

Opportunities in the Emerging Carbon Trading Markets

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QualityTons

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Presentation

- Voluntary vs. Compliance Markets
- VERs, CERs and Market Trends
- How to generate and sell an offset
- Who is buying, why and for how much?
- Emerging regulatory markets in the US
- Implications for SF6 Partners



Overall Carbon Market

- 1. Kyoto Market
- 2. Voluntary and Retail Market
- The value of the global aggregated carbon markets was \$10 billion in 2005.
- In the first quarter of 2006, overall transactions worth \$7.5 billion
- Some predict this new financial market will be worth \$25-30 billion in 2006



Key Markets

- EU Trading System
- Offset credits generated in developing world (CDM/JI)
- Voluntary Markets, CCX, NS Wales
- Two types of transactions
 - allowance-based transactions (cap and trade)
 - project-based (offsets)



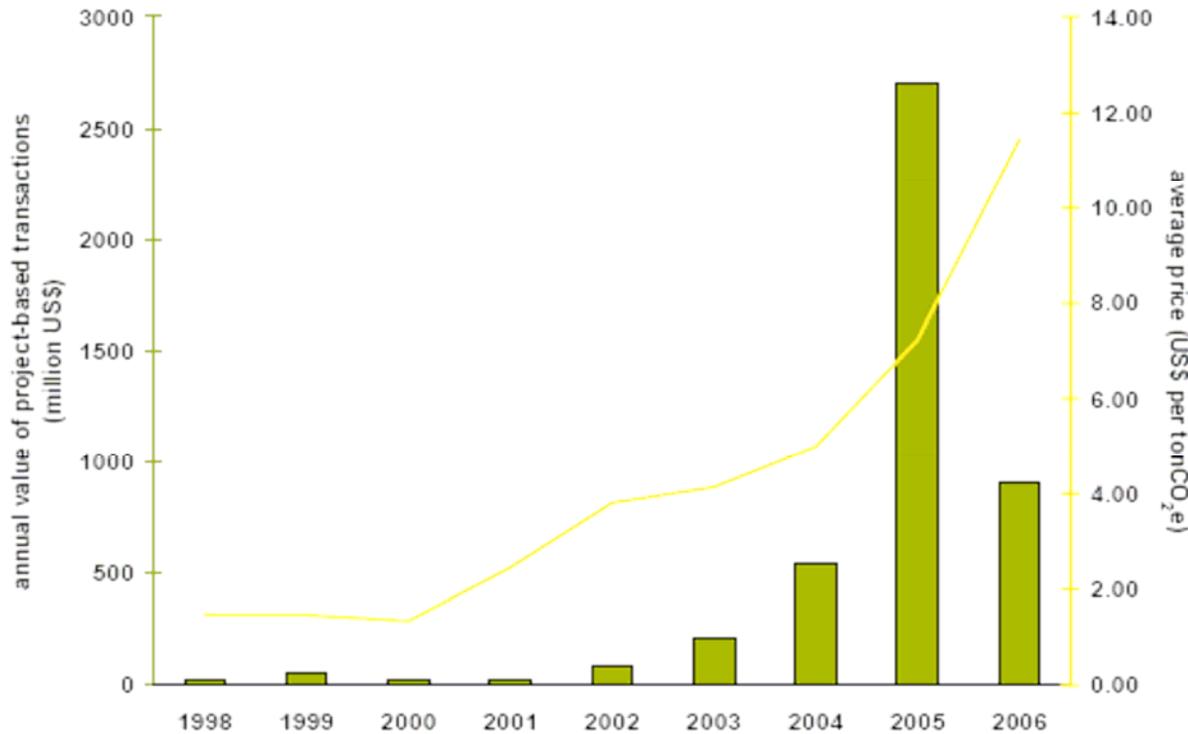


Figure 3: Annual volumes (million tCO₂e) of project-based emission reductions transactions (up to 2012 vintages) and annual average price in US\$ per tCO₂

