pushed to either model.

Emissions trading via instruments whose compliance value is guaranteed by the international authority is like commodity trading. So long as the guarantee is trusted, the allowances can trade as a commodity; what you see is what you get, and a tonne is a tonne. In a commodity model, the value of an allowance derives from its guaranteed compliance value. By contrast, if the authority reserves the right to adjust the compliance value of the allowance based on some subsequent occurrence, then the instrument is more like a bond, and the value of the instrument depends on market assessment of the promisor’s likelihood of performance. The acceptance of allowances for trade and their valuation depends whether compliance value is guaranteed or subject to adjustment for conditions outside the control of a holder.

Seller vs. Buyer liability for non-compliance:

Pure seller liability: A seller would unconditionally guarantee attainment of its adjusted emissions target in support of any allowance sale. This is a commodity market model, but unlike most commodity trades, compliance may not be determined until long after allowance sales; the power to compel subsequent cure of a compliance deficiency, or to exact indemnity from a sovereign Party that is unwilling or unable to cooperate, is lacking. To truly reflect seller liability, buyers must be given guaranteed value, not simply a right of recovery against a defaulting seller. It would fall to the international authority to exact substitute performance out of non-complying sellers, hardly a welcome task for the international authority under a voluntary compact. Seller liability may therefore be impossible to enforce, insofar as performance default may come long after the transaction occurs and remedies would be applied to sovereigns who are voluntary

participants in the agreement.

Modified seller liability: All sellers could agree, in advance, to escrow a share of allowance sale revenues or provide 3rd party performance bonds for their end-of-period emission compliance obligations. This plan has the disadvantage that some net sellers will be counting on their allowance sales proceeds to cover monitoring costs and the cost of investments to further improve energy efficiency and emission performance. Performance bonds may be costly for the Parties that need them most. Insurance is not viable because the insured event is too much subject to the control of the insured Party and the Party may, in the short-run, gain more from default than from compliance. The insurance cost will be unfairly high for those who comply and too low for those who default. The issue is akin to the 1980 S&L problem. The problem is summarized by the economic term “moral hazard,” and creates incentives for a downward spiral toward progressive, insured non-compliance and the accompanying withdrawal of insurers from the marketplace..

Pure buyer liability: Under this option, buyers of allowances can use (tender) them for emissions compliance (i.e., receive the anticipated value) only to the extent that sellers retrospectively meet their emission commitments. This is a bond market model. The determination of compliance value is made long after some sales occur. Unless buyers can get effective guarantees of performance from the originator of purchased allowances, or reliable assessments of risk, the buyer holds a very uncertain instrument. This risk, even in small doses, is unattractive to buyers and even less attractive to traders. Buyer liability for sellers’ future emissions performance would likely be fatal to emissions trading, where, unlike the case of “full faith and credit” guarantees, secure guarantees of performance across national boundaries are unlikely. In addition, although the imposition of liability on buyers increases incentives for seller compliance, if sellers fail buyer liability merely transfers from sellers to buyers the incentive to default.

Modified buyer liability: If the FCCC Secretariat held the power to deny compliance tender value to specific allowances not supported by emissions compliance of the first issuer (a bond market model), the direct compliance burden would fall on buyers, but an informed market could achieve substantial shifting of the compliance burden to sellers. For example, allowance trading could be conducted according to these rules:

- Traded allowances are identified as to original nationality and serially identified by date of their first recorded trade. Untraded allowances are always good for domestic compliance purposes in the nation of original issue, and the date they are submitted to the FCCC Secretariat for international compliance determines their serial priority v. traded allowances of the same nationality,
- In the event of a Party’s non-compliance, some allowances originating from that Party would be invalidated, starting from the latest serialized allowances and proceeding backward, until the remaining quantity matched the Party’s compliance achievements (i.e., excess emissions over assigned amounts would, 1 for 1, invalidate national allowances starting from the last serialized),
- Annual reports would reveal each Party’s compliance progress (emissions) and AEU sales rate, thus permitting the market to assess how many allowances from each Party are likely to be valid, and a quality-adjusted price for each point in the serial sequence,
- Market prices for allowances would reflect expected probabilities of validity. Private

- tools, such as rating services, compliance consultants, derivative contracts, and portfolio syndications would arise to permit risk management strategies.
- Market information, both public and private, would permit shifting of risk exposure back to sellers through the market prices that informed buyers would offer for allowances of varying probable value. In the end, each allowance would be good or bad; all good allowances would have the same compliance value. Market information would permit a gradual sharpening, over the course of the budget period, of the price differential between expected good and bad allowances around the expected validity cut-point for each Party's issuances.
 - An options market could approximate this result with fewer transactions and fewer recordkeeping requirements, but also with less transparency to policymakers and negotiators unfamiliar with derivatives transactions. An options market has the additional attraction that buyers would not have to put up the full purchase price until near the expiration date, when the value of the underlying asset would be better known.

Direct imposition of compliance burdens on buyers, but with substantial information about sellers' performance, can create a hybrid system of liability that shifts a significant share of the compliance burden to sellers and creates a significant market incentive, through prices realized, for seller compliance, even when the direct compliance process is administered on buyer/holders of allowances.

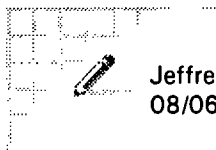
Private steps in the trading process following emission assignment under the FCCC with modified buyer liability rules:

- Parties may, at their option, assign some allowances to sub-national entities.
- Holders may offer to sell allowances, to be identified by nationality and serially numbered in ascending order.
- Buyers offer prices, based on assessment of end-of-period compliance of seller. Highest prices will be offered for first issuances, which are the first to be honored within each nationality class. Later issuances carry greater risk of non-compliance bumping and will generally command lower prices.
- Rating agencies could offer assessments of the likely validity cut-off point for each issuer.
- Prices of allowances traded would reflect market consensus of future validity with continual adjustment of perceptions as compliance expectations change.
- Parties that show credible compliance reports will get high prices for larger proportions of their sales offerings. Poor reports would limit the opportunity to sell allowances except at very low prices and for limited quantities. Speculators might enter to buy cheap allowances to rehabilitate them prior to the compliance date.
- At the end of the compliance period, FCCC Secretariat announces (by serial number) which allowances are valid. Nations make compliance tender of valid units and added compliance from supplemental sources, as needed, to complete their compliance.
- Supplemental compliance methods, like borrowing from the next budget or an agreed "excess emissions fee" will be needed to permit national compliance in the event that insufficient valid allowances survive to permit compliance out of first period assignments..

Official steps in the trading process under modified buyer liability rules:

- Emissions amounts are assigned to Parties,
- Compliance authority agrees to permit allowance trading,
- Following any sale, the recording agent accepts joint order to record transfers;
- The recorder notes the nationality and places a serial number on newly-recorded allowances; recorder maintains the existing identifiers for successive trades of previously traded allowances.
- At the end of the budget period, FCCC Secretariat announces which allowances from each issuer are valid for compliance. Validity is based on the compliance showing of each issuer that transferred assignment portions to other holders.
- Parties supplement surviving allowances to complete compliance by borrowing, open market purchases, or pre-specified default payments, as necessary.

Prelim. Draft: 3-28-98, for comment only
Peter Karpoff



Jeffrey A. Frankel
08/06/98 06:44:25 PM

Record Type: Record

To: PETER.KARPOFF @ hq.doe.gov
cc: Alan S. Polasky/CEA/EOP
bcc:
Subject: Re: Liability memo

Peter:

I think everyone at the meeting understands very well the argument for getting much-needed compliance-pressure out of the marketplace. But most of us feel that the various versions of buyer liability threaten to strangle the marketplace in the cradle; it's not always that easy to get a market going, and nobody will want to buy permits if the legitimacy is highly uncertain. Stunting trading would be bad both because efficiency is a very high-priority goal, and because you won't get any compliance-pressure out of the marketplace anyway if there is no market at all.

We look forward to reading your paper when I have time.

JF

PETER.KARPOFF @ hq.doe.gov



PETER.KARPOFF @ hq.doe.gov
08/06/98 10:09:00 AM

Record Type: Record

To: Jeffrey A. Frankel/CEA/EOP
cc:
Subject: Liability memo

The attached piece was circulated back in the Spring to EPA and Treasury folks. It encountered criticisms that it was too much for the market to handle and "too detailed."

The key point, I think, is that official, administrative sanctions have little chance of success against the sovereigns who are likely to have little attachable wealth in the hands of any effective enforcer.

The best available alternative is to have sanction-equivalents come from the impersonal marketplace instead. Let's set up rules that force trading nations to operate in a commercial arena that would bring real world market penalties to the rogues.

The idea, summarized, is that each nation has to report openly on its emissions budget (assignment) and actual emissions, and is then free to sell SERIALIZED allowances. The compliance value of allowances will be determined after the fact when compliance is known and the last-sold will be the first to be cancelled.

The plan depends upon a market in both allowances and trusted reports that will permit buyers to make informed assessments of which ones are safe, relatively safe, risky, or probably bad. I envision private assessment services (akin to Dun and Bradstreet) and primary trading by professionals who might assemble diversified portfolios for resale to participants who would then have access to lower average risks. You might even get speculators who would specialize in issuer assistance to help rehab dicey national issuances thru compliance services.

In the trading, the passage of time and receipt of national reports would give greater information about the likely value of an ever-larger portion of an issuer's offering. As we progress through the budget period the zoom lens of cumulating information focuses the market uncertainty on an ever narrower slice of the issuance and lets buyer distinguished ever more finely on the boundary zone between the likely good and likely bad allowances of each issuers. Allowance prices and total revenues for each country would depend on performance, initial sales would not have to await final reporting for even the first year, no long duration escrow is required, no UN body has to impose sanctions and all the incentives seem right. Someone does have to require emissions reporting and make an eventual compliance check, but the private info sources could have a lot of power in the market and might even constrain the official body to credible performance.

I really think the answer to this thing is to enlist the marketplace as the enforcer with commercial and private financial consequences because there may be no official body with the power to do it, even if the US would agree to empower such a body.

See the attached paper, especially starting at the bottom of the first page, at the heading "Modified Buyer Liability."

Peter Karpoff 586-5639 Unfortunately, I will be out of the office from Aug 12 thru the end of Aug.



- bsliab.wpd

JF 8/10/98

“Seller Plus” Proposal (Revised)

The CEA is not proposing that this rule be offered by the U.S. delegation at the beginning of CoP4. Rather, we are proposing that the interagency group should think about it among ourselves as an intermediate option, and consider the possibility of using it as a compromise ending-point in negotiations at Buenos Aires -- to be preferred to efficiency-impairing proposals for buyer-liability or binding limitations on trading.

- **If a country had net sales in the first year (or cumulatively in the first N years) greater than a proportion X of its allocation (or XN),¹ then it could not sell any more, unless and until emissions data came in and showed that the country had cumulatively paid back this amount of proportionate overage (through any combination of emission reductions and permit purchases).**
- If those data show that cumulative emissions plus net sales to date are less than XN, then the country can again sell up to another X.
- We would propose that “X” be 1/5 of the 5-year allocation.
- If and when it hits the cumulative limit of 2X in sales, it must again suspend unless and until data are available showing that cumulative emissions plus net sales to date are less than XN.
- If the country never reaches X in cumulative sales, it is never restricted, except in the regular end-of-budget-period accounting.
- In alternate versions of the proposal, X could be lower than 1/5 or higher. But it should be a number well below 100% of the 5-year allocation, and yet well above any reasonable level of sustainable legitimate emission sales (including hot air).
- The suggested level of 1/5 could be described as an “empty tank” provision (though it admittedly re-introduces a bit of “annualization” into the multi-year budget format). It is generous in the sense that it assumes zero emissions, aside from smoothing.
- For example, it is estimated that Russia and Ukraine [more accurately, FSU] will have hot air equal to 23 % of their one-year allocation in 2010, and that it might pay for them to reduce emissions by another 8 % of their allocation, for a total estimated sales of 31 %. Thus a limit of 1/5 of their five-year allocation would be

3.3 times as large as the estimated sustainable rate of selling. This is a multiple large enough to accommodate a lot of legitimate inter-year smoothing.

- An alternative version, which is a bit more permissive, follows:
 - 1) a country can sell up to 1/5 of its total allotment in the first year
 - 2) after the first year, the country can sell up to the difference between its cumulative emissions through whatever prior year emissions data are available for at that time (e.g., year 3 would include emissions in year 1 under the presumption that data would be available by the end of year 2) plus net sales and the percentage of total allotment that would accrue at the end of that prior year (e.g., 20% in year two, 40% in year three, ...).

JF 8/10/98

Revised "Seller Plus" Proposal

The CEA is not proposing that such a rule be offered by the U.S. delegation at the beginning of CoP4. Rather, we are proposing that the interagency group should think about it among ourselves as an intermediate option, and consider the possibility of using it as a compromise ending-point in negotiations at Buenos Aires -- to be preferred to efficiency-impairing proposals for buyer-liability or binding limitations on trading.

- **If a country had net sales in the first year (or cumulatively in the first N years) greater than a proportion X of its allocation (or XN),¹ then it could not sell any more, unless and until emissions data came in and showed that the country had cumulatively paid back this amount of proportionate overage (through any combination of emission reductions and permit purchases).**
- If those data show that cumulative emissions plus net sales to date are less than XN, then the country can again sell up to another X.
- We would propose that "X" be 1/5 of the 5-year allocation.
- If and when it hits the cumulative limit of 2X in sales, it must again suspend unless and until data are available showing that cumulative emissions plus net sales to date are less than XN.
- If the country never reaches X in cumulative sales, it is never restricted, except in the regular end-of-budget-period accounting.
- In alternate versions of the proposal, X could be lower than 1/5 or higher. But it should be a number well below 100% of the 5-year allocation, and yet well above any reasonable level of sustainable legitimate emission sales (including hot air).
- The suggested level of 1/5 could be described as an "empty tank" provision (though it admittedly re-introduces a bit of "annualization" into the multi-year budget format). It is generous in the sense that it assumes zero emissions, aside from smoothing.
- For example, it is estimated that Russia and Ukraine [more accurately, FSU] will have hot air equal to 23 % of their one-year allocation in 2010, and that it might pay for them to reduce emissions by another 8 % of their allocation, for a total estimated sales of 31 %. Thus a limit of 1/5 of their five-year allocation would be

3.3 times as large as the estimated sustainable rate of selling. This is a multiple large enough to accommodate a lot of legitimate inter-year smoothing.

- An alternative version, which is a bit more permissive, follows:

- 1) a country can sell up to 100 of its total 500 allotment in the first year

- 2) after the first year, the country can sell up to the difference between its cumulative emissions through whatever prior year emissions data are available for at that time (e.g., year 3 would include emissions in year 1 under the presumption that data would be available by the end of year 2) plus net sales and the percentage of total allotment that would accrue at the end of that prior year (e.g., 20% in year two, 40% in year three, ...).



Jessica Stern <"j..stern" @ worldnet.att.net>

08/08/98 05:34:47 PM

Please respond to "j..stern"@worldnet.att.net

Record Type: Record

To: Alan S. Polasky/CEA/EOP

cc: jeffrey_a_frankel @ cea.eo.gov

Subject: from Jeff Frankel

Steve,

Here is the current version of my proposed rule.

Assume that a country's allocation is 500, or an average of 100/year. The proposed rule is that it can sell (on net) a maximum of 100 in the first year, and 100 cumulatively in the first N years, until data become available on emissions in the first year, or first N years. If those data show that cumulative emissions plus net sales to date are less than 100N, then the country can again sell up to 100 in any given year. (If and when it hits the cumulative limit of 200 in sales, it must again suspend unless or until data are available showing that cumulative emissions plus net sales to date are less than 100N.) If the country never reaches 100 in cumulative sales, it is never restricted, except in the regular end-of-budget-period accounting.

It would be good if you could try out the rule's performance (as compared, e.g., to restrictions of $X=500$ on the one hand, or $X=50$ on the other) under the following sequence of alternative assumptions -- that the seller in question (FSU for concreteness):

- * seeks maximum abuse of the ability to sell
- * has a high discount rate but intends to pay back
- * is midway between maximum abuse and predicted sustainability
- * predicted sustainability
- * claims to be cutting back, but actually emits BAU
- * predicted sustainable, but with early positive shocks to emissions of 1 or 2 standard deviations
- * predicted sustainable, but with early negative shocks to emissions of 1 or 2 standard deviations
- * exploitation of monopsony power (perhaps in the early years, and then goes for broke in later years?).

