

Greenhouse Gas Management

An Analysis of the European Union GHG Emissions Trading Scheme (EU ETS) – What the future holds in store for the U.S.

2008 A&WMA Environmental Conference



PROVIDENCE

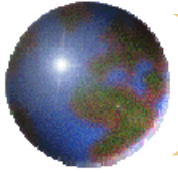
Charlie Van Hoof

for

Nimish Katwala

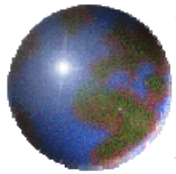
Providence Engineering & Environmental Group LLC

November 18, 2008



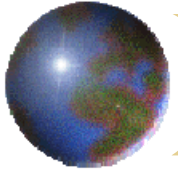
The EU ETS

- World's largest GHG emissions trading scheme
 - Multi-sector
 - Multi-national
 - ~12,000 facilities
 - 50% of EU's total CO₂ emissions
 - 40% of EU GHG emissions



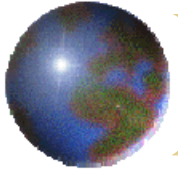
Comparison with Other Programs

	EU ETS	MECT	HECT	U.S. Acid Rain Program	U.S. OTC
Sectors	Multiple	Electric Power, Industrial Combustion	Multiple	Electric Power	Electric Power, Industrial Combustion
Regulated Sources	~12,000	<500	<200	~3000	~2400
Regulated Pollutants	All GHGs	NO _x	HRVOCs	SO ₂	NO _x
Political Jurisdiction	30 (EU Countries)	1 (HGA NAA)	1 (HGA NAA)	1 (U.S. Federal)	22 (US States)
Project Offsets	Yes	No	No	No	No
Estimated Value of Annual Allocation	\$37 Billion	<\$1 Billion	< \$1 Billion	\$2.25 Billion	\$1.2 Billion



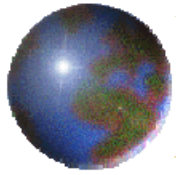
History & Basics

- ❖ 8% reductions required by Kyoto
- ❖ 2.3% achieved by 2000
- ❖ EU ETS designed to achieve Kyoto targets
- ❖ October 13, 2003 – Directive 2003/87/EC promulgated by the EU Commission



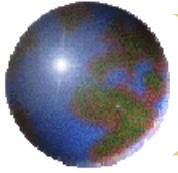
Key Provisions

- List of Industrial Sectors
- GHG permitting system
- Criteria for National Allocation Plans (NAP)
- Methodology for Allocations, Issuance, Validation, and Verification
- Guidelines for Monitoring and Reporting
- Community Independent Transaction Log
- Penalties and Enforcement Mechanism
- Reporting Requirements for Member Countries



Phases

- Phase I – Jan 1, 2005 – Dec 31, 2007
 - Learning Phase
- Phase II – Jan 1, 2008 – December 31, 2012
 - Kyoto Commitment Period
 - 8% Reduction Target compared to 1990 levels
- Phase III – Jan 1, 2013 – December 31, 2020
 - Future Phase
 - 20% Reduction Target compared to 1990 levels



Industries

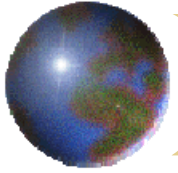
☀ Phase I and Phase II

☒ Energy Activities

- Combustion with thermal output > 20 MW (excluding hazardous waste or municipal waste installations)
- Mineral Oil Refineries
- Coke Ovens