Source for this and next slides: IETA and World Bank

Compliance Market (Kyoto) is the Motivator

Table 2: Volumes Exchanged and Number of Transactions per Market Segment

	Total Project-Based Transactions	Compliance	Voluntary	Retail*
1998	17,976,538	0	17,907,448	69,090
1999	35,423,491	0	35,265,724	157,767
2000	17,094,425	387,933	16,507,407	199,085
2001	13,004,103	4,724,591	8,161,652	117,860
2002	28,776,967	14,676,748	13,893,209	207,010
2003	77,641,815	70,429,780	6,773,367	438,669
2004	107,010,089	104,600,758	2,299,050	110,281
2005 (Jan.-April)	42,863,095	39,823,182	2,995,000	44,913
Total	339,790,524	234,642,992	103,802,856	1,344,675

Note: All volumes are for vintages up to 2012 only. Data for retail incomplete.

Notice growth from '04 to '05

Compliance Market (con't)

- EUAs worth \$8.2 billion traded in 2005 -- 322 million tCO₂e. 40x increase over the previous years' volumes.
- In 2005, 374 million tCO₂e CERs were transacted valued at \$2.7 billion; average price was \$7.23.
- Increase of 300% from past year in terms of volume and 500% increase in value.
- 1st Quarter 2006 – average price shot up to \$11.45 per tCO₂e
- 1st Quarter 2006 – 79 million tons transacted, worth \$900 million.

Voluntary Markets

- According to the World Bank's, 6.05 million tons of voluntary emissions reductions were traded in 2005, worth approximately \$43 million.
- Volume was 200% higher than in 2004, the value increased 700%.
- Criteria for additionality, vintages, acceptability of old vintages, prices and contract terms vary significantly.
- **Not a standardized commodity**
- Prices can range from \$1.75 to \$4.50 per ton



Motivations

- Many US companies doing voluntary efforts to reduce GHG emissions are turning to emissions trading to reduce their overall GHG emissions profile.
- Tradable units are Verified Emission Reductions (VERs) and have been trading since 1999.
- **Internal corporate GHG commitments**
- **Desires to be “carbon neutral”**
- **Possible early-action compliance under future regulatory regimes in the US.**
- **Speculators looking to get cheap tons that might be sold as offsets under a reg. regime**



Chicago Climate Exchange

- North America's only voluntary, legally binding GHG reduction system.
- How it Works: voluntary, but if you join, must reduce 1% per year from baseline
- Members can trade allowances
- Offsets Eligibility – if you're a large direct emitter, you need to join.
- SF6 reductions would have to be brought to the Offsets Committee



CCX Prices

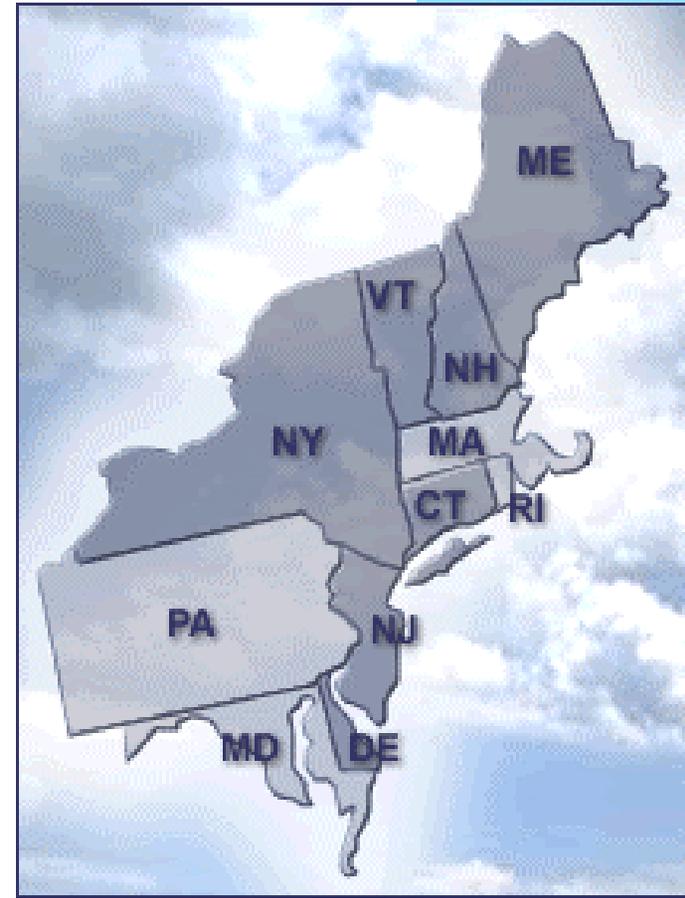
	Price	Change
Vintage 2003	\$4.20	0.10
Vintage 2004	\$4.15	0.15
Vintage 2005	\$4.25	0.15
Vintage 2006	\$4.15	0.10
Vintage 2007	\$4.15	0.05
Vintage 2008	\$4.15	0.10
Vintage 2009	\$4.10	0.10
Vintage 2010	\$4.10	0.10