3100 R Street, NW
Washington, DC 20007
Tel: 202 965 5678
Fax: 202 965 6422

JF 8/5/98

CEA "Seller Plus" Proposal

- **If a country had net sales in the first year greater than a proportion X of its allocation,¹ then it could not sell any more, until emissions data came in and showed that the country had cumulatively paid back this amount of proportionate overage (through any combination of emission reductions and permit purchases).**
- I would propose that "X" be 1/5 of the 5-year allocation.
- In alternate versions of the proposal, X could be lower than 1/5 or higher. But it should be a number well below 100% of the 5-year allocation, and yet well above any reasonable level of sustainable legitimate emission sales (including hot air).
- The suggested level of 1/5 could be described as an "empty tank" provision (though it admittedly re-introduces a bit of "annualization" into the multi-year budget format). It is generous in the sense that it assumes zero emissions, aside from smoothing.
- For example, it is estimated that Russia in 2008 will have hot air equal to ___ % of its one-year allocation, and that it might pay for Russia to reduce emissions by another ___ % of its allocation. Thus 1/5 of its five-year allocation is ___ times the estimated sustainable rate of selling -- or even more, if one allows for any resumption of Russian economic growth -- a factor large enough to accommodate a lot of inter-year smoothing.

Allocation of risk under international emissions trading

Issue for Decision: Should the buyer or the seller bear the risk that a selling Party may oversell and fail to retain enough assigned amount to cover its emissions at the end of the 5-year period?

General Background: In proposing trading rules, the US has sought to create an efficient market in emissions permits. At the same time, we have also sought to ensure compliance. Our proposals have consistently recognized these two distinct goals.

Our proposals have further recognized that there are only limited levers for promoting effective Party-level compliance in the context of international agreements. Rather than advocate negative sanctions (such as financial penalties or trade sanctions), the U.S. has sought to develop clear accounting rules under the provisions for emissions measurement and reporting (Articles 5 & 7), and positive incentives to observe those accounting rules through the rules for international trading (Article 17) and the other flexibility mechanisms. At the same time, we recognize that we create problems if we conflate the goals of efficiency and compliance: if the trading system is burdened with provisions aimed at improving compliance, the market for permits is likely to be inefficient, and may fail.

There is broad agreement among agencies on the following points relating to emissions trading and compliance.

Loss of Eligibility and Repayment with Penalty Provisions

- A Party that is not complying with its measurement and reporting obligations should be suspended from emissions trading.
- A Party that has run out of assigned amount during the 5-year commitment period should lose its eligibility to make further sales (although it should still be able to buy), so long as it remains in deficit.
- If a Party has over-emitted at the end of the 5-year period, the Party should be required to deduct the excess, with a penalty from its assigned amount for the second period. The Party might also be subject to restrictions on sales in the second period. (Note: This provision could be defined as a general accounting rule, rather than a trading rule, because it would apply to any Party which over-emitted, regardless of its emissions trading activities.)

The question still needing resolution is whether there should also be any linkages that would affect the status of the tonnes that a Party previously sold.

- This is the issue of seller or buyer liability. Specifically, if a selling Party has over-emitted at the end of the period, should the tradeable units it previously sold remain the property of the buyer (seller bears the risk)? Or should they be returned to cure the seller's deficit (buyer bears the risk)?

In analyzing this question, we have looked at a range of options and attempted to assess their consequences for compliance and for market function. (We are currently consulting with stakeholders on these issues.)

Options:

1) Seller bears the risk. Buyers should be responsible for ensuring that they obtain clear title to any units purchased, but the selling party would be solely responsible for its excess emissions. Buyers would not be subject to the risk of retroactive devaluation.

Benefits: Simplest and most efficient. Buyers could use purchased tonnes at face value, and treat them as interchangeable. Buyers need not assess the risk of the selling Party's ultimate compliance.

Downsides: Unless other rules create consequences for a Party that oversells, this approach may provide insufficient incentives for compliance, as parties could be encouraged to deliberately or carelessly over-sell and not retain enough assigned amount to cover their own emissions.

2) "Seller plus." Similar to 1), but adds penalty provisions described on page 1. Tradeable units already sold would remain the property of the buyer.

Benefits: Retains most of simplicity and efficiency of option 1).

Downsides: Additional penalties might be insufficient to prevent careless or deliberate over-selling by a government with only a short-term focus or no interest in complying.

3) Buyer bears the risk. If the seller does not possess enough tons to cover its emissions at the end of the period, tonnes that the Party had previously sold would be applied to cover the shortfall. This could occur under a LIFO rule (the last units sold would be the first ones returned), or by a proportional devaluation of all previously sold tonnes.

Benefits: Creates strongest incentives and guarantees against over-selling. A risky Party will receive lower prices for its units, thereby having a financial incentive to comply. Excess emissions are automatically covered, up to the extent of prior sales.

Downsides: Likely to impede development of trading, as tons would no longer be a single commodity, but would differ in risk (and price) according to the original seller, and, under LIFO, the date originally sold. Would require private sector buyers to assess and manage the likelihood of various selling Parties' eventual non-compliance. Buyers might manage risks in several ways: by creating a portfolio of tonnes from different parties and of different vintages; by using contracts contingent on compliance of the selling party; or by buying options or taking other offsetting positions. While risk management tools are likely to be developed by the marketplace, this approach may impose a significant burden on the

emissions trading market in its start-up phase. Under this approach, the non-compliance of a selling Party could lead to the noncompliance of buying Parties, possibly creating a “domino effect.” While the likely validity of purchased emission permits would become increasingly clear as the end of the commitment period approaches, it could take a year or two after the end of the 5-year period to definitively sort out the validity of all permits. This option could also force buyers to buy extra tonnes to guard against seller shortfalls. This option would not eliminate the incentive to oversell, but would only reduce the price to the Party overselling.

4) Potential Hybrids. Other approaches could also be considered that lie between “seller plus” and buyer liability.

- **Seller plus-plus.** For example, adding to “seller plus,” there could be a prohibition on selling tradeable units at an unsustainable rate (i.e., at a rate that, considering the Party’s emission rate, places its eventual compliance in doubt). This would be an additional restriction, and it would kick in before the Party had completely run out of its assigned amount. It would require agreement on a formula to determine what rate of sales should be considered unsustainable.
- **Seller/Buyer.** Alternatively, the rule could be that sales above the unsustainable rate are still permitted, but only under buyer liability. In other words, trading would start on the basis of seller liability, but would switch to buyer liability if the Party were selling at an unsustainable rate. Only sales under the condition of buyer liability would be subject to retrospective recall if the selling Party over-emits at the end of the period.

These approaches add more incentives for compliance than “seller plus,” but place less burden on the marketplace than buyer liability. The first hybrid would still protect all past trades, but would not allow a Party to sell as much of its assigned amount as “seller plus.” The second hybrid would protect most past trades; it would also allow the selling Party to sell the “unsustainable” increment of its assigned amount, but only under the condition of buyer liability.

Positions of US interest groups and other parties

Most firms that are potential buyers have a preference for seller liability or “seller plus” rather than buyer liability. A few potential buyers, as well as U.S. environmental organizations, prefer buyer liability.

Among the Parties, the EU has staked out a position in favor of buyer liability, although they also agree with the limitations (on page 1) we have offered. The Umbrella Group countries are generally in the “seller plus” camp.

EPA Liability 8/5/98

EMISSIONS TRADING: "LIABILITY" (ALLOCATING THE RISK OF SELLING PARTY'S NON-COMPLIANCE)

Issue for Decision: Should the buyer or the seller bear the risk that a selling Party may "oversell" and fail to retain enough assigned amount to cover its emissions at the end of the 5-year period?

General Background: A key U.S. objective for trading rules has been to create effective compliance incentives without undue burdens on the marketplace. Our proposals have consistently recognized a close relationship between emissions trading and compliance with the Annex B Parties' key obligations (accurate measurement and reporting of emissions and staying within assigned amounts). Effective compliance regimes are essential to meeting the Protocol's environmental objectives, and critical to a well-functioning and credible emissions trading system.

Close?
Should be
separate
issues

Our proposals have further recognized that there are only limited levers for promoting effective Party-level compliance in the context of international agreements. Rather than advocate negative sanctions (such as financial penalties or trade sanctions), the U.S. has sought to develop clear accounting rules under the provisions for emissions measurement and reporting (Articles 5 & 7), and positive incentives to observe those accounting rules through the rules for international trading (Article 17) and the other flexibility mechanisms. With the exception of liability, there is broad agreement among agencies on the following linkages between emissions trading and compliance.

Loss of Eligibility and Repayment with Penalty Provisions ("Seller Plus" Features)

- A Party that is not complying with its measurement and reporting obligations should lose its eligibility to engage in further emissions trading. - Selling but not buying
- A Party that has "run out" of assigned amount during the 5-year commitment period should lose its eligibility to make further sales (although it should still be able to buy).
- If a Party's has "over-emitted" at the end of the 5-year period, the Party should be required to deduct the excess, with a substantial penalty (e.g., 20-30%), from its assigned amount for the second period. The Party might also lose its eligibility to make sales in the second period. (NOTE: this provision could be defined as a general accounting rule, rather than a trading rule, because it would apply to any Party which over-emitted, regardless of its emissions trading activities)

Yes.

These proposals are all *prospective*. They limit trading activity or require repayment of debits in the future. Their compliance incentive value lies in Parties' reluctance to risk losing the cost savings or investment benefits of trading, or incurring the penalty deduction from the second budget period. The question still needing resolution is whether there should also be any *retrospective* linkages that would affect the status of the "tradeable units" that a Party previously sold?

- This is the issue of seller or buyer liability. Specifically, if a selling Party has "over-emitted" at the end of the period, should the tradeable units it previously sold remain the property of the buyer (seller bears the risk)? Or should they be returned to cure the seller's deficit (buyer bears the risk)?

In analyzing this question, we have looked at a range of options and attempted to assess their consequences for compliance and for market function. (We are currently in the midst of consultations

with stakeholders on these issues.)

Options:

1) **"Seller bears the risk."** In the purest form of seller liability, the trading rules would make no linkages at all, prospective or retrospective, with compliance issues. Agencies agree that this approach provides insufficient incentives for compliance: Parties could be encouraged to deliberately or carelessly over-sell and not retain enough assigned amount to cover their own emissions.

2) **"Seller plus."** This approach relies on the prospective "loss of eligibility" and "repayment with penalty" linkages described above, but includes no retrospective linkages. Tradeable units already sold remain the property of the buyer.

Benefits: Places least burden on marketplace. Units purchased from another Party are fungible and have a clear value, with no contingencies. Buyers do not need to assess the risk of the selling Party's ultimate compliance.

Downsides: Disagreement over whether prospective linkages alone are sufficient to prevent careless or deliberate "over-selling" by a government with only a short-term focus or no interest in complying.

3) **"Buyer bears the risk."** In the purest form of buyer liability, all purchases are made at the risk that they can be taken back if the selling Party "over-emits" at the end of the period. The most likely method would be that the last units sold would be the first ones returned (LIFO). Buyers would have to assess the risks of a Party's non-compliance and use discounts, portfolio approaches, insurance, and other tools to cope with the uncertainty.

Benefits: Creates strongest incentives and guarantees against over-selling. A risky Party will receive lower prices for its units, thereby having a financial incentive to comply. Excess emissions are automatically covered up to the extent of prior sales.

Downsides: Requires private sector buyers to assess and manage the likelihood of various selling Parties' eventual non-compliance. While tools for doing so efficiently could develop over time, this approach may impose a significant burden on the emissions trading market in its start-up phase. For buyer Parties, this approach creates a risk of a "domino effect" in which a selling Party's non-compliance can lead to a buyer Party's non-compliance. It could take a year or two after the end of the 5-year period to definitively sort out the Parties' final compliance status.

4) **Potential Hybrids.** Other approaches could also be considered that converge between "seller plus" and "buyer liability."

- **"Seller plus-plus."** For example, adding to "seller plus," there could be a prohibition on selling tradeable units at an unsustainable rate (i.e., at a rate that, also considering the Party's emission rate, places its eventual compliance in doubt). This would be an additional prospective restriction, and it would kick in before the Party had completely "run out" of its assigned amount. It would require agreement on a formula to determine what rate of sales should be considered unsustainable.

- **"Seller/Buyer."** Alternatively, the rule could be that sales above the unsustainable rate are still permitted, but only under buyer liability. In other words, trading would start on the basis of seller liability, but would switch to buyer liability if the Party were selling at an unsustainable rate. Only sales under the condition of buyer liability would be subject to retrospective recall if the selling Party "over-emits" at the end of the period.

These approaches add more incentives for compliance than "seller plus," but place less burden on the marketplace than "buyer liability." The first hybrid still protects all past trades, but does not allow a Party to sell as much of its assigned amount as "seller plus." The second hybrid protects most past trades; it also allows the selling Party to sell the "unsustainable" increment of its assigned amount, but only under the condition of buyer liability.

Positions of U.S. Stakeholders and other Parties:

There is general recognition by U.S. stakeholders (including many, but not all in industry), that pure seller liability is not acceptable, and that some compliance linkages are appropriate. Most firms that are potential buyers have a preference for "seller plus" over "buyer liability." A minority of potential buyers, as well as U.S. environmental organizations, prefer "buyer liability." There is a lot of interest in learning about hybrids.

Among the Parties, the EU has staked out a position in favor of buyer liability, although they also agree with the prospective limitations (the "plus" proposals) we have offered. The Umbrella Group countries are generally in the "seller plus" camp, also may be interested in hybrids.

Recommendations

We have agreed with our umbrella group partners that the objective of establishing an international greenhouse gas emissions trading system is to achieve environmental objective of the Kyoto Protocol to reduce emissions by at least 5% below 1990 levels at the lowest possible cost. In addition, the umbrella group has agreed that to promote confidence in the trading system, the system should be designed to be simple, credible, transparent, and with low transaction costs. Some have also proposed that the trading system could be designed to promote compliance from countries with economies in transition by providing funding for national monitoring system improvements and real investment in emission reduction projects. Based on these objectives, we should reject pure seller liability, effectively making the current "seller plus" approach the minimum option under consideration. We should complete stakeholder consultations and development of the hybrid approaches this month, so that further judgments can be made internally as to their acceptability, and so that they can be explored with other Parties in international meetings in September. While not ruling it out, we should express strong concerns to the EU about the problems with its buyer liability proposal and seek their views on hybrids. We should continue working with the Umbrella Group for a common position on hybrid approaches.

TO: David Doniger

FROM: Sue Biniarz

RE: Allocation of Risk (aka "liability") Paper

Below are a few points I would like to have reflected in the memo you are preparing:

- o As I have said before, I think it is misleading (and therefore unhelpful) to continue to refer to the issue as one of "liability." It is really an issue of allocation of risk, as between the buying and selling Parties, in the case where the selling Party oversells. It has been my experience that when the issue is so framed, not only it is legally more accurate, but policymakers tend to understand it more readily.

- o Conversations I have had with various colleagues in the interagency process lead me to believe that, with respect to risk-on-the-selling-Party options, it would be worth including a brief discussion of the types of penalties we would envision placing on the selling Party that exceeds its assigned amount. If the goal is simply to provide an incentive for a selling Party not to oversell, then any stringent penalty (such as a fine) might do the trick. However, if the equally or more important goal is to ensure the integrity of the trading system (i.e., that any excess tons are returned to the system), then it is important that the penalty involve a payback of tons (such as our proposal to require the selling Party to subtract the excess tons, with a penalty, from its subsequent assigned amount).

- o With respect to risk-on-the-buyer options, I would like the paper to reflect some of the legal concerns I have raised, namely:

- the cumbersome, iterative international process that would be necessary if one Party's compliance were linked to another Party's compliance (i.e., assuming the U.S. was holding Russian tons, Russia's compliance would need to be internationally assessed in order to judge U.S. compliance; then, U.S. compliance would need to be internationally assessed, taking into account any devaluation of Russian tons held by U.S. domestic entities; then, the compliance of other Parties holding U.S. tons would need to be internationally assessed in light of whatever devaluation of U.S. tons flowed from the U.S. assessment, etc...);

- the timing problems that would arise for U.S. ton-holders if they could not know whether they had complied with U.S. law until the compliance of other Parties had been judged (post-2012).

To: David Donniger
From: Steve Polasky
RE: "Seller Plus" Option

This option would have seller liability with two compliance provisions, one limiting sales in relation to the allocation, and another limiting sales in relation to the allocation plus measured reductions. (These provisions may be thought of as "empty tank" restrictions on further trading.)

To make the proposal more concrete --

There would be a restriction on further sales of permits from a country if:

- 1) the country had net sales in a given year greater than or equal to X% of its initial allocation plus JI and CDM credits and offsets that were valid at the time of the trade (where "X" is to be determined)
- 2) once emissions data were available (annually), the country had net sales greater than or equal to its initial allocation minus emissions plus JI and CDM credits and offsets that were valid at the time of the trade.

Failure to meet the emissions cap at the end of the 5-year trading period would result in a reduction in the allocation of the next period allotment by an amount equal to the shortfall plus a specified penalty rate (20-30%).

