NATSOURCE

Review and Analysis of the Emerging International Greenhouse Gas Market

Executive Summary

This document is the public executive summary of a confidential report prepared for the World Bank Prototype Carbon Fund.

Executive Summary

Though few governments have imposed binding restrictions on greenhouse gas (GHG) emissions, many companies have already begun exploring the benefits and challenges of GHG trading. To date, no comprehensive record of GHG emissions trades had been assembled, nor had any systematic analysis of these trades been conducted. The World Bank commissioned this first-of-its-kind report to fill these gaps. The report's findings are meant to inform the Bank's decisions concerning the Prototype Carbon Fund and educate a wider audience about the emergence of the GHG market.

Analysis of trends in these transactions and projects yields the following key conclusions:

- **Volume:** Approximately 60 inter-company transactions are known to have occurred, involving roughly 55 million tons of carbon dioxide equivalent (CO2E) emissions reductions. Most of these known trades have occurred between buyers and sellers located in Annex B countries. Since market participants are not required to report transactions, the actual size of the market is probably greater. Intra-company trades such as those in BP's and Shell's internal emissions trading systems are not included in these figures.

- **Tradable Commodity:** Most transactions have involved Verified Emissions Reductions (VERs) that were or will be audited by a 3rd party such as an engineering or accounting firm. VERs carry only a possibility of future government recognition as "credits." Buyer interest is shifting to government-issued emissions *permits*, since these are regarded as a superior instrument for hedging regulatory risk. This is because they carry government recognition in at least one jurisdiction and may well be transferable to other jurisdictions. Examples of these compliance instruments include Emissions Reduction Units (ERUs) such as those recently purchased by the Dutch government and allowances from domestic markets such as those in the UK and Denmark.

- **Price:** Nominal prices for VERs have ranged between $.60 and $3.00 per ton CO2E since trading began in 1996-7. Changes in price over time are more attributable to differences in the terms of each transaction than to shifts in supply and demand. VERs that stand a high probability of earning government certification fetch a higher price than VERs unlikely to earn certification. Seller creditworthiness appears to be a strong determinant of price for VER sales for future delivery; creditworthiness is in part a proxy for quality of the emissions reductions, since many sellers provide some degree of guarantee that the VERs will be acceptable by regulatory authorities. Prices for permits such as ERUs and UK allowances are substantially higher, reflecting permits' superior hedging value (see Table 1 on the next page containing GHG prices in US$ per ton CO2E differentiated by commodity type and vintage).

- **Participant Motivations:** Buyers are driven by the desire to demonstrate leadership in addressing climate change by supporting climate-friendly activities before they are legally required to do so. Buyers also use pre-compliance trading as a way of reducing exposure to the potentially high costs associated with future binding emissions restrictions. They are also motivated by competitive concerns. Sellers generally seek to improve their returns from emissions reducing projects by generating new revenue and reducing borrowing costs. Both buyers and sellers seek first-hand experience with the practice of emissions trading.

- **Transaction Structures:** The majority of transactions have been for outright purchases of emissions reductions. Between a quarter and half of transactions have involved financial derivatives such as call options based on future emissions reductions, which offer buyers a cheap

means of hedging risk. Many transactions have involved streams of reductions generated over several years. These streams include combinations of historical and future reductions.

Table 1. GHG Prices by Commodity Type, Vintage

Commodity Type	Vintage Year	Price per ton CO2E (US$)
VERs		
Annex B VERs	1991-2007	$0.60-$1.50
Annex B VERs	2008-2012	$1.65-$3.00
CDM VERs	2000-2001	$1.75-$3.00
Compliance Tools		
Dutch ERUs	2008-2012	$4.40-$7.99
Danish allowances - Mid market bid - offer	average 2001-2003	$3.78
European ERUs - Indicative Bids	2008-2012	$7.00-$12.00
Australian Early Action AAUs - Indicative Offers	2008-2012	$6.00-$12.00
UK permits - Mid-market bid-offer	2003	$8.46
BP internal allowances - Pilot phase	1999	$10.00-$25.00
BP internal allowances - Full-scale internal trading	2000-2001	$0.50-$25.00

Data updated on July 1 2001.

- **Liability:** Buyers and sellers typically share liability for non-performance and non-usability of reductions. In many transactions to date, sellers have agreed that if they cannot deliver reductions that will be usable against the buyer's future compliance requirement, they will return the sale revenue plus a penalty to the buyer. Greater assumption of liability by sellers allows them to command somewhat higher prices per ton.

- **Baselines and Monitoring:** With almost no governments having yet established guidelines for setting baselines and monitoring emissions, sellers have been free to define these for themselves needing only to satisfy potential buyers of their quality. As all reductions sold in the market to date have related to specific projects rather than company-wide actions, baselines too have been project-specific. Sellers typically choose a single base year in the past as far back as 1990.

- **Gases:** Almost all trades have involved reductions of carbon dioxide (CO2) and methane (CH4), probably because of these gases' important contribution to climate change and because monitoring methodologies for other GHGs are not perceived as adequately accurate.

- **Ownership:** Buyers typically require some proof that sellers own and are authorized to transfer rights to emissions reductions. Demonstrating ownership has been an impediment for some emissions reduction activities such as renewable energy and demand side management projects when their owners do not also own the fossil-fired generating facilities whose emissions are offset by the project activities.

- **Types of Reduction Activities:** Buyers generally prefer reductions generated by activities that they expect to be approved for certification in the future and for which monitoring and demonstration of ownership are fairly straightforward. Popular activities have included fugitive gas capture from landfills, fuel switching, and co-generation.

- **Geography:** Most transactions have been between companies located in developed countries, though some have been between developing country sellers and developed country buyers. AIJ projects are split almost equally between developed and developing country locations.

- **Host country recognition:** Formal host country approval is expected to be a requirement for earning credits from international project-based reductions. Therefore buyers typically prefer to acquire reductions from projects that already have host country recognition or a strong prospect thereof.

Interest in GHG emissions trading has grown steadily since the market's first trades. As more domestic emissions trading markets emerge, along with other opportunities for trading government-recognized emissions permits, the market's growth looks set to continue despite continuing uncertainty surrounding international climate change policy.

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