Emerging Regulatory Programs

RGGI in the Northeast

- CO2 allowances
- Starts in 2009
- Eligible offsets include reduction in SF6 emissions
- Offsets can be anywhere as long as reg. agency in both states agree on offset standards



RGGI Method

$$\text{Emissions (tons CO}_2\text{e)} = [(V_{\text{iby}} - V_{\text{iey}}) + (PA_{\text{psd}} + PA_{\text{e}} + PA_{\text{rre}}) - (SD_{\text{op}} + SD_{\text{rs}} + SD_{\text{df}} + SD_{\text{sor}}) - (CNP_{\text{ne}} - CNP_{\text{rse}})] \times \text{GWP}/2000$$

where (all SF₆ values in lbs.):

V_{iby} = SF₆ inventory in cylinders, gas carts, and other storage containers (not SF₆-containing operating equipment) at the beginning of the reporting year

V_{iey} = SF₆ inventory in cylinders, gas carts, and other storage containers (not SF₆-containing operating equipment) at the end of the reporting year

PA_{psd} = SF₆ purchased from suppliers or distributors in cylinders

PA_{e} = SF₆ provided by equipment manufacturers with or inside SF₆-containing operating equipment

PA_{rre} = SF₆ returned to the reporting entity after off-site recycling

RGGI Method (Con't)

SD_{op} = Sales of SF₆ to other parties, including gas left in SF₆-containing operating equipment that is sold

SD_{rs} = Returns of SF₆ to supplier (producer or distributor)

SD_{df} = SF₆ sent to destruction facilities

SD_{sor} = SF₆ sent off-site for recycling

CNP_{ne} = Total SF₆ nameplate capacity of new SF₆-containing operating equipment at proper full charge

CNP_{rse} = Total SF₆ nameplate capacity of retired or sold SF₆-containing operating equipment at proper full charge

GWP = CO₂e global warming potential of SF₆ (22,200)

ER's = Emissions in Baseline Year – Emissions in Project Year * 22,200

Other States

- California just approved cap and trade system; offsets eligibility not yet spelled out
- Other states exploring about GHG reduction programs:
 - North Carolina
 - New Mexico
 - Oregon
 - Arizona
 - Colorado



How Can Credits Be Sold

- Baseline determination
- Monitoring protocol
- Annual Verification – 3rd Party
- Entering into a Contract
- ****Credibility: Vintage and “Additionality”** – something beyond what is going on anyway. This is important.



Considerations

- Price
- Number of years to sell
- Credibility of offsets
- Contract risks – non-delivery?
- Could offsets be even more valuable when regulatory regimes are established?
- Some people buy at \$2.50 and sell at \$5.50 – is there a middle-man?



Example of One Buyer

- What is buyer looking for?
- 100,000 TCO₂eq/year minimum
- Link to CDM Methodologies as way to enhance credibility
- Price?
- Can start as of 1/1/2000, but future VERs are better
- No geographic limitations
- Seller must have clear title



Implications for SF6 Partners

You can monetize credits, but ...

- It takes commitment
- Need to be precise about baseline and monitoring methodology
- Need to undertake and pay for verification
- Need to understand contracts and who the buyer is
- Need to understand that there is some skepticism in the market, which a seller should want to avoid
- The market is clearly going to grow with regulatory frameworks developing, but many of the criteria are not yet set.
- New projects vs. on-going or already implemented projects



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