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS
17TH & PENNSYLVANIA AVE., NW
WASHINGTON, DC 20502



THE OLD EXECUTIVE OFFICE BUILDING

TO:

Victoria Greenfield
Kay Siquieri

FAX NUMBER:

OFFICE:

TEL NUMBER:

FROM: STEVE POLASKY

FAX NUMBER: (202) 395-6870

ROOMB19

TEL NUMBER: (202) 395-5012

NO. OF PAGES (inc cover) 2

DATE:

July 30, 1998

SUBJECT: _____

MESSAGE:

Option for paper on allocation of risk.

Achieving effective compliance with the Kyoto Protocol is essential if its benefits are to be realized. And designing an efficient trading mechanism is essential if those benefits are to be achieved at least cost. Conflating these two objectives, however, creates problems. If the trading system is burdened with provisions aimed at improving compliance, the market for permits is likely to be inefficient or even fail.

The best way to achieve an efficient system for trading is to adopt seller liability. Buyers should be responsible for ensuring that they obtain "clear title" to any units purchased. But buyers should not be subject to the risk of retroactive devaluation of permits as would be the case with a system in which the buyer is liable for the seller's country's compliance.

Compliance also needs to be addressed. We therefore believe that "seller plus" is the right answer. A number of ideas have been put forward for dealing with compliance: no deficit selling, payback requirements, and restrictions on future trading. These promising ideas should be analyzed more fully and discussed further.

Post-it® Fax Note		7671	Date	7/27	# of pages	1
To	Steve Bolashy		From	Ray Sargent		
Co./Dept.	CEA		Co.	Vreco		
Phone #			Phone #			
Fax #	395-6870		Fax #			

Victoria Greenfield

7/29/98

What is "Seller Plus"?

Seller plus takes seller beware ("a ton is a ton") as the starting point and adds compliance incentives. Four compliance incentives are presented below, but others may also be possible. The first incentive is based in the current period, the others are linked to a future commitment period:

- **No deficit selling.** A Party could not sell when its "tank is empty." There are many possible ways to determine whether a Party's tank is empty. If, for example, a Party's initial assigned amount is 100 tons, the rules could specify that it could not sell more than 100 tons, after adjusting for international purchases, credits acquired through JI and CDM, and net emissions. Annual emissions reporting, as already required by the Protocol, would facilitate accounting, but should not be used to "re-annualize" the 5-year commitment period. (There should be no quantitative limits on annual transactions, apart from "no deficit selling".)
- **Payback requirements.** If, for example, a Party is out of compliance at the end of the first commitment period *because it has "oversold" its assigned amount*, and cannot cover its excess during a prescribed grace period, it could be required to subtract the excess from its assigned amount in the second commitment period, with a penalty. (This option would return excess tons to the system and preserve the environmental integrity of the trading regime.)
- **Future restrictions on selling.** If, for example, a Party is out of compliance at the end of the first commitment period *because it has "oversold" its assigned amount*, and cannot cover its excess during a prescribed grace period, it could face a restriction on selling in the second commitment period.
- **Seller chooses.** A selling Party could be given the option to choose, including up front: (1) to make up its excess emissions either by (a) acquiring tons or (b) subtracting them from the next commitment period, or (2) not to make up its excess emissions, in which case it could face a restriction on selling the next commitment period, or some other penalty related to its trading activities.

* A "no deficit selling" rule would not constitute an annual "true up." This rule would preclude deficit selling, not deficits *per se*.

To: Janet Yellen
Jeff Frankel

From: Adele Morris

Date: June 1, 1998

Subject: Seller vs. Buyer Liability

Introduction:

As we prepare for negotiations on international trading rules later this year, CEA should be very involved in the decisions regarding the treatment of transferred permits of Parties that over-emit -- the so-called "liability" question. The attached paper was written by several of us and sent to the Umbrella countries by the State Dept last Friday. It provides an introduction to the issues without taking a position.

So far, all the economic analysis has implicitly assumed that every permit is fully valid for one ton of emissions, and that all countries comply with their treaty obligations. The liability decisions could produce a sharp departure from that world:

- In a buyer liability system, the permits we buy from other Parties would be devalued in the event that they don't retain enough to cover their own emissions. Thus the price of a Party's tons would be discounted according to their risk of over-emission.

The biggest problems:

- The risk connected to purchasing permits could seriously impede the startup of the trading system.
- The price discount may not compensate buyers for the information and transactions costs, as well as precautionary permit purchases.
- U.S. tons could trade at a discount if other buyers think we own too many risky permits. Thus, U.S. selling sectors could be affected by the behavior of U.S. buying sectors.
- Buyer liability is a very blunt instrument to get at the behavior of the one or two countries that people are worried about (Russia and Ukraine).

Argument for buyer liability:

Others argue that compliance tools are extremely limited, and even if you have second period penalties, the treaty doesn't offer enough disincentives for rogue nations to sell excessively. Only by introducing a price incentive for them to demonstrate compliance can you ensure that they participate responsibly.

What everyone else thinks:

State: Victoria Greenfield largely agrees with me. She thinks that market power exertion by the Russians may prevent them from selling too much, irrespective of noncompliance penalties. [Monopoly power raises another whole set of issues for the development of the trading rules.] The diplomatic side of State (e.g. Jonathan Pershing) seems to care most about process, and views compromise, or at least dialogue, on liability as a way to make progress in other areas.

Mike Toman is even more worried about buyer liability than I am. He thinks it could be a disaster. He suggests we concentrate on borrowing from second period budgets with a penalty as the main means to encourage compliance in the first period.

Treasury: So far David Wilcox and Jon Gruber don't like buyer liability, but view seller liability as something we can give away in negotiations to get something more important. While I agree that there are more important rules than liability, such as caps on trading, I view caps that won't bind as definitely preferable to buyer liability.

DOE: Abe Haspel's shop supports a version of buyer liability that discounts by date of first transfer, with the last permits sold as the first devalued. So far, we haven't heard much from Mark Mazur.

EPA: David Doniger supports a hybrid approach in which a small initial set of permits are sold at full value (with proceeds dedicated to real reductions and building monitoring and reporting infrastructure) and later permits are sold as buyer liable.

Allocation of Risk under International Emissions Trading

Introduction

- To comply with the Protocol, each Annex I Party has the obligation to hold enough tonnes of carbon dioxide equivalent at the end of the first commitment period to cover its net emissions during that period.
- Rules under Article 17 should indicate clearly from the outset what will happen to tonnes that a Party has previously transferred if it has excess emissions at the end of the commitment period. (This paper focuses on excess emissions; however, failure to comply with measurement and reporting obligations also needs to be addressed.)
- Different approaches to the allocation of risk as between the selling and buying Parties could produce substantially different prospective incentives for selling and buying Parties and other entities (e.g., private sector firms) involved in international emissions trading.
- Because those incentives have potentially large implications for the economic and environmental consequences of the trading system, careful consideration must be given to the various advantages and disadvantages created by the different approaches before one is chosen.
- This paper briefly outlines possible approaches, but much more analytical work is necessary to explore the options.
- In addition, consultations with potential private sector participants could help us understand the effects of the risks and uncertainties associated with different approaches, as well as the extent to which they may impede the development of the trading system.

Basic Options

- The rules could provide that previously transferred tonnes are unaffected, placing total responsibility for the excess emissions on the selling Party.
- Under this option, a selling Party could be required to make up its shortfall, by acquiring tonnes from others or by deducting its excess emissions, with a penalty, from its assigned amount for the second commitment period.
- Alternatively, the rules could provide that previously sold tonnes will be applied to cover the selling Party's excess emissions, effectively shifting non-compliance risks to the buying Party of those tonnes.

- Hybrid approaches could be possible.

Discussion

1. Selling Party Bears Risk

- As noted above, under such an approach, the rules would provide that any tonnes transferred by a party may be used (or re-transferred) by the acquiring Party at their full value (i.e., a tonne is always equal to a tonne), regardless of whether the originating Party had retained enough tonnes to cover its own net emissions at the end of the commitment period.
- The selling Party would be solely responsible for its excess emissions.
- While further sales of tonnes could be prohibited once the selling Party's emissions had used up its entire assigned amount after adjustments for trading, past sales would be unaffected.
- Consequences for the selling Party would depend upon the trading rules and the more general non-compliance rules. The rules could require the selling Party to make up the excess emissions -- by acquiring that number of tonnes from others within a specified period of time after the end of the commitment period, by deducting that number of tonnes (with a penalty) from its assigned amount for the following commitment period, or by some other means. They could also preclude the Party from participating in trading in the subsequent commitment period.

Implications

- Likely to be the simplest system, providing relative certainty for buyers.
- Buying Parties (and their entities) could acquire and use tonnes from any Annex B Party at face value and treat them as completely interchangeable. Buyers would bear no added costs to evaluate or purchase additional tonnes to protect against the possibility of the selling Party's non-compliance.
- To the extent that a selling Party with market power oversells, thereby reducing the price of tons, the market itself would provide an incentive for that Party to comply.
- Unless trading or non-compliance rules create consequences for a Party that oversells, this approach may not provide sufficient incentive for a selling Party to retain enough tonnes to cover its own emissions.
- As such, there could be negative environmental consequences.
- Others?

2. Buying Party Bears Risk

- Under such an approach, the rules would provide that if a selling Party does not possess enough tonnes to cover its emissions at the end of the commitment period, tonnes that the Party had previously sold would be applied to cover the shortfall.
- In other words, tonnes sold abroad would be applied to the excess emissions of the selling Party rather than the buying Party.
- There are several approaches to how (and which) tonnes could be devalued (reclaimed) to cover the excess emissions, for example, all tonnes could be devalued by an equal share or tonnes could be devalued on the basis of their transfer date.
- To the extent that buyers may not be able to apply their tonnes purchased from a non-complying Party, the tonnes from different Parties would potentially trade at different prices, reflecting buyers' assessment of the risk of the originating Party's non-compliance.

Implications

- Selling Parties would have a price incentive to demonstrate compliance, because buyers would pay more for tonnes from Parties with solid compliance assurances (although the magnitude of the price incentive is uncertain).
- Would create risks for buyers, who would not know whether the tonnes they acquired are fully valid until the end of (or perhaps after) the commitment period.
- However, buyers might manage risk in numerous ways, such as: creating portfolios of tonnes from different Parties, trading through contracts that are contingent on the performance of the selling Party, using the services of risk-raters (akin to Moody's bond ratings), etc.
- Such an approach could impede development of the trading system by: overburdening a fledgling market with excess risk; raising transaction costs (e.g., to get risk information); potentially requiring buyers to buy extra tonnes to guard against a shortfall.
- Even if the selling Party gets only a discounted price, it might still have an incentive to oversell.
- The approach creates complex interdependencies, under which market prices for a Party's *own* tonnes may be weakened if it holds large numbers of tonnes from risky sellers.
- Private sellers could be adversely affected by the purchasing decisions of private buyers in the same country. In other words, a buyer of tonnes from Party A, in deciding how much to pay for tonnes from Party B, would need to take into account whether Party B was likely to comply. To the extent that Party B (including through its private sector) had acquired

tonnes from Party C (a compliance risk), tonnes from Party B could be devalued.

- Others?

3. Hybrid Options

- Hybrid options could be possible.
- There appear to be at least three ways in which a hybrid approach might work:
 - The mixed allocation could be decided up front.
 - A pure buyer or seller allocation could apply initially, but could later switch under certain circumstances (such as under a "yellow light" scheme).
 - A selling Party could be given the option to choose, including up front: 1) to make up its excess emissions by either acquiring tonnes or deducting them from the next commitment period (in which case previously transferred tonnes would retain their full value); or not to make up its excess emissions (in which case the risk would switch to the buying Party).
- Further consideration would need to be given to ensure that hybrid options were designed to mitigate concerns raised by pure buyer/seller options.

Buyer versus Seller Liability: Issues and Comparison

I. Seller Compliance/Total Emissions

A. Seller liability: Seller liability requires some type of enforcement mechanism. Possible penalty schemes include: a) subtract deficit from the next period allocation (or deficit plus penalty), b) suspend ability to sell permits. The penalty must be sufficiently high to make systematic non-compliance by the seller unprofitable.

B. Buyer liability: incentives for seller compliance are provided by buyers ("buyer beware"). Therefore, it *may* not be necessary to have any special penalty scheme to get seller compliance. If buyers can correctly anticipate seller actions, permit price will reflect risk of seller non-compliance. There are several arguments, see point II below, why it may be difficult for buyer liability to result in an efficient outcome.

C. Even with no liability provision, there is the possibility of self-enforcement. If the seller (or combination of sellers) has sufficient market power, there is an incentive to keep sales of permits relatively low to maintain relatively high market price.

D. Total emissions: There is no difference in total emissions if seller compliance is assured. If a seller is non-compliant, total emissions are lower with buyer liability if the buyer must make good for the non-compliance by the seller by buying extra tons.

Summary: To ensure seller compliance, there may be an advantage to buyer liability when there is difficulty or reluctance to use second period penalty schemes and where self-enforcement does not work. If seller compliance is not assured, buyer liability results in lower total emissions.

II. Transactions Costs/Risk Information

A. Seller liability: "a ton is a ton." Buyers are assured of what they are buying. There is no information/risk problem in the transaction.

B. Buyer liability: buyers bear the risk of seller non-compliance. Therefore, the buyers must form some expectation of seller behavior prior to agreeing to a purchase and discount the price accordingly. In other words, the buyer must have some notion of the probability that the permit will be valid. One key question is how does this argument work in an emerging market without past history? Similarly, how would this argument work with a new administration in a country?

There are two ways to envisage instituting a buyer liability scheme.

1. Proportional discounting of permits: all permits bought from a non-compliant seller are discounted by the same proportion. This solution suffers severe incentives problems. Consider a simple case with two subperiods that transactions can occur within the relevant time period for

permits. To obtain high first subperiod prices, the seller would like to promise to restrain second time permit prices. However, once the second period arrives, the seller does not have the same incentive to restrain sales as does the buyer. There is a negative externality on first subperiod buyers from second subperiod sales. This problem is identical to the durable goods monopoly problem. The resulting market outcome is inefficient.

2. Last-In First-Out: permits sold by a country would be numbered so that each permit would have a serial number from the country of origin. If a seller was non-compliant, the permits at the end of the queue for that seller would be invalid back to the point in the line at which the seller would come back into compliance. The main problem with queueing is that it transforms a homogeneous good with the potential for a large number of trades into a heterogeneous good: the country of origin matters and the place in the queue for that country matters. Doing so reduces market liquidity and increases transactions costs. Another issue arises when there is some uncertainty over the accuracy of monitoring. There is the possibility of rent seeking activities. The buyer who is near the cutoff point has an incentive to lobby to push the cutoff line further down the queue to protect the validity of his permits.

C. Some possible solutions to problems with buyer liability. Supporters of buyer liability point out the similarity to international bonds. To overcome risk on these transactions people have pointed to rating services, political risk insurance and hedging. Skeptics point to the lack of certain markets to function at all or to function poorly without some type of home government assurance.

D. Cascading risk: suppose that country A sold permits to B, who in turn sold permits to C. If A's permits turn out to be invalid making B non-compliant, are B's sales to C invalid? There does not appear to be a good solution to this issue.

Summary: In terms of the smooth and efficient functioning of the market, there is an advantage to seller liability over buyer liability.

III. Overall: Since insuring compliance is an issue even without trading, it seems logical to have a compliance mechanism in place. Without compliance issues, there is a clear preference for seller liability.

September 2, 1998

MEMORANDUM ON EMISSIONS TRADING

TO: Please see distribution list
FROM: Jim Rubin, WHCCTF
RE: Umbrella Group Talking Points

Enclosed are talking points for the Umbrella Group meeting in New Zealand. Please provide clearance to Jim Rubin by **noon on Thursday, September 3**. If you have any further comments or questions please contact Jim (395-2343) and David Doniger (260-2865).

Organization	Name	Fax	Phone
State	Rafe Pomerance	647-0217	647-2232
	Victoria Greenfield	647-5713	647-6985
	Sue Biniaz	736-7115	647-1370
CEA	Jeff Frankel	395-6947	395-5046
Treasury	Bob Cumby	622-2633	622-2200
	Bob Boorstin	622-9373	622-0486
	Ben Jones	622-9373	622-4447
Justice	Lois Schiffer	514-0557	514-2701
DOE	Abe Haspel	586-3047	586-5316
	Rick Bradley	586-4341	586-0154
	David Doniger	260-5155	260-2865
EPA	David Gardiner	260-0275	260-4332
	Bill White	260-4852	260-4724
	Dirk Forrister	395-2311	395-2310
DOD	Sherri Goodman	703-693-7011	703-695-6639
NEC	Bill Antholis	456-5334	456-2198
CEQ/NSC	David Sandalow	456-2710	456-6224
DOC	Larry Cambell	482-0325	482-3038

Talking Points for Umbrella Group on Over-Selling/Liability

Umbrella Group members should be prepared to discuss the over-selling/liability issues with the EU at the Annex I Working Group. Specifically, we should:

- Reiterate the priority we place on compliance and the integrity of the emissions trading system.
- Reiterate the priority we place on establishing an efficient marketplace.
- Acknowledge the need to address the possibility of over-selling but emphasize our concerns over the burdens on the market that would be imposed by pure buyer liability.
- Indicate willingness to explore all options, building on the base of seller responsibility, with appropriate enhancements that are consistent with efficient market function.
- Look for means, possibly within the AIXG process, to explore the potential options.

In terms of timing, Umbrella Group members should work to make sure that the over-selling/liability issue stays open until the "end-game" for addressing all of the trading rules (including the EU's proposed restrictions), unless an attractive offer comes from the EU to settle the liability issue separately.

Background Points

Compliance issues pertaining to emissions trading must be addressed in the context of overall expectations for COP-4.

- Our primary goal for COP-4 should be to obtain a COP decision establishing a deadline of COP-5 for resolving all trading rules.
- We should also explore including some rule provisions on technical issues (e.g., monitoring and reporting requirements, national registries) within the COP-4 decision. At a minimum, we should seek Annex I-wide agreement on those points, perhaps embodied in a new Umbrella-EU paper.

In proposing trading rules, the US has had two primary goals:

- One goal is economic efficiency: We must secure an efficient market in emissions permits to help keep costs down.
- The other goal is integrity and compliance: The emissions trading market must support compliance by all Annex I Parties with their Kyoto targets

The trading market and compliance issues are inter-related.

- Markets need clear and predictable rules, and market participants need assurances that everyone will have to play by the same rules.
- At the political level, effective compliance assurances are essential to garnering international support for emissions trading.

We should acknowledge the risk that Parties may "over-sell" -- i.e., that a Party that has sold permits (AAUs) may not have enough at the end of the five-year period to cover its emissions during the period.

- If this happens, the Protocol's environmental objective of a 5% reduction across Annex I as a whole will not be met.
- Over-selling will also hurt participants in the market who "play by the rules" by undermining the value of AAUs purchased from complying Parties.

To those who urge addressing this compliance risk in Article 18, outside of the trading rules, we should respond that:

- We need an approach based on positive economic incentives, not negative legal sanctions.
- We cannot create these incentives in a timely fashion through Article 18.
- That is why the Umbrella Group supports including positive compliance incentives in the Article 17 trading rules, in ways that do not significantly burden the market or reduce the cost savings that our countries are counting on.

The EU appears to have mixed motives on the over-selling/liability issue.

- The EU is likely to lump over-selling -- and its proposal for "buyer liability" -- together with its objective of limiting purchases by the U.S. and other buyers, and limiting sales by Russia and the Ukraine.
- That makes it difficult to address the over-selling/liability issue as a separate, largely technical matter in the short-term. It may not be resolved before the end-game over "concrete caps" and "hot air".

The Umbrella Group needs to consider potential responses to the over-selling issue and the EU buyer liability proposal.

- In the short-run, we need to work out a coordinated response to the EU proposal for the AIXG meeting and other meetings taking place in September (Netherlands/CCAP, 9/22-23).
- For the longer-run, we need to develop (1) a common view on which options to address over-selling are workable and acceptable on their merits, and (2) a common negotiating strategy for handling this issue in light of the EU's other demands.

To start this discussion, the U.S. offers a preliminary list of possible approaches of which we are aware. The U.S. does not have a position on these options but wants to stimulate discussion within the Umbrella Group on them and possible additional options.

- Seller liability
 - with an annual "pay-as-you go" surrender of AAUs to cover emissions to date.
 - with an automatic deduction of any excess emissions, with a penalty, from a Party's second budget allocation.

- with a limit on the amount or percentage of AAUs that may be sold before the end of the commitment period.
 - * this limit could take several forms:
 - after a certain amount, no further sales.
 - after a certain amount, further sales only under buyer liability.
- with a requirement for sellers to have insurance (to self-insure through a set-aside of AAUs, or to buy private insurance to supply replacement AAUs).
- Buyer liability
 - with recall of AAUs in case of over-selling in reverse order of sales (LIFO).
 - with proportional devaluation of all sales.

In terms of timing, we should make sure the over-selling/liability issue stays open until the "end-game" for addressing all the trading rules, unless an attractive offer comes from the EU to settle this issue separately.

- DRAFT 9-14-98 for comments only -

**Buyer Liability for Greenhouse Gas Trading is
Good for the Environment and Good for Emissions Trading**

by

John Palmisano

Enron International, Washington, DC

What is emissions trading? What is the liability issue?

Under Article 17, the Kyoto Protocol on limiting greenhouse gases allows for the transfer of "assigned amounts" of greenhouse gases (GHG) among Annex I Parties. "Assigned amounts" are internationally agreed upon levels of emissions for a five year budget period beginning in 2008 and ending in 2012. Annex I countries are primarily the developed countries and the transitional economies, including the United States, Russia and Ukraine, Europe, Australia, Canada, New Zealand, and Japan.

Under the rules of the Protocol, these countries will limit their emissions of greenhouse gases by a certain percentage of 1990 levels of GHG emissions during the 2008-2012 interval.

If Parties emit less than their assigned amount during this time, they will be able to sell some or all of these surplus "assigned amounts" to other countries or "bank" their surplus GHG emissions for use during the next time period. Buyer companies or countries will be able to use these surplus GHG emission allocations to meet their own GHG caps. Analysts predict that the trading of emission allocations (usually called emissions trading or ET) will reduce the cost of compliance with GHG reduction targets by billions of dollars.

While Annex I countries include the developed and transitional economies, non-Annex I countries are synonymous with the notion of "developing countries," still GHG trades can be conducted between Annex I and non-Annex I countries. Trades between Annex I countries differ from trades between Annex I and non-Annex I countries. While emissions trading among Annex I countries is described in Article 17, trading between Annex I and non-Annex I is described under Article 12 of the Kyoto Protocol - the Clean Development Mechanism (CDM). The CDM allows developing countries to trade GHG reductions that result from specific projects. Trades of so-called "certified emissions reductions" (CERs) will be based on the difference between a project's GHG emissions and a baseline determined to be those emissions that would have happened anyway. CERs that result from CDM actions can be traded only after they are created and certified.

Besides trading CERs and emissions trading of assigned amounts, there is a third trading initiative called joint implementation, or JI. JI is described under Article 6 of the Kyoto Protocol. JI is similar to the CDM in that the focus of the trade is a surplus emission reduction that flows from a specific project. Any emissions credit that flows from a JI project

is created after the fact -- it is certified after the emission reduction has been qualified, quantified, and certified.

JI and CDM-based reductions are first certified, then they are traded or banked for future use. Many people envision a system where surplus assigned amounts are traded first and demonstrated to be surplus later. The question, therefore, arises as to who is liable if the traded "assigned amount" is not demonstrated to be surplus.

This paper addresses the mechanics of emissions trading of assigned amounts between Annex I Parties. The concern is that total emissions from Annex I Parties will not be subject to verification tests until the end of the initial period between 2008 and 2012, and may not be known until 2014. To preserve the integrity of the global greenhouse gas trading system, emissions trades of assigned amounts must only be for surplus GHG emissions. Therefore, GHG sellers must only be allowed to sell, and buyers must only buy, those allocations which are left over after the seller's own emissions control obligations have been met.

Purchasing countries or companies will want to buy GHG emissions allocations to help them meet their own commitments during the initial period between 2008 and 2012. Since country-specific inventories of GHG emissions will not be reported until as late as 2014, buyers will be purchasing GHG allowances before the seller's actual emissions are known. Since there is a potential for noncompliance, there is a need to specify which party is liable if a country determines that sold (so-called) surplus allocations are not, in fact, surplus. Therefore, GHG trading rules must clarify which party in a emissions trade is liable for a failure to perform -- the buyer or the seller or both.

Is the buyer or seller responsible for ensuring the surplus nature of traded GHGs?

Responsibility for validating the surplus nature of purchased assigned amount could rest with sellers of emissions allocations, with buyers, or with some combination of the two. If sellers are liable, they will hold responsible for making sure they have sufficient parts of assigned amount to cover their emissions after any sales are conducted, and would be subject to domestic and international penalties for selling their assigned amounts that are not surplus. On the other hand, since buyers would be using any purchased allocations to meet a domestic GHG emission limit, domestic regulators can only sanction GHG buyers who attempt to apply non-surplus reductions against a domestic emission control obligation. Responsibility could also be imposed upon both the buyer and seller, as is done under certain US environmental regulations. The Conference of the Parties to the Framework Convention on Climate Change will consider this issue when they meet in Buenos Aires in November. And, while this is a complex issue, Tables 1 and 2 provide some insight into how this problem might be approached.

Making sellers liable is simple in concept, but difficult in practice. An allocation, once sold, would retain its value as a portion of an assigned amount in the market no matter what the seller finally emitted. At the end of the trading period, compliance would be confirmed and sanctions invoked on those countries and companies that claimed to sell surplus GHG emission reductions but failed to establish "surplusness."

Table 1
Upon whom do we impose liability?

On the buyer

When the buyer can best influence the integrity of the outcome or when the regulator or public can only recover from the buyer. Consider the case of the person who has acquired, or bought, counterfeit money. The buyer must beware and the buyer assumes complete liability since any future "buyer" of the money cannot get relief from the original seller.

On the seller

When the seller's behavior best influences the integrity of the outcome or when the regulator can only recover from the seller; examples relate to property law where the seller has more knowledge about the property than does the buyer; thus, full disclosure is required and indemnification provisions are commonplace.

On both buyers and sellers

When there is an over-riding public policy reason for insuring fulfillment of a regulatory obligation (i.e., Superfund).

While, in theory, seller liability provides punishment once noncompliance is discovered in 2013, it does nothing to promote compliance along the way. In addition, seller liability works only when sellers are accountable and punishable. But this is a highly unlikely outcome under any anticipated climate change negotiation.

Table 2
Whose behavior can we affect and what does that mean?
On whom does liability for the integrity of the surplus reduction rest?

Who is the enforcer of liability?	The "creator" (Seller company)	The "user" (Buyer company)
regulator in "seller" country	Regulator can affect seller's behavior	Regulators cannot affect behavior
regulator in "buyer" country	Cannot affect behavior	Regulator <u>can</u> affect buyer's behavior

It is unlikely that countries can be punished if they sell GHG emission reductions that are implied to be surplus and are subsequently found to be defective. It is virtually impossible for a domestic regulator say, in Canada, to enforce sanctions against a GHG seller in Russia. Therefore seller liability for yet-to-be-proven surplus allocations is a functional impossibility.

The need for environmental and commercial integrity of traded "surplus" reductions dictates rules that make Parties meet their emissions reduction obligations and attain the Protocol's environmental goals. For the reasons discussed below, the best commercial and environmental outcomes are achieved when it is the responsibility of buyers to ensure the surplus nature of the GHG emissions they are purchasing.

Why doesn't seller liability create the right economic and environmental incentives?

The scale of emissions trading will be global; domestic sanctions may not provide a sufficient deterrent for non-compliant behavior, and they may not be sufficiently enforced in all countries. The United States has proposed two international methods of dealing with Parties that sell non-surplus parts of assigned amount: sellers could be excluded from future emissions trades or they would have to deduct the excess, with a penalty, from the next period's assignment. The second option sounds very much like emissions borrowing, a concept already rejected by the Conference of Parties.

While proposed "sticks" create penalties for non-compliance, they may not be sufficient deterrents for Parties with a short-term outlook, and they do not provide "carrots" for compliant behavior. In the two proposed methods for correcting illegal trades, damage to the environment is irreparable because buyers have used non-surplus emissions to cover their own. Damage is also imposed on the system of emissions trading by getting "counterfeit" trades into the system. And even if the concept of emissions borrowing is accepted, there is no guarantee that borrowing behavior exhibited during the first commitment period will not be repeated in future budget periods, thus emission control repayment is never achieved.

In addition, international trade sanctions are notoriously difficult to impose, even for issues (like weapons proliferation) that enjoy broad popular consensus. Because trades of GHGs will cross international boundaries, legal and financial penalties for sale of emissions that are not surplus will be problematic. With weak enforcement or insufficient penalties, sellers will have a financial incentive to sell an assigned amount that exceeds the penalties of non-compliance. These sales could undercut prices from countries and firms that legitimately sell surplus assigned amounts. A system that builds incentives for compliance into the trading program is preferable.

What is buyer liability and why is it better?

With buyer liability, the buyer would be responsible for ensuring the purchased "assigned amount" is truly surplus. If the seller is found to have sold non-surplus assigned amounts, these assigned amounts will be invalidated and buyers will not be able use them to meet their emissions control obligations.

If buyers are liable for a seller's failure to perform, the market for "assigned amounts" will be differentiated by seller. Countries that act in ways to insure the surplus nature of the sold assigned amounts will have more valuable assigned amounts since the likelihood of default will be less than for low integrity assigned amounts. Since buyers will be responsible for ensuring the surplus nature of the assigned amount they purchase, they will be vigilant about who they buy from, and buyers will pay more for credits that have a high probability of being surplus after the first budget period. Buyers will be willing to pay more for high-integrity assigned amount and will pay less for low-integrity assigned amounts. With buyer liability, the international GHG market will give value to the assigned amount that is likely to be surplus, and devalue an assigned amount that is of low integrity. It will therefore provide incentives to the seller to maintain the integrity of the parts of assigned amount they sell and to stay within their cap.

The initial buyers of GHG emissions could also have the option of purchasing insurance from the private sector or governments that allows for the replacement of a non-surplus assigned amount. The insurance premium charged would be based on the risk associated with the seller. If the seller runs a high risk of not having enough surplus emissions to cover its sales, the premium will be high. Conversely, if the seller is likely to meet its emissions commitments, the premium will be low.

Because the price of insurance will be incorporated into the market price for GHG allocations, sellers will have an incentive to keep their default risk low and sell only those allowances they know to be surplus. To minimize this risk, sellers might also have an incentive to control emissions below the required levels, thus maintaining a reserve to protect against default. This is an environmental benefit of buyer liability that seller liability does not provide.

There are a variety of remedies if, at the end of the budget period, a seller is found not to hold a surplus allocations equal to the amount that they have sold. For example:

1. sales could be disallowed in reverse order (last in-first out), until the seller has enough assigned amount to cover its needs, or
2. all traded allocations could be pro-rated downward to adjust for the amount oversold, or
3. all traded allocations could be viewed as defective since it is impossible to determine which ones were non-surplus.

Each remedy will have a different effect on the market for potentially non-surplus allocations.

Disallowing transactions in reverse order might create an incentive to begin trading early in the commitment period, and to register these trades as soon as possible but this option puts little pressure on sellers of assigned amounts to maintain quality reductions. Pro-rating all reductions downward provides some security for GHG allocation buyers and reduces the any insurance premium. However, pro-rating may not provide a strong incentive for assigned-amount-selling countries to be rigorous in maintaining GHG surpluses. Option 3 puts the

only depends on which credit you have.

most market pressure on sellers of GHG because buyers will demand higher guarantees of surplusness. Option 3 provide the most environmental integrity and promotes the development of the most rigorous GHG monitoring and reporting systems. Impounding all traded allocations may be too strict of a system for some parties, but this system guarantees the integrity of the GHG trading system while creating a complementary market for ancillary insurance products.

All three systems could encourage the development of insurance services, information services to provide information on buyer risks, and better GHG monitoring systems in seller-countries. Any insurance product would likely follow the assigned amount even if the assigned amount is resold. The insurance information would be only two or three data items in an emissions trading data-base, hardly a big task. Because the insurance would be country- and date-specific, the insurance premium and pay-out would be very specific, much the same as is political risk insurance. If purchases are disallowed, insurers will provide valid assigned amounts (or cash equivalents) as compensation.

Buyer liability promotes the market-based objectives by encouraging market-based risk-management solutions. Buyer liability also promotes environmental objectives by incentivizing countries to create high-integrity emission reductions via the avoidance of GHG emissions shortfalls by over-controlling.

Is buyer liability tenable?

Organizations like the United Nations could provide information that tracks the probability of sellers being in compliance. Annual reporting of progress towards Kyoto Protocol goals is likely to be written into the rules for either liability scenario, and potential assigned amount deficits will become obvious over time. Emissions will be tracked by country, sector, company, and facility. With buyer liability, sellers with potential deficits will not be able to find buyers for their assigned amounts, and insurance and information products will be developed to help companies and countries manage their risk. The GHG emissions market, like the bond and stock markets, will discriminate by quality.

In addition, because U.S. companies will be responsible for validating the surplus emissions they purchase, and would likely be subject to domestic sanctions if they do not, citizens, regulators and environmental organizations will gain faith in the international GHG trading program.

What is at stake?

The stakes are huge. A well designed international trading program will help participants achieve the environmental objective of GHG emissions reductions while cutting the cost of compliance billions of dollars over the coming decades. A successful trading program will broaden and sustain international participation. A poorly designed program will encourage non-participation and non-compliance, raise costs, and exacerbate environmental problems. Once a trading program is designed, it will be difficult to change. Buyer liability is one critical piece of this complicated puzzle; it's important to put it in place the first time around.

Buyer versus Seller Liability and Transactions Costs

An argument for seller liability and against buyer liability is that buyer liability imposes higher market transaction costs than does seller liability. While virtually everyone will concede some level of increased transactions cost of buyer liability over seller liability, there is disagreement over how large this increase in cost is likely to be.

Transactions Costs with Buyer Liability

The logic for expecting increased transactions cost with buyer liability is as follows. Introducing seller liability adds no complications to a permit market transaction. Traded permits are always valid. The permit market functions just like a commodity market. With buyer liability, however, traded permits are not always valid and the buyer must assess default risk, i.e., the risk that a permit will turn out to be invalid. The buyer will either invest directly in obtaining information about the default risk, or purchase insurance covering the default risk. Either way, a buyer liability rule imposes a cost on the buyer for carrying out a market transaction.

Indirect Empirical Evidence

It would be very useful to know the magnitude of transactions costs imposed under buyer liability. There does not, however, appear to be any direct empirical evidence on this point. The best that once can do is to make inferences about the importance of these transactions costs by looking at the choice of market institutions and the absence or limited extent of certain markets in which buyers face risks.

1) *Choice of Market Institutions*: In domestic permit markets, seller liability is the rule of choice. The SO₂ permit market is perhaps the most notable example of a permit market with a seller liability rule. In meetings with industry groups and regulators, there was almost universal agreement that domestically, where there exists adequate compliance mechanisms, seller liability is preferred to buyer liability. One example where there was an expressed preference for buyer liability in domestic trading, was EPA's proposed open market trading rule for ozone smog precursors (Federal Register 8/3/95). The buyer liability scheme was preferred to the alternative of pre-certification of projects to reduce emissions by the government. A pure seller liability scheme was not considered.

2) *Limited Markets with Risk to Buyers*: In some situations there may be no way to avoid placing some risk on buyers. Buyers of bonds, for example, face default risk. There are several examples of bond markets that have either failed to develop or developed only to a limited extent. The nonexistence of private inflation indexed bonds is an example of the former problem (Fischer 1977). Similarly, it was only after government intervention and the introduction of Brady bonds that the market for developing country debt became highly liquid. A third example involves the lack of full insurance coverage for losses from a catastrophic event such as a hurricane or earthquake. Recent innovations such as "cat bonds," which pay the bond holder principle plus interest except in the event of a catastrophe, in theory bring the size of the capital market to bear in spreading the risk of these low probability large loss events. These bonds, and other similar

financial instruments, have not, as yet, grown to the point of providing substantial insurance coverage for catastrophic risk. Froot (1997) points out that certain preconditions must be met for these markets to fully develop, including investor education about risks and some degree of standardizing risks across different investments.

A point stressed by many in this literature is the difficulty of starting these markets when buyers lack information about risks and there is not a track-record upon which to estimate risks. This last argument holds with full force for international trading of GHG permits with buyer liability. Again, though, there is a lack of direct empirical evidence to predict with confidence for how long, or to what degree, adopting a buyer liability regime would impede the establishment of an international market in GHG permits.

Allocating Liability in an International Emissions Trading Program

Suzi Kerr, University of Maryland at College Park

Who should bear liability for internationally traded credits, buyers, sellers or both, is one of the major outstanding issues in the design of international emissions trading programs. It will be a key issue at COP-4 in Buenos Aires. The integrity of trading, and indirectly the confidence of participant countries in the treaty as a whole, hinges on credits representing real reductions in GHGs. At the same time, excessively strict trading rules could stifle markets and raise international compliance costs to unacceptable levels. The optimal allocation of liability trades off these two concerns. We assume some level of international pressure to comply with the treaty as a whole and show how this can be utilized in the most effective way to make Kyoto work.¹

We look at optimal allocation of liability in the presence of information asymmetries and weak enforcement mechanisms. This discussion is in two parts. We first consider the design of a credible international trading system for Annex I, developed countries, focusing on the assignment of liability for “bad” emission permits (i.e., when the seller country is not in compliance with its Kyoto targets known as ‘assigned amounts’). The second part of the discussion addresses issues of credibility and liability in the context of Clean Development Mechanism (CDM) joint ventures.

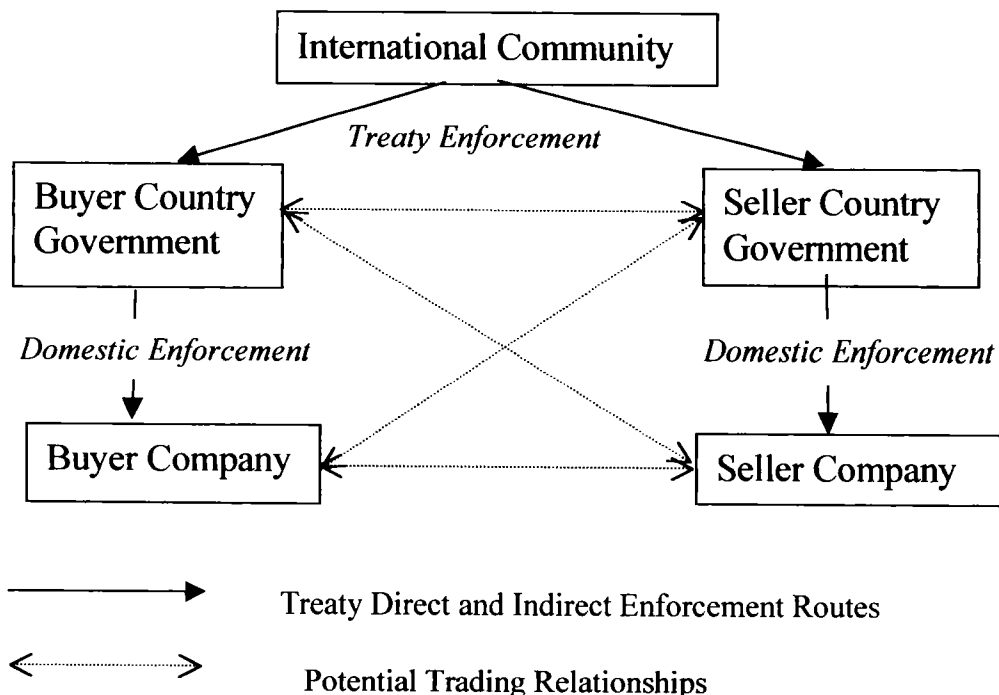
Ultimate responsibility for obligations rests with the national governments of Annex 1 countries. If countries do cheat by claiming bad credits there is some chance they will be caught and sanctioned. International monitoring is not perfect because it is expensive and limited by sovereignty, so they may get away with it. Sanctions are difficult to apply internationally but could be adopted by mutual consent to apply when national compliance falls short. These could include having a lower national assigned amounts in subsequent commitment periods (to “make up its environmental debt” plus an element of

¹ Much of the literature on international GHG policy has been concerned with the fact that international agreements are inherently difficult if not impossible to enforce legally, and the resulting challenges of

punishment). Within a trading program sanctions on sellers could include strictures on future trading opportunities (future permits or credits might be sold at a previously agreed discount, or subject to a caveat emptor test). Sanctions on buyers would be the same as those under the overall Protocol compliance mechanism.

Governments can, however, delegate trading privileges to sub-national parties (“legal entities” in the parlance of the Kyoto Protocol). If they delegate, the government will apply domestic enforcement pressure because if their companies cheat and are caught, the government is still ultimately responsible. Where permits are project-specific, national governments could hold sub-national actors responsible for specific permits bought. As shown in Figure 1, trading can occur among any combination of sub-national parties and national governments. This paper looks at the potential for more effective enforcement pressures that can be achieved by exploiting these trading relationships.

Figure 1 International and Domestic Enforcement and Potential Trades



making national commitments credible (Barrett 1994, Wiener 1998). Here we examine instead some of

The Kyoto Protocol envisages at least two different kinds of international emissions transactions. One type involves exchange among actors in Annex I countries, those countries that have accepted binding limits on their aggregate emissions by the 2008-2012 period. These transactions could involve international trade in homogeneous permits designated in tons of carbon equivalent, or the exchange of heterogeneous project-specific emission reduction credits.

The second type of transactions involves specific joint ventures between actors in Annex I countries and actors in non-Annex I developing countries, wherein the former invest in the latter to obtain emission reduction credits. These projects were referred to previously as joint implementation, but the Kyoto Protocol articulated a new name and potentially a new set of international institutional arrangements, the Clean Development Mechanism (CDM). For the CDM, seller countries do not have emission obligations so do not have national baselines to measure reductions against. Project level reductions are measured by assessing the additional reduction achieved, i.e., relative to business as usual (BAU). This is a controversial and costly process. BAU is difficult to measure; yet raising the estimate means a project ‘creates’ more permits. These permits may not reflect real reductions. This is probably the easiest way to manipulate the trading system but is difficult to prove when there is no objective way to create baselines.

Parties to the Kyoto Protocol could minimize the costs of assessing CDM emissions reductions and reduce manipulation of baselines by determining a set of generic criteria for evaluating the additional GHG reductions associated with different classes of investments (e.g., enhancements in the power sector, improvements in end-use efficiency, use of low-GHG renewables). These criteria would be to a significant extent arbitrary and would require revision periodically with experience, but they would provide a way to avoid the arduous and equally arbitrary project-specific determination of additionality.

In both Annex I and CDM trading, even where non-compliance is clearly defined and measurable and sanctions are used, because monitoring is not perfect and sanctions are limited, parties may misreport reductions or claim inability to meet targets. In particular, sellers may sell more credits than they really create. One major instrument for

the questions raised by the additional challenges and opportunities created by international trading.

controlling these behaviors in a permit market is the assignment of ex post liability for validity of traded permits. The question we address is “Which country should bear liability for the validity of traded credits, the buyer, the seller, or both?” The fact that the two types of transactions involve different actors and operate under different domestic regulatory structures leads us to different conclusions about how responsibility for the integrity of the trading system should be imposed.

Performance Risks and Remedies in Annex I Trading

As already noted, Annex I trading involves either trading of homogeneous permits based on national emissions or bilateral contracts for the creation and exchange of project-related credits. In either case, the fact that the actors trading all are in Annex I means that their respective governments are ultimately responsible for their actions and all trading entities should be governed by their domestic compliance mechanisms. The Kyoto Protocol requires each Annex I country to develop an operational capacity to keep track of their aggregate net emissions, and a capacity to develop and implement policies and measures to credibly ensure that those emissions remain within the negotiated targets.

If these mechanisms worked as they were supposed to, then effectuating international GHG trading would require only a relatively minor increase in bookkeeping capacity. Whether the domestic systems of both countries are permit based or one or both countries allows only project-based trades at the sub-national level, regulators in the buyer and seller countries need to keep track of the volumes of the international flows. Then they need to adjust domestic emissions accordingly for the purpose of evaluating domestic compliance.²

In practice, things could go wrong. Sellers could simply sell more permits than they create and openly non-comply with their commitments under the Protocol. Sub-national sellers could inflate the number of credits created in a project when they report to

² Note that while it may be useful to keep track of where the permits flow, there is no need to keep detailed regulatory records of individual buyer and seller transactions in this case. If, for example, a US permit holder sold some US permits to a Japanese entity, it would suffice for the seller’s permit balance to be debited by US regulators and for Japanese regulators to note that the buyer has obtained a greater capacity to emit. Aggregate flows among countries would need to be recorded as a cross check on each country’s report of buying and selling.

their national regulators. The national regulators in seller countries could report higher levels of permits sold than emissions they really reduced. These misleading reports would be given to the international bodies charged with overseeing compliance under the Framework Convention and Kyoto Protocol. Even if buyers observe misreporting or know that the seller will not be able to comply, they may collude with the seller in order to get cheaper credits. For example Russia could sell more credits than they really created (their assigned amount minus actual emissions) and the US, or a firm in the US could buy them cheaply despite knowing that they are probably ‘bad’ permits.

In response to concerns about this potential threat to the credibility of Annex I trading, a number of proposals have been offered for assigning liability for “bad” permits or credits, those coming from a non-compliant seller country. Within Annex I, seller countries are always liable for the sum of net emissions plus permit sales being below their assigned amount. The question is whether the buying side should also be liable. If buyer countries are also liable and the international community finds that the buyer country met part of its obligations (either directly or through sub-national entities) with purchased permits or credits from a country determined to be non-compliant, the buyer country government would be responsible for covering their ex post “carbon deficits”. It could purchase additional “secured” permits or credits from other sources, as well as being sanctioned. In all likelihood, the finding of noncompliance in the seller country would be based primarily on an accounting of aggregate emissions plus sales versus assigned amounts, though it is possible that some spot checking of individual project based-transactions also could occur. Buyer liability could put all transactions with that country at risk. Alternatively, only those permit or credit sales beyond some target level of seller country emissions might be subjected to this caveat emptor test.³

Introducing buyer liability, in addition to seller liability, will increase compliance, but may do so at high cost relative to the gains and relative to the costs of increasing compliance pressure on sellers. We will argue that the costs will outweigh the benefits.

³ For example, Russia could sell credits equal to the difference between its emission quota under the Kyoto Protocol and its 1998 emissions or some other target level – the so-called hot air – without triggering buyer liability, but sales beyond that mark would be caveat emptor. Another alternative would be the ‘last

For buyer liability to be beneficial, buyers must have a comparative advantage relative to the international community either in monitoring or responding to seller non-compliance. They also must not be so risk averse that bearing the uncontrollable part of the risk of penalties for noncompliance would drive large numbers of potential trades from the market.⁴ If these conditions hold it could be efficient for the international community to ‘employ’ the buyer as an enforcer, with the threat of sanctions as the incentive, rather than increasing their own efforts to enforce seller compliance.

Buyers can affect seller behavior by monitoring seller conduct and then responding to the information they obtain either by changing their choice of trading partners, offering less for risky credits, or sanctioning non-complying sellers directly. If buyer countries were liable for seller non-compliance, buyer countries and their sub-national actors, to whom they pass the liability, would undertake a variety of risk management measures. Expert assessments of noncompliance risk would be developed to help buyers gauge the probabilities of having their permits or credits devalued ex post, and these probabilities would be used by buyers to discount the price of purchased credits from less secure sources accordingly. Buyers would refuse to trade with especially risky sellers. In response reliable sellers would try to provide transparent information on their compliance. Buyers also could directly punish non-compliant sellers through standard international contract law.

Early on in the advent of international GHG trading neither buyers nor intermediaries are likely to have a strong comparative advantage in assessing the prospective conduct of sellers, particularly when permit validity depends on national, not project-level compliance. Any individual buyer country is in a very similar situation to the international agency when trying to monitor another country’s GHG production. If they subcontract monitoring to specialists, the international agency could do likewise. Buyers may duplicate each other’s efforts. Market reputations about seller conduct will take some time to develop.

in-first out system, where permits would be made invalid in reverse order based on the date of trade until the seller was back in compliance.

⁴ Holmström and Milgrom 1990

Buyers' options for directly policing or controlling seller behavior are inherently limited if defectiveness of credits is based solely on national aggregate emissions of the seller country rather than project-specific findings. In particular, with homogeneous permits, buyer liability is a form of joint and several liability that imposes the burden of non-compliant conduct by one seller (national or sub-national) on all buyers. No buyer, and no sub-national seller, can control the risk of national non-compliance.

Despite careful choice of sellers, buyers will still face uncontrollable risk that they will attempt to insure against by holding additional credits as a reserve margin or buying insurance from a broker. These are direct costs to society. Buyers will face high costs from the uncontrollable risk they are required to bear. In addition, and more importantly, the buyer's caution in trading punishes unreliable sellers but also imposes monitoring and risk-assessment costs on the buyer in addition to the risk the buyer still bears. These costs are borne for 'good' trades as well as 'bad' ones and hence limit trading by reliable sellers as well as those who are unreliable. Risk averse buyers will tend to be overly cautious and discount or exclude many 'good' trades. The loss of legitimate gains to trade because of high transaction costs could be significant.

It follows that under buyer liability, buyers will face potentially high transaction costs in assessing the reliability of permits or credits offered on the international market and bearing risk, with limited social reward in terms of improved quality of information and increased compliance. The transaction costs will unnecessarily reduce trading and raise global abatement costs. Buyers are unlikely to satisfy the conditions for being a good monitoring and enforcement agent on the international community's behalf.

A fundamental issue is that it is not clear that buyer liability is completely additional to seller liability. Under domestic law if two parties are held liable they generally share the liability rather than the liability being doubled. If liability is shared, pressure on the seller is lessened and our argument against buyer liability is strengthened. Within Annex 1 the financial sanctions against sellers (through limiting future trading) may be stronger than those available against non-compliant buyers. Compliance could actually fall. Whether buyer liability would be additional to seller liability is a question of international legal practice and the operation of treaty compliance mechanisms.

We believe that on balance an appropriately defined seller liability program is the best way to allocate liability for performance failures in trades by most Annex I countries. The ex-post sanctions would have to be serious enough to motivate seller country governments to comply and to deter cheating by their private actors (e.g., forfeiture of future quota, limits on future access to the market). These are reasonably credible and potentially serious sanctions.⁵

We recognize, however, that it is important to distinguish sellers with good reputations and domestic enforcement from those whose weak enforcement engenders extreme uncertainty about the credibility of their permits. What we want to avoid is throwing the baby out with the bath water. We should not unnecessarily hinder the trades of the majority of countries because of problems related to a few. Thus we propose coupling qualifying requirements for Annex I countries to sell permits in this trading market with the ex post sanctions on qualified but non-compliant Annex I sellers. This would allow us to distinguish high-risk sellers in advance and prevent them from creating large numbers of invalid permits. No country needs to be constrained from buying permits.

The national qualification process would look at countries' domestic monitoring and enforcement capabilities (including the general strengths of the legal systems for regulatory and contract enforcement), past treaty compliance, and perhaps at other factors that bear on their commitment and capacity to meet their obligations. Countries that fail to meet the qualifications would still be able to sell credits, but only after national emissions during the commitment period have been certified (i.e. at the end of the commitment period), or through the project-level CDM mechanism described below, with buyer liability. Determining a more fully articulated set of qualification criteria and applying them in practice would be inherently subjective, but no more so than determining countries' eligibility to participate in the IMF or WTO.⁶

⁵ Note that the equivalent sanctions on buyers are only as strong as buyers' commitments to comply with the treaty as a whole. Many sellers, including but not only those with 'hot air', benefit from the treaty so they have clear incentives to continue to participate.

⁶ The proposal in the text involves a single bright-line determination of eligibility to participate in Annex I permit/credit trading. More complex approaches are possible. For example, selling countries could be allowed to participate if they fail to meet all the criteria satisfactorily but with an automatic discount

Ultimately, for the trading program to work well and help us achieve the goals of the Convention, the combination of preconditions and the threat of future sanctions must deter cheating by sellers in the permit market. Countries may simply walk away from their Framework Convention obligations but this is a problem with or without trading. Trading reduces buyers' incentives to non-comply and increases sellers' incentives. The potential benefit of non-compliance for a seller is much lower than for a buyer however. Without trading some buyers could have very high marginal compliance costs; non-complying sellers can at most gain the market permit price. Even if some sellers cheat, trading could still raise overall treaty compliance.

What is important, especially in the early stages, is to do as much as possible to develop a liquid and flourishing international trading system among Annex I countries subject to some basic credibility tests. We will have to live with the system we create for the indefinite future. We want a system that has low transaction costs, many trades, low national compliance costs, and consequently generates strong national interest in meeting Kyoto goals.

Performance Risks and Remedies in Clean Development Mechanism Trading

The situation with the CDM is fundamentally different from Annex I trading in at least three important respects. First, developing country hosts of JI/CDM projects are not currently obligated to cap aggregate emissions. These governments thus do not have the same obligations for policing the performance of domestic GHG abatement as their Annex I counterparts. Second, it is clear that a number of non-Annex I countries have less technical and institutional infrastructure for overseeing JI/CDM project results and enforcing contractual performance obligations than their counterparts in Annex I. Third, Annex I actors obtaining the emissions credits also have a direct involvement in financing and possibly managing the investment project producing the credits. Their comparative advantage in monitoring and enforcement, and the prospects for collusion to misrepresent

applied to their permits/credits. This would provide some inducement for improved performance in implementing monitoring and oversight. Again, the size and application of the discounts would be subjective, at least for some time until performance data and reputations become better established. If more complex qualification approaches such as this are used, we still believe there should be some threshold level of prospective performance to qualify for entry into the Annex I trading system.

project results, exist in a way that does not arise with more arms-length permit or credit transactions.

Consider the problem of a seller inflating the results of a CDM project.⁷ If the buyer observes this and is not liable for the validity of the credits, it has no incentive to report accurately. The buyer can strategically collude with the seller to increase the payment to the seller while reducing the compliance burden of the buyer. If the buyer is liable, however, and there is some risk of detection and subsequent sanction, it may act as a monitor/enforcer for the international community.

As discussed above, the buyer will be a good monitor/enforcer for the international community if it has a comparative advantage in monitoring and enforcement and is not too risk averse. In contrast to Annex I trading we argue that here they do have a large comparative advantage. As partners in joint ventures, Annex I buyers have the ability to directly observe the number of credits created. They, or the seller, can employ third party certifiers to monitor the specific project. Even if they cannot do this perfectly they can observe better than the international community. They could refuse to pay for invalid credits and use domestic law to improve contract enforcement. The risk they bear is only the risk related to the project they are involved with. Thus it is limited and largely controllable. Annex I countries would be good monitors/enforcers for CDM trades on behalf of the international community so buyers should be held liable. The benefits outweigh the costs.

We also argue that buyers should be held liable in CDM even where joint liability would be shared rather than additive; i.e. it might be better to hold the buyer liable instead of the seller. Because international law is weak it may be better to hold one party primarily liable rather than risk the dilution of sanctions through ambiguity about liability. As long as both actors can observe and control the behavior, the best way to deter such behavior is to assign liability for misrepresentation, once detected, to that actor with the greatest vulnerability to punishment.⁸

⁷ In CDM at present credits are only awarded after they are created in contrast to Annex I where they can be traded at any point in the commitment period.

⁸ see, e.g., Holmström and Milgrom 1990

Annex I buyer countries are potentially more subject to reputational damage than the non-Annex I sellers, so they have stronger incentives to enforce domestic regulation. Combining this strong incentive with domestic regulatory capability, Annex 1 sub-national buyers will face a wider array of credible domestic sanctions for noncompliance (including the possibility of citizen suits as well as formal regulatory punishments). In contrast, although seller countries can be punished through restraints on future trading, because regulatory structures are weak this may not be passed down to sub-national actors. Future trading restraints may not be an effective threat. The buyer would seem to be most vulnerable and hence should be held liable for correct reporting.

This conclusion is strengthened by the observation that the buyer (either country or sub-national actor) is better able than the seller to bear the increased economic risk implied by this penalty system. Sellers may not be able to control their sub-national actors in which case it seems inappropriate to punish the whole country for the behavior of a few actors.

Buyers will face high costs when they are held liable and this will limit CDM trading. In this case, however, we believe the higher levels of compliance that will be achieved justify the high costs. The buyer is able to control a large part of the risk they face, and many of the trades that will be inhibited would have involved ‘bad’ credits. By holding liable buyer countries, and through them the domestic actors engaged in CDM transactions, the incentive for being honest about credits is increased. We thus conclude that in contrast to Annex I trading, a buyer-beware approach is appropriate for project-specific joint implementation transactions through the CDM even where only one party can be held liable.

Summary

The credibility of traded permits is key in international emission permits markets. Permit markets can exacerbate or alleviate international compliance problems. We conclude that in trading among Annex I countries, the potential compliance benefits from adding buyer liability to seller liability are outweighed by the high transaction costs created and the level of uncontrollable risk buyers would have to bear. In contrast for trading with non-Annex I

countries through the Clean Development Mechanism we conclude that the primary form of liability should be buyer liability. Buyers have considerably stronger incentives to comply than sellers do both because they are more vulnerable to punishment and because their governments are able to enforce domestic regulation. Because trades are project based, sub-national buyers are able to observe and control accurate reporting.

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SirriE @ sec.gov
08/12/98 10:56:35 AM

Record Type: Record

To: Alan S. Polasky/CEA/EOP

cc:

Subject: Re: risk allocation between buyer/seller

Alan-

I enjoyed talking to you and your colleagues the other day about the emissions trading problem--very interesting stuff! I'd be happy to help any way I can.

Regarding your question, I do not have specific cites to articles. But you might find it useful to look at the problem of legal certainty surrounding repurchase agreements when the borrower defaults. A similar issue relates to netting arrangements for swaps transactions when a party defaults. In both of these, the legal certainty about a payment caused problems for the primary market of the instrument. The solution was to provide greater legal clarity, though my attorney friends tell me it still a bit murky.

On a related issue, the growing market for property and casualty insurance risk, as funded by the capital markets, may provide you with a parallel for the pollution risk case.

Good luck,

Erik

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Erik Sirri
Chief Economist
Securities and Exchange Commission
Office of Economic Analysis, Mail Stop 11-5
450 5th Street, N.W.
Washington, D.C. 20549

Voice: (202) 942-8020
Fax: (202) 942-9657
Email: SirriE@sec.gov

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Addressing the risk of overselling in international emissions trading

Issue for Decision: How to address the risk that a party may oversell emissions permits, and fail to retain enough assigned amount to cover its own emissions?

I. Background

In proposing trading rules, the US has attempted to strike a balance between economic efficiency and incentives for compliance. An efficient market in emissions permits will help keep costs down. Incentives for compliance are needed to achieve our environmental objectives. The agencies have come to agreement on most aspects of trading rules, but have not yet agreed on the proper allocation of the risk of overselling.

The US has several objectives in crafting rules for emission trading. Trading rules should create an economically efficient market. In addition, they should help achieve the Kyoto targets, should create an incentive for compliance, and should encourage participation by the FSU and prospective new entrants from the developing world.

The EU and environmental groups are concerned about overselling, especially by Russia and Ukraine. They fear that these countries will oversell their allotments early in the 5-year compliance period (2008-2012), and cite weak compliance and regulatory regimes in these countries. They believe that trading rules should contain additional incentives for compliance.

Others, including potential market participants, are concerned that some compliance incentives could hobble the nascent market in tradable permits. They believe that trading rules should focus, above all else, on facilitating development of the new market.

Recognizing that there are limited levers in traditional international law to compel Party compliance, the US has supported including positive incentives for compliance within the trading rules, where that can be done without significantly burdening efficient market function. Specifically, before Kyoto the US proposed including two compliance provisions in trading rules:

- A Party not complying with its measurement and reporting obligations would lose its eligibility to engage in further emissions trading.
- A Party that has run out of assigned amount during the 5-year commitment period would lose its eligibility to make further sales (although it would still be able to buy), so long as it remains in deficit.

The “empty tank” rule, however, is not seen by the EU as an effective way to block large-scale over-selling early in the 5-year period. Concern over this possibility led the EU to propose buyer liability. The US has not yet taken a position on liability or advanced other proposals to address the risk of over-selling. The linkage between monitoring and reporting obligations and trading eligibility is broadly supported within the Umbrella Group, as well as by the EU.

II. Options

1) Seller bears the risk. If the selling party does not possess enough assigned amount to cover its emissions at the end of the period, the excess, with a penalty, would be deducted from its assigned amount for the next budget period. The party might also be subject to restrictions of sales in the second period. Buyers are responsible for ensuring that they obtain clear title to any units purchased, but are not subject to the risk that permits will be recalled or devalued. Tradeable units already sold remain the property of the buyer.

Benefits: Simplest and most efficient, because transaction costs are lowest. Buyers would be certain of the face value of any tonnes bought, and tonnes would be interchangeable. Buyers need not assess the risk of the selling Party's ultimate compliance. Loss of trading eligibility and repayment requirements provide incentive for compliance.

Downsides: Significant risk of overselling and unremedied excess emissions. Compliance incentives depend on Parties' commitment to participate in the global climate change treaty over the long haul. Loss of trading eligibility and repayment requirements alone may not be sufficient to prevent overselling by a government that seeks a short-term financial bonus.

2) Buyer bears the risk. If the selling Party does not possess enough assigned amount to cover its emissions at the end of the period, emissions permits that it had previously sold would be taken back from buyers and applied to cover the shortfall. The last permits sold would be the first ones returned (LIFO); alternatively, all permits sold could be devalued by the same proportion. Buyers, who would be on notice of these rules from the start, would have to assess the risks of a Party's non-compliance. They might manage risks in several ways: by discounting prices paid, creating a portfolio of permits from different Parties and of different vintages; by making contracts contingent on compliance of the selling Party; or by buying options or taking other offsetting positions.

Benefits: Creates strongest protection against overselling. Uses market mechanisms to promote environmental objectives. A Party at risk of having excess emissions will receive lower prices for its permits; this creates a financial incentive to comply. Excess emissions are automatically covered, up to the extent of prior sales.

Downsides: Likely to increase costs. Likely to impede development of trading, as allowances would differ in risk (and price) according to the original seller. Would require private sector buyers to assess and manage the likelihood of selling Parties' eventual non-compliance. Market tools for doing so efficiently could develop over time, but are not likely to exist at first; this could impose a significant burden on the nascent emissions trading market.

Some have raised the possibility of a "domino effect," in which noncompliance of a seller leads to noncompliance not only of the first buyer but of all subsequent buyers as well, implying de facto joint-and-several liability. A cumbersome iterative international process

would be necessary if one party's compliance were linked to another's. Others have argued that this domino problem could be limited either by a LIFO rule, or by a rule limiting liability to the first buyer only.

Options (3), (4), and (4a) are intended to offer more protection against overselling than "seller bears the risk," and less burden on the trading market than "buyer bears the risk."

(3) Seller bears the risk, cap on sales.

collapse to 1 (b) **Simple percentage cap.** A simple cap could be set on any Party's permit sales prior to the end of the budget period, based on the countries presenting the greatest concern. The Administration's economic modelling suggests that Russia and the Ukraine will need approximately 70% of their assigned amounts to cover their own emissions. A Party could be limited to selling no more than 25% of its budget before the end of the budget period (the 5% difference representing a compliance reserve margin). Any portion of the remainder could be sold at or near the end of the five-year period if not needed to cover the Party's emissions.

(b) **Formula-based cap.** Another approach would be to let a Party make permit sales in the first year equal to a total of X% of its 5-year allocation (e.g., 20%). The Party could not sell any more permits unless its cumulative net sales and emissions for the first two years was less than two times X% (e.g., 40%), and so forth for later years. The value selected for X should be well below 100% of the five-year allocation, and yet well above any reasonable level of sustainable permit sales.

Benefits: Trading takes place with low transaction costs because buyers do not bear the risks of sellers' non-compliance. Cap limits potential overselling, compared to option 1).

Downsides: Although caps limit overselling, they do not prevent it. Unclear how these options would work where parties to the Convention devolve emissions permits to firms, as an individual firm's right to sell would depend on whether prior sales by other firms had reached the cap. This option requires detailed data on both spot and forward trades, as well as emissions, data that the central government may not have. Sellers may find ways to game the system.

Don (4) **Seller bears the risk, with reserve account.** Sellers would be required to set aside a specified percentage (perhaps 10 percent or 20 percent) of the total sold. These permits could be sold at or near the end of the five-year period, if they were not needed to cover the selling Party's emissions. Until then, they would serve as a compliance reserve against possible excess emissions.

Benefits: Low transaction costs, as in option (3). Compliance reserve grows with volume of permit sales. Reserve margin offers more protection against overselling than option (1). Whether protection against overselling is more or less than provided by option (3) is difficult to analyze, depending in part on the percentages chosen.

Downsides: Protection against overselling is still incomplete for any percentage set aside less than 100%. Interim permit prices (prices during the five-year period) may rise because fewer permits would be available for sale, until they are released at the end. The higher the percentage set aside, the greater this effect.

(5) Seller/buyer variations. Variations on options (3) and (4) could allow sale of permits above the cap or sale of permits in the compliance reserve, under the condition of buyer liability. In other words, most permits would trade without any contingencies, but sales of the permits above the cap or in the compliance reserve would be subject to the risk of being recalled and returned to the seller Party to cover a shortfall at the end of the period.

Benefits: Provides more protection against overselling than options (3) and (4), because sales above the cap are subject to recall against seller's excess emissions. All permits are allowed to go to market; most trade on basis of seller liability without contingencies, while buyer liability is focused where most pertinent to compliance risk. May provide selling parties with more incentives for compliance, since a price signal reflecting the party's compliance risk will be created for the permits in the compliance reserve.

Downsides: Same as option 2); potential burdens on the market are limited to only those permits trading under buyer liability.

III. Positions of US interest groups and other parties

The following picture emerges from a series of stakeholder meetings coordinated by the White House Climate Change Task Force:

- Most private sector potential buyers and brokers expressed a strong preference for avoiding buyer liability, although they recognized that seller liability alone does not address the risk of overselling.
- A minority of potential buyers and brokers said buyer liability would be workable.
- Environmental organizations prefer buyer liability.

Among the Parties:

- Other buyer members of the Umbrella Group generally favor "seller bears the risk."
- Russia and the Ukraine have endorsed Umbrella Group proposals to date. They are eager to get trading underway in order to begin realizing revenue. They have acknowledged the need to build up their monitoring and regulatory capacity and are looking to trading revenue as a source of funds for such efforts. They have not yet been engaged in detailed consideration on liability or the risk of overselling.

- The EU currently favors buyer liability but has recognized problems such as the potential domino effect on compliance. The EU also supports the additional compliance features listed above under “seller bears the risk.” Option 5) may also appeal to the EU as a means for both sides to get some of what they want.

IV. Strategy and timing

Strategy and timing considerations. The overselling issue will be on the agenda of back-to-back meetings of the Umbrella Group and the Annex I Experts Group beginning on Labor Day. This argues for coming to agreement on a US position by September 4.

In G-8 workgroup discussions in July, the Umbrella and EU sides agreed that even though they have deep differences on the highly-charged political issues of (supplementarity, “hot air”), both sides have a stake in showing some progress on trading and the other flexibility mechanisms at Buenos Aires. The G-8 workgroup agreed that a realistic goal for COP-4 at Buenos Aires is to reach Annex I-wide agreement on a number of mostly technical trading issues (e.g., emissions monitoring and reporting methods, systems for tracking transfers, procedures for participation by legal entities) and to obtain a COP decision on a work plan and schedule for resolving the remaining issues by COP-5.

In this context, it is worth trying to resolve the overselling issue this fall. While the issue is not simply technical (involving potential trade-offs between compliance and efficiency objectives), it is not as highly charged as supplementarity or “hot air.” If held over after Buenos Aires, it is likely to become more politicized and harder to solve. Addressing it now could also facilitate a solution to broader compliance concerns the EU has raised (concerning Article 18), which will also tend to become more politicized and harder to resolve if not addressed by Buenos Aires.¹ Of course, if an acceptable solution to the overselling issue is not reached by then, we always have the option of keeping it open for COP-5.

¹ The EU has argued for adopting binding compliance consequences under Article 18 before trading may commence under Article 17. Since Article 18 requires an amendment of the Protocol, this approach would introduce a major delay. The US and its Umbrella partners have sought instead to include important compliance provisions in the Article 17 trading rules themselves. Some progress in moving the EU towards our view was made at the G-8 discussion group in July. Since the EU is especially fearful of over-selling by Russia and the Ukraine, an effective response to that risk now could help get the EU off the Article 18 soap box.

Addressing the risk of overselling in international emissions trading

Issue for Decision: How to address the risk that a party may oversell emissions permits, and fail to retain enough to cover its emissions?

I. Background

In proposing trading rules, the US has attempted to strike a balance between economic efficiency and incentives for compliance. An efficient market in emissions permits will help keep costs down. Incentives for compliance are needed to achieve our environmental objectives. The agencies have come to agreement on most aspects of trading rules, but have not yet agreed on the proper allocation of the risk of overselling.

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purchased, but are not subject to the risk that permits will be recalled or devalued. Tradeable units already sold remain the property of the buyer.

Benefits: Simplest and most efficient, because transaction costs are lowest. Buyers would be certain of the face value of any tonnes bought, and tonnes would be interchangeable. Buyers need not assess the risk of the selling Party's ultimate compliance. Loss of trading eligibility and repayment requirements provide incentive for compliance.

Downsides: Significant risk of overselling and unremedied excess emissions. Compliance incentives depend on Parties' commitment to participate in the global climate change treaty over the long haul. Loss of trading eligibility and repayment requirements alone may not be sufficient to prevent overselling by a government that seeks a short-term financial bonus.

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Options (3), (4), and (4a) are intended to offer more protection against overselling than "seller bears the risk," and less burden on the trading market than "buyer bears the risk."

(3) Seller bears the risk, percentage cap on sales. In the first year, if a country had net sales greater than, for example, one-fifth of its 5-year allocation, then it could not sell any more, until emissions data came in showing that the country had repaid its deficit through some combination of emission reductions and permit purchases. In the second year, if the country had cumulative net sales greater than two-fifths of its 5-year allocation, the same conditions would apply; and so on for later years. Naturally, shares other than one-fifth, two-fifths, etc. could be used. The first-year share should be well below 100 percent of the five-year allocation, and yet well above any reasonable level of sustainable legitimate emissions sales, including "hot air."

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Downsides: Although caps limit overselling, they do not prevent it. Unclear how these options would work where parties to the Convention devolve emissions permits to firms, as an individual firm's right to sell would depend on whether prior sales by other firms had reached the cap. This option requires detailed data on both spot and forward trades, as well as emissions, data that the central government may not have. Sellers may find ways to game the system.

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Close hold . Pre-decisional draft. For use in international negotiations. JF 8/21/98.

paper on emissions trading rules

Good job overall. But

Suggested insert under " Option (2) Downsides".

Some are concerned that buyer liability might partially and wholly kill the international market. The most definite costs of this would be far higher costs of compliance for the US and other OECD countries. But there is also an argument that it would damage compliance. In a world without effective international trading, a country that is 30% over its target in 2007 is likely to figure that compliance is hopeless, because it is physically impossible to reduce emissions in so short a span of time (much as compliance with the -- admittedly voluntary -- Rio targets in 2000 is so difficult that probably nobody will even bother to complain when countries miss them.) But in a world with effective international trading, a country has no defense against the charge that it can always buy its way out of a shortfall; because compliance is physically possible in such a world, it is more likely that countries will take the agreement seriously actually feel that they have to take correspondingly serious actions.

Option (3) Seller plus cap

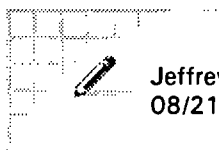
I'd like to raise questions about the passage "This option requires detailed data on both spot and forward trades, as well as emissions, data that the central government may not have. Sellers may find ways to game the system."

Regarding the first sentence, (1) a lot of these data have to be collected anyway, for compliance with or without trading, and (2) this requirement is only there for some country that wants to exceed what would already be grossly large multiple of sustainable sales; it's not there for anybody else.

Regarding the second sentence, we might insert the phrase "though this problem would be worse under option (1)."

Option (4) : Seller plus reserve account

Seems to me the worst of both worlds. It gives less protection against gross seller abuse, while simultaneously hurting legitimate small and moderate sales more.



Jeffrey A. Frankel
08/21/98 10:10:13 AM

Record Type: Record

To: Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com @ INET @ LNGTWY
cc: Alan S. Polasky/CEA/EOP, Joseph E. Aldy/CEA/EOP, Quindi C. Franco/CEA/EOP
bcc:
Subject: A further reaction Re: paper on emissions trading rules 

Suggested insert under "(2) Downsides".

Some are concerned that buyer liability might partially and wholly kill the international market. The most definite costs of this would be far higher costs of compliance for the US and other OECD countries. But there is also an argument that it would damage compliance. In a world without effective international trading, a country that is 30% over its target in 2007 is likely to figure that compliance is hopeless, because it is physically impossible to reduce emissions in so short a span of time (much as compliance with the -- admittedly voluntary -- Rio targets in 2000 is so difficult that probably nobody will even bother to complain when countries miss them.) But in a world with effective international trading, a country has no defense against the charge that it can always buy its way out of a shortfall; because compliance is physically possible in such a world, it is more likely that countries will take the agreement seriously actually feel that they have to take correspondingly serious actions.

JF

Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com



Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com
08/20/98 06:37:00 PM

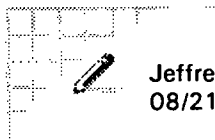
Record Type: Record

To: Dirk Forrister, Jeffrey A. Frankel, T J. Glauthier, James W. Rubin
cc:
Subject: paper on emissions trading rules

Date: 08/20/1998 06:34 pm (Thursday)
From: Ray Squitieri
To: kimble-sandalow
Subject: paper on emissions trading rules

This paper will be the basis for discussion in Friday's meeting. The attachment contains the same paper in Word Perfect format.

Addressing the risk of overselling in international emissions



Jeffrey A. Frankel
08/21/98 09:58:03 AM

Record Type: Record

To: Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com @ INET @ LNGTWY
cc: Alan S. Polasky/CEA/EOP, Joseph E. Aldy/CEA/EOP, Quindi C. Franco/CEA/EOP
bcc:
Subject: Re: paper on emissions trading rules

Ray,

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Regarding the second sentence, you might insert the phrase "though this problem would be worse under option (1)."

See you at the meeting.

JF

Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com



Ray.R.S.Squitieri @ MS01.DO.treas.sprint.com
08/20/98 06:37:00 PM

Record Type: Record

To: Dirk Forrister, Jeffrey A. Frankel, T J. Glauthier, James W. Rubin
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Addressing the risk of overselling in international emissions trading

Issue for Decision: How to address the risk that a party may oversell



CENTER FOR INTERNATIONAL ENVIRONMENTAL LAW

Post-it® Fax Note 7671		Date 8/04	# of pages 5
To David Sondalov		From Don Goldberg	
Co./Dept. CEQ		Co. CIEL	
Phone # 7		Phone # 785 8700	
Fax # 456-2710		Fax # 785 8701	

Options for Responsibility for Non-Compliance Under Kyoto Protocol Emissions Trading

The Kyoto Protocol permits Annex B countries to transfer parts of their assigned amounts to other Annex B countries (Art. 17). An important question is who has ultimate responsibility, the buyer (transferee) or seller (transferor) if the seller has exceeded its assigned amount at the end of the commitment period. This paper identifies several options for assigning responsibility and discusses their pros and cons. It should be noted that the options are not all mutually exclusive, and an optimum responsibility rule might blend several of the approaches discussed below.

PURE SELLER RESPONSIBILITY

Countries can sell an unlimited amount of emission reduction units. The compliance of the seller country is only subject to evaluation at the end of the commitment period. Even if it is found that the seller is out of compliance, the buyer country can use the emission units it has purchased to meet its obligations. Pure seller responsibility relies solely on the relationship between the selling country and the treaty regime to ensure compliance.

Pro

- Simple to administer, since it requires straightforward compliance determination at end of commitment period.
- Stimulates market by eliminating risk to buyer.
- Seller is in best position to determine its own level of implementation and ability to sell.
- All allowances are equal in secondary market.

Con

- The financial benefits received by the seller country for fraudulent emission reduction units may outweigh the consequences of non-compliance.
- The buyer has no incentive to investigate whether or not the seller is experiencing implementation problems because their emission reduction units are guaranteed.
- May place responsibility on Parties with weak economies or limited administrative and enforcement capacity.

SELLER RESPONSIBILITY WITH ESCROW

Seller could be required to escrow some or all of the purchase money until compliance has been determined at the end of the commitment period.

Pro

- Provides ready cash to purchase needed allowances at end of commitment period.

Con

- Seller may need to use purchase money to achieve implementation.
- Does not guarantee allowances will be available for purchase at end of commitment period (note: if allowances are borrowed from subsequent commitment period, Parties may compensate by adopting less stringent targets for that subsequent period).

BUYER RESPONSIBILITY - UNIFORM DISCOUNTING

If at the end of the commitment period, the seller country is found to be out of compliance, all of the emission reduction units that it has sold will be equally discounted to make up overage.

Pro

- Encourages buyer due diligence (investigation of seller).
- The buyer pressures the seller country to implement policies and measure in order to avoid compliance questions.
- Probably places responsibility on stronger Party.
- Unlike LIFO and traffic light approaches (see below), does not encourage early buying rather than reducing domestically.
- All reduction units sold can be discounted to cover seller's "overage."

Con

- With respect to Protocol compliance mechanism, seller is off the hook.
- Does not discriminate between a buyer who exercised due diligence when investigating the seller country and another buyer who purchased emission reduction units when implementation problems were apparent.
- Could reward buyers of bad units by spreading discount across all buyers.
- May inhibit the development of a robust and efficient market if buyers are wary of trusting the seller countries.
- Unnecessary transaction costs may accrue because each buyer country duplicates the evaluation of the seller country.
- Allowances are rated, hence not equal in secondary market.

BUYER RESPONSIBILITY - "LAST-IN, FIRST-OUT"

Under "last-in, first-out" (LIFO) buyer responsibility, the emission reduction units that were sold last are the first to be returned until the amount of units sold reflects the reductions achieved by the seller country. Vintaging of the emission units is necessary to ascertain the order in which they were purchased.

Pro

- Again, the seller must prove that the emission units sold will be equal to the reductions achieved, in order for the buyer to pay the premium price.
- Rewards due diligence of buyer.
- All reduction units sold can be returned to seller to cover "overage."

Con

- Creates incentive to buy emission reduction units early, which may encourage unnecessary buying and discourage domestic action.
- Due diligence does not protect buyer against subsequent excess domestic emissions by seller.
- All allowances not equal in secondary market.

BUYER RESPONSIBILITY WITH INSURANCE

Buyer could be required to purchase insurance to cover possible non-compliance by seller. Insurer would provide required number of allowances or cash equivalent.

Pro

- Could create a reserve of allowances held by insurers to protect against possible seller non-compliance.
- Compliance "true-up" would be automatic.

Con

- Adds transaction cost for buyer (cost of insurance).
- Insurance reserve would soak up some allowances that would otherwise be available to Parties, thereby further increasing difficulty or cost of compliance. However, these may be one-time costs since reserve need be replenished only if used.
- Reliance on private entity insurers may be risky.
- If insurers pay off in cash, there is no guarantee excess allowances will be available to cover overage at end of commitment period.

JOINT BUYER-SELLER RESPONSIBILITY - UNDIFFERENTIATED

After the seller country is found to be in non-compliance, the seller and the buyer must participate in negotiation to assign who should take responsibility. Each Party would be uncertain as to how much risk is associated with the transaction.

Pro

- Can seek remedy from either party or both parties to transaction.

Con

- Ultimate responsibility may be unclear and require negotiation.
- May lead to finger-pointing and delayed resolution of problem.
- No guarantee excess allowances will be available to cover overage at end of commitment period.

JOINT BUYER-SELLER RESPONSIBILITY - DIFFERENTIATED

At end of commitment period, initially, seller is responsible for overage. If seller does not remedy within a certain period of time, responsibility shifts to buyer.

Pro

- Seller may be more likely to comply if it retains some responsibility to COP.

Con

- May make buyers less wary.
- Could delay remedy, since buyer must wait to see if seller remedies.
- No guarantee excess allowances will be available to cover overage at end of commitment period.

BUYER-SELLER HYBRID (TRAFFIC LIGHT)

At the beginning of the commitment period, all countries have a green light to trade emission reduction units. Units traded under the green light are guaranteed to the buyer (seller responsibility). However, if

implementation problems occur, the country must sell under a yellow light (buyer responsibility). The yellow light units will be subject to discounting or LIFO if the seller is in non-compliance at the end of the commitment period. If the implementation problems are not resolved, the red light is switched on and the seller is prohibited from further selling. If, however, the problems are fixed, seller can return to the green light status.

Pro

- Stimulates market by offering buyers "solid gold" (green) reduction units.
- Provides strong incentive to avoid "yellow" reduction units.
- Quick and thorough examination of the sellers by review teams to provide accurate information to the market.
- Highly transparent, since all information developed by review teams would be public.
- Measuring performance against milestones or "burn rates" would provide strong incentive for mid-course corrections.

Con

- Triggering of yellow light by review teams could be politically difficult, and lag time could be excessive. These problems might be avoided by having yellow light be triggered by annual inventories, measured against agreed milestones or burn rates.
- Could provide disincentive to achieve early domestic reductions.

EMISSION REDUCTION RESERVE - NATIONAL

Strictly speaking, not a responsibility option, but a mechanism for ensuring that non-compliance can be remedied. Could work under either buyer or seller responsibility. For each unit traded, one unit must be held in reserve by the selling country. This reserve would be used to cover the selling Party's overage. Any units not needed for this purpose could be sold to other Parties or banked.

Pro

- This mechanism would help ensure that reduction units are available to cover excess emissions, without having to "borrow" from the subsequent budget period.

Con

- Some Parties might regard this as an excessive constraint on trading.
- This approach will not eliminate hot air (see below).

EMISSION REDUCTION RESERVE - INTERNATIONAL

A percentage of each trade would be put into an international reserve. Presumably, this percentage would be smaller than 1 for 1 (e.g. 5-25% of trade). At end of commitment period, reserve would sell units to Parties that are out of compliance. Proceeds could be given to the GEF to finance additional reductions in non-Annex I countries.

Pro

- Would help ensure that reduction units are available to cover excess emissions without having to "borrow" from the subsequent budget period.
- Would offset hot air by obtaining additional reductions through GEF.
- Increase level of domestic reductions by raising cost of international trades.

Con

- Some countries may object to creation of a new international fund.
- May raise WTO issues (but other responsibility mechanisms may also).
- May inhibit development of international trading market.

-- DRAFT --

For Comment Only

Please contact the author with comments and suggestions

**International Emissions Trading and Compliance with
Greenhouse Gas Emissions Limitation Commitments**

Erik Haites
Margaree Consultants Inc.
Toronto, Canada
telephone: 416-369-0900 fax: 416-369-0922

May 1998

SUMMARY

The Kyoto Protocol provides for transfers of "assigned amount" (international emissions trading) among Annex I Parties. The rules for international emissions trading are expected to be adopted by the Conference of the Parties in November 1998.

Purchasers will want to buy "assigned amount" prior to the end of 2012 so that it can be used to help meet their commitments for the 2008-2012 period.

Although Annex I Parties report their emissions annually, actual emissions for the period 2008-2012 will not be known until some time after the end of the period, probably 2014. Thus neither the buyer nor the seller can be certain that the "assigned amount" purchased will be surplus to the seller's compliance requirements at the time of the transaction.

Making sellers responsible for the validity of the "assigned amount" sold simplifies the administration but possibly at the price of increased non-compliance. Holding the proceeds in escrow until compliance is established provides an incentive to comply although with some increase in complexity.

Making buyers responsible for the validity of the "assigned amounts" purchased provides an incentive to comply and hence increases the integrity of emissions trading. If necessary, proposed sales would be disallowed working back in time from the most recent sale until the seller achieves compliance. All earlier transactions are completed.

Buyers will want insurance coverage or a performance bond to ensure that disallowed transactions do not cause them to violate their commitments. The insurance coverage or performance bond must replace the "assigned amount" from a disallowed sale with valid "assigned amount" or equivalent instruments.

A central estimate of the value of "assigned amount" transferred is \$8 billion per year. Coverage would be required for up to seven years, so total exposure for the industry could be up to \$56 billion.

The requirement for insurance or performance bonds exists only if the rules for international emissions trading specify that the buyer is liable for the validity of the "assigned amount" purchased and this is likely to be decided in November 1998.

BACKGROUND

Kyoto Protocol sets out emissions limitation commitments for developed countries (Annex I Parties) for a basket of six greenhouse gases for the period 2008-2012. To help them meet their commitments, the Kyoto Protocol allows transfers of "assigned amount" among Annex I Parties. This is called international emissions trading.

The rules for international emissions trading will be adopted by the Conference of the Parties, probably at COP 4 in November 1998.

Purchasers will want to buy "assigned amount" prior to the end of 2012 so they can use this additional "assigned amount" to help them meet their commitments for the 2008-2012 period.

All Annex I Parties report their emissions annually. But actual emissions for the period 2008-2012 will not be known until after the end of the period, probably 2014. This means that neither the buyer nor the seller can be certain that the "assigned amount" purchased will be surplus to the seller's compliance requirements at the time of the transaction.

Thus the rules for international emissions trading must deal with situations where a buyer has purchased "assigned amount" from a seller that does not meet its emissions limitation commitments. There are two basic options: the seller or the buyer is responsible for the validity of the assigned amount.

SELLER RESPONSIBILITY

If the seller is responsible, the buyer can use the "assigned amount" to help meet its commitments regardless of whether the seller achieves compliance. If the seller meets its commitments, the trade does not create any problems. If the seller does not meet its commitments, the seller incurs the penalties for non-compliance. Administratively making the seller accountable is simple because transactions are final.

A system of seller responsibility relies on the penalties for non-compliance to ensure that they do not sell more than their surplus "assigned amounts". Emissions trading gives "assigned amount" a market value and so creates an incentive that does not exist otherwise to sell "assigned amount". Since the penalties for non-compliance in international agreements are typically quite weak and/or difficult to enforce, the financial incentive to sell may exceed the expected penalty for non-compliance.

A financial incentive to comply can be created by requiring that the proceeds from sales of "assigned amounts" be held in escrow until compliance is established. If all of the "assigned amount" sold is found to be surplus when compliance for the commitment period is established, the funds are disbursed to the country. If some of the "assigned amount" sold is needed to achieve compliance, the quantities not owned by the national government are reduced proportionally and the owners receive a share of the funds in the escrow account.

Holding the proceeds in escrow creates a financial incentive for sellers to meet their commitments. However, buyers planning to use purchased "assigned amount" to achieve compliance might find themselves in non-compliance because the amounts they purchased had been reduced. However, the rules could allow buyers a few extra months to purchase additional "assigned amount" or equivalent instruments to come into compliance.

Operation of the escrow accounts is discussed in the next section.

Escrow Accounts

An escrow account is established for each Annex I Party at a suitable financial institution; for example, the International Monetary Fund, the Bank of England or a commercial bank.¹ A condition of registration of the transfer of "assigned amount" by the Climate Change Secretariat would be documentation that the proceeds had been deposited into the escrow account. Interest would be paid on account balances. Funds would be disbursed once compliance for the commitment period is established.

In principle sellers receive no money from the sale of "assigned amount" until after the end of the commitment period when compliance is established. In practice sellers could borrow from other financial institutions using the escrow account balance as security.² Lenders would probably be willing to advance only a small share of the balance initially because future emissions and sales could cause non-compliance.³ But the share could rise over the course of the commitment period as actual emissions are reported and the prospects for compliance become clearer.

"Assigned amount" could be resold. The proceeds from a resale go to the seller (which is not the original Annex I Party seller), not into the escrow account. Only the proceeds from the original sale go into the escrow account.

Annual reports of actual emissions and information on sales and purchases of "assigned amount" provide potential buyers and lenders with information on the prospects for compliance. Since the prospects differ from country to country and over time, the market price of "assigned amount" would differ by country of origin and fluctuate over time. Annual reports submitted on time and well received by the expert review teams will strengthen the market price for a country's "assigned amount".

A country will want to keep the market price for its "assigned amount" as high as possible because this will affect the revenue it receives from future sales. Since compliance with reporting and other commitments strengthens the market price for a Party's "assigned amount" sellers have an incentive to comply with their Protocol commitments.

When compliance is established after the end of the commitment period the funds in the escrow account are disbursed. If all of the "assigned amount" sold is found to be surplus to the Party's needs, the funds are disbursed to the secured lenders and the national government.

If some of the "assigned amount" sold is needed to achieve compliance, the quantities not owned by the national government are reduced proportionally. For example, if when establishing compliance it is determined that a Party has a surplus of 800,000 tonnes of "assigned amount" and it has sold 1,000,000 tonnes, each of the units sold is reduced to 0.8 tonne of "assigned amount".⁴ This brings the seller Party into compliance.

As compensation for the reduction in their holdings of "assigned amount" the owners of record on the specified date receive a share of the funds in the escrow account.⁵ The compensation could be the greater of: (1) a proportional share of the funds in the escrow account, and (2) the cost of purchasing an equivalent quantity of valid "assigned amount" on the market. In the case of the above example, it would be the greater of 20% of the balance of the escrow account and the cost of purchasing 200,000 tonnes of valid "assigned amount".

Owners of devalued "assigned amount" would have first call on the funds in the escrow account. Secured lenders would rank second. The balance would be paid to the national government.

Buyers planning to use purchased "assigned amount" to achieve compliance might find themselves in non-compliance because the amounts they purchased had been reduced. The rules could be drafted to allow buyers a few extra months to purchase additional "assigned amount" or equivalent instruments to come into compliance.

BUYER RESPONSIBILITY

If the buyer is responsible, it must decide whether the seller is likely to comply with its commitments before purchasing the "assigned amount". If the buyer agrees to purchase "assigned amount" and the seller later needs this "assigned amount" to achieve compliance, the sale will not be consummated.⁶ If the buyer was relying on the purchased "assigned amount" to achieve compliance, failure to consummate the transaction means the buyer will not comply with its commitments.

Buyers can protect themselves by insisting on insurance or performance bonds to replace the "assigned amount" from a transaction that is subsequently disallowed with valid

"assigned amount" or equivalent instruments. The cost of the insurance or performance bond will rise with the risk of non-compliance and, at some point, coverage will not be available and the seller will be unable to export any more "assigned amount".

Since Parties report their actual emissions annually, companies can update their assessment of the probability of compliance with the cumulative budget each year.⁷ Parties will also have an incentive to register transactions quickly. Thus companies will be able to adjust the premium for each Party to reflect the risk of non-compliance at the time of the transaction.

The market price will set a price for one tonne of CO₂ equivalent of valid "assigned amount" or "certified emissions reductions" from the Clean Development Mechanism. Since the price covers a tonne of valid "assigned amount" the cost of the insurance or performance bond lowers the revenue from the sale of the "assigned amount". Thus, the cost of the insurance or performance bond creates an economic incentive for sellers to comply with their international commitments.

As a result of the economic incentive for sellers to remain in compliance, the number of transactions invalidated is likely to be relatively small.⁸

Two conditions must be met to enable this approach to work effectively:

- Transactions must be invalidated in reverse chronological order until the seller achieves compliance;⁹ and
- The insurance or performance bond must be transferable and remain in effect until the seller's compliance (or non-compliance) is established.

These conditions are discussed in the next section.

Characteristics of the Insurance Coverage/Performance Bond

Transactions must be invalidated in reverse chronological order until the seller achieves compliance. This is important for three reasons. First, disallowing transactions in reverse order minimizes the number of transactions affected. Second, it creates an incentive to register transactions quickly because earlier sales have a lower probability of disallowance than later deals. Since transactions are registered quickly companies will have accurate current information about the seller's commitments when calculating the premium for a proposed sale.

Third, it does not change the risk of default from what it was at the time of the transaction. If all transactions were reduced proportionally to bring the seller into compliance, the risk associated with an early transaction would be affected by subsequent sales. It would be very difficult to establish premiums because later sales would increase

the risk of disallowance. Invalidating transactions in reverse chronological order means that the risk associated with a proposed sale is not affected by subsequent sales.

The insurance or performance bond must be transferable and remain in effect until the seller's compliance (or non-compliance) is established. Assuming non-government entities can engage in emissions trading, once a quantity of "assigned amount" enters the market it could be resold many times. The insurance coverage or performance bond for the initial transaction should remain in effect, regardless of the number of times the "assigned amount" is resold, until the seller achieves compliance after the end of the commitment period. Since transactions are invalidated in reverse chronological order and depend only on the performance of the seller, the risk does not change with resale.

The insurance coverage or performance bond may need to remain in effect for up to seven years. The commitment period runs from 2008 through 2012 and it will likely be two years later before actual emissions are reported and compliance can be established. Thus a transaction initiated early in 2008 could require coverage for about seven years.¹⁰ But a transaction initiated in 2012 would only require coverage for two years. On average coverage might be required for about five years.

Buyers will want to use the "assigned amount" purchased to achieve compliance. Ideally, the insurance or a performance bond should provide valid "assigned amounts" to replace those from a purchase that is subsequently disallowed. Financial compensation for the value of the disallowed sale will not bring the buyer into compliance. However, financial compensation would be acceptable if the rules allowed buyers whose transactions had been invalidated extra time to comply, as would be the case with escrow accounts.

Valid "assigned amount" can be acquired in any of the following ways: purchasing valid "assigned amount" from Parties in compliance with their commitments, purchasing "certified emission reductions" through the Clean Development Mechanism, or purchasing valid domestic allowances or credits of the importing country to replace the imported "assigned amount". In future commitment periods, companies could purchase "assigned amount" banked from a previous period.

Magnitude of the Exposure

The amount of "assigned amount" transferred and the market price can not be accurately predicted at this time. However, rough estimates suggest that the value of "assigned amount" transferred could range between \$1 and \$16 billion per year; say \$8 billion per year as a central estimate.¹¹ Over the five years from 2008 through 2012 the total amount of "assigned amount" transferred would be five times as large, for a central estimate of \$40 billion.

This is an estimate of the value of transfers for which insurance or performance bonds is required. The total value of trades could be much higher, but the insurance or performance bond is assumed to remain in effect and to be transferred when "assigned amount" is resold.

Although the commitment period is five years, it will probably be two years after the end of the period before it is possible to establish compliance for all sellers. Transactions for the second commitment period would take place during this period. Thus the total exposure for the companies providing insurance coverage and performance bonds is more likely to be the equivalent of seven years of sales -- \$56 billion.

Financial institutions providing insurance or performance bonds could reduce their exposure by purchasing futures or options for "assigned amount". The International Petroleum Exchange has announced that it proposes to launch a CO₂ emissions futures contract as soon as a primary market has been established.¹² The Clean Development Mechanism can begin to certify emissions reductions created by projects in developing countries beginning in 2000. Certified emissions reductions can be used by Annex I Parties in exactly the same way as assigned amount, so a primary market and futures trading could be established before 2008.

Further Research

Further research is needed to confirm that insurance coverage or performance bonds with the required features would be considered an attractive product by a number of firms. A number of firms would need to offer these products to ensure that premiums are competitive.

Further research is also needed to confirm that the total exposure is manageable for the firms involved, or to identify ways to reduce the total exposure.

Unfortunately, this work needs to be completed before November 1998 otherwise the Conference of the Parties may adopt rules for international emissions trading that reflect seller liability. That option is administratively simpler and does not involve insurance or performance bonds.

Notes

¹ For convenience, each Party would have a single account for each commitment period. Ideally, all accounts would be held by the same institution.

² The financial institution holding the escrow accounts should not be eligible to lend funds to Parties using those accounts as security.

³ A seller might be tempted to negotiate sales that lead to immediate payment. For example, if the market price for "assigned amount" is \$5 per tonne, the seller might suggest that \$1 per tonne be deposited in the escrow account and that the buyer pay the seller \$3 per tonne directly to get immediate payment. The total price would need to be less than the market price since the risk to the buyer is higher because there is less money in the escrow account to compensate for any reduction in the quantity of "assigned amount" held. A buyer might be more willing to do this later in the period if there is already a large balance in the escrow account, but then the immediate payment is less attractive for the seller since it could probably borrow more against the balance in the escrow account. In any case, a sale at an unusually low price would probably be

interpreted as a signal that compliance was unlikely. That would reduce the market price, limit additional sales, and limit the ability to borrow against the escrow account. Thus, circumvention of the escrow account is unlikely to be a major problem.

- ⁴ Conceptually it is possible to invalidate transactions in reverse chronological order or to adjust the holdings in proportion to the price paid, rather than to adjust the quantity held proportionally. Those approaches would create a different market price for the "assigned amount" sold in each transaction. A proportional reduction of the quantity creates a single market price for the "assigned amount" of a given country. Although prices will differ by country, this is a much simpler situation than one where market prices differ by country and transaction.
- ⁵ The registered owners of "assigned amount" as of a specified date would be the ones to have their holdings adjusted and receive compensation. This date should be known well in advance. This is equivalent to the payment of dividends on common shares to owners of record as of a specified date.
- ⁶ This could be implemented as follows. The Climate Change Secretariat would not make the transfer of "assigned amount" associated with any trade until after the end of the commitment period. Then it would implement the transactions in chronological order and invalidate transactions in reverse chronological order if necessary to bring the seller into compliance.
- ⁷ Since companies will rely on annual reports, which include emissions inventories, to establish their premiums, Parties have an incentive to submit high quality reports on time.
- ⁸ If the companies do their job well relatively few transactions will be affected because sales become financially unattractive as the risk of non-compliance, and eventual disallowance, rises.
- ⁹ If all transactions are disallowed and the Party is still not in compliance, then it would be subject to the penalties for non-compliance. But emissions trading has not contributed to the non-compliance.
- ¹⁰ Although the rules for international emissions trading remain to be agreed, they may well allow provisional transactions prior to 2008. In that case, the period for which insurance coverage would be required is correspondingly extended. But the costs of obtaining coverage for such a long period of time may discourage early transactions.
- ¹¹ International Energy Agency, *World Energy Prospects to 2020*, G8 Energy ministers' Meeting, Moscow, 31 March 1998, Table 3, p. 24, shows energy-related CO₂ emissions for groups of Annex I countries for 1990 and for "business as usual" in 2010. The reduction from BAU emissions required to meet the Kyoto commitment in Annex I countries other than transition economies is shown as 3,803 million tonnes of CO₂. Assume that the supplementarity provision limits the amount of "assigned amount" these countries can purchase to half of the total reduction, say 1,900 million tonnes of CO₂. The projected BAU emissions for transitional economies in 2010 are 3,769 million tonnes of CO₂, which is 657 million tonnes below 1990 levels. Thus, these countries should be able to sell at least 650 million tonnes of "assigned amount". Implementing energy efficiency measures to reduce demand by 25% in 2010 would make another 950 million tonnes of "assigned amount" available. Thus, the supply of "assigned amount" is probably between 650 and 1,600 million tonnes of CO₂ while the demand could be as high as 1,900 million tonnes of CO₂. Prices currently range from less than \$1 to about \$3 per tonne of CO₂. The U.S. Council of Economic Advisors has estimated the price to be between \$18 and \$23 per tonne of carbon -- about \$5 per tonne of CO₂ -- assuming international emissions trading. Using a range of \$1 to \$10 per tonne of CO₂, the value of "assigned amount" transferred could range from \$0.65 to \$19 billion per year. Consider a "central" price estimate of \$5 per tonne, if the quantity traded ranged between 650 and 1,900 million tonnes the value would be between \$3.25 and \$9.50 billion. Consider a "central" estimate of 1,600 million tonnes traded, if

the price ranged between \$1 and \$10 per tonne the value would be between \$1.6 and \$16.0 billion. A central value for these ranges is approximately \$8 billion per year.

¹² International Petroleum Exchange, *A Proposal to reduce CO2 Emissions in the European Union through the Introduction of an Emissions Trading Programme*, May 1998, p. 9.