☒ Production and Processing of Ferrous Metals

- Metal Ore
- Iron and Steel



Industries

☉ Phase I and Phase II

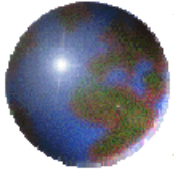
☐ Mineral Industry

- Cement
- Lime
- Glass and Glass Fiber
- Ceramic Products

☐ Pulp and Paper

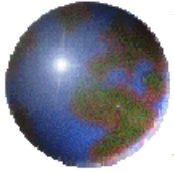
☉ Phase III

- ☐ Ammonia Production
- ☐ Aluminum Production

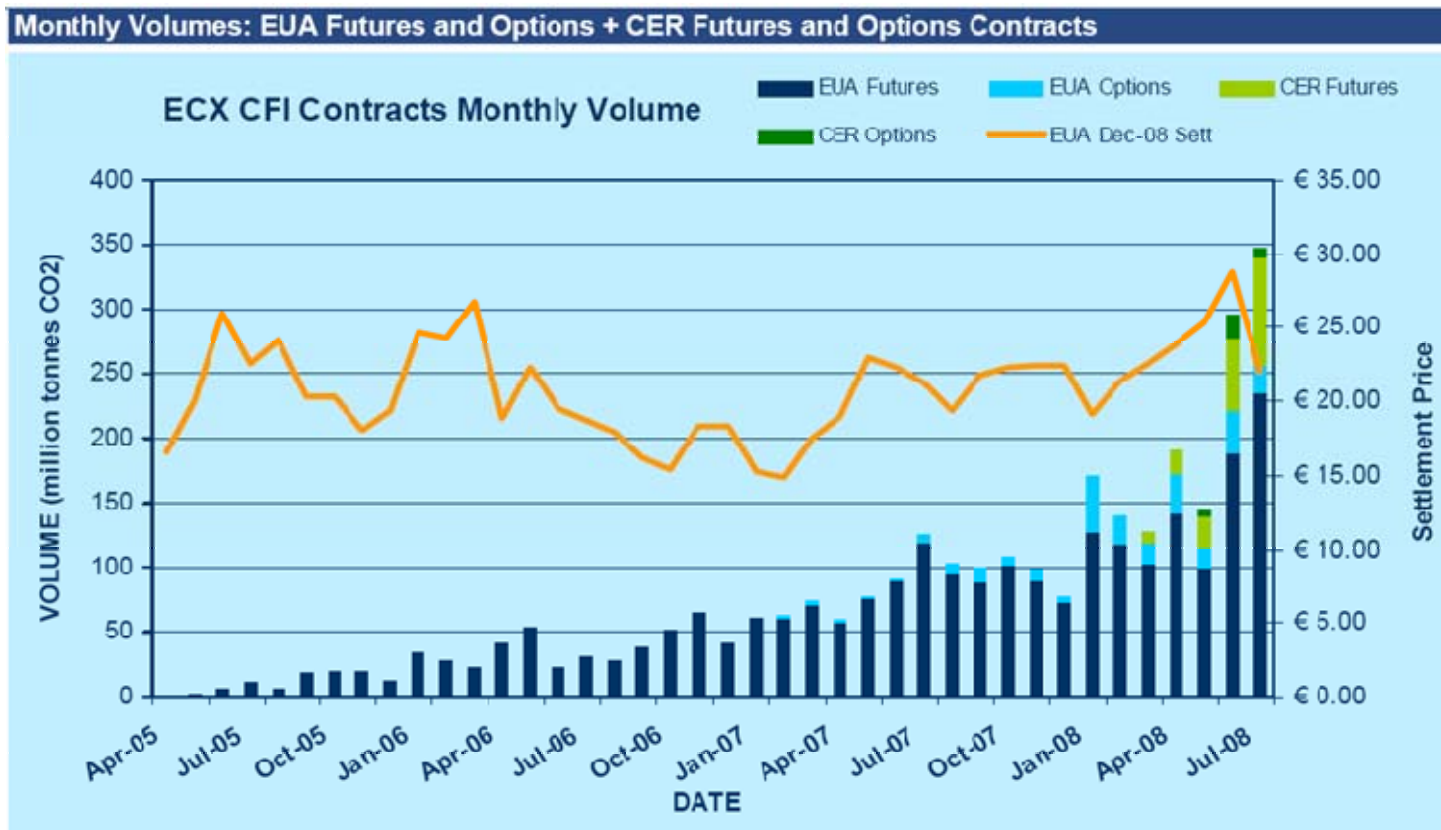


Trading Mechanism

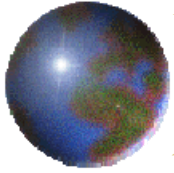
- National Allocation Plans (NAPs) to determine allowance allocations
- Allowance allocated to member countries and individual facilities therein
- Trading within a company and across national borders
- Use of brokerage firms and climate exchanges
- Kyoto Certified Emission Reduction (CER) unit accepted
- Linking with UN system currently in the works
- Registry – Community Independent Transaction Log



European Climate Exchange

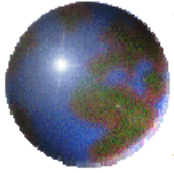


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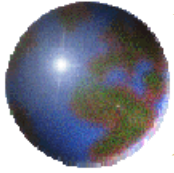
National Allocation Plans (NAPs)

- NAPs to be proposed by individual member countries and approved by the EU Commission
- Criteria for NAPS
 - NAPs must comply with Kyoto targets
 - Must take into account economic growth
 - Shall not unduly favor a company or industrial sector
 - Provisions for New Entrants
 - Provisions for credit for early actions and clean technology
 - Provisions for public comments
 - Allocations for individual facilities
 - Provisions to account for outside EU competition



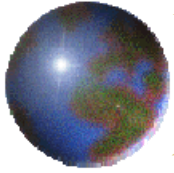
Allocations

- Allocations deposited in facility account by Feb 28
- Phase I
 - At least 95% of allocations free of charge
 - Balance to be auctioned
- Phase II
 - At least 90% of allocations free of charge
 - Balance to be auctioned
- Phase III
 - Expected 60% allocations to be auctioned based on lessons learned in first two phases



Compliance & Penalties

- Compliance is measured annually
- April 30 - Surrender allowances equal to total verified emissions for prior calendar year
- Banking and Borrowing is allowed
- Penalties
 - Phase I – EUR 40 (USD 60.08) per tonne of CO₂e
 - Phase II – EUR 100 (USD 150.20) per tonne of CO₂e
 - Surrender allowances equal to excess emissions in following calendar year



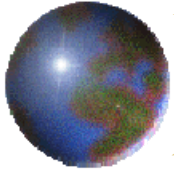
Monitoring & Reporting

☀ Measurement or Calculation

Emissions = Activity Data x Emission Factor x Oxidation Factor

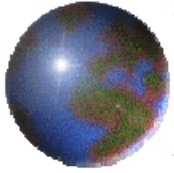
☀ Reporting

- ▣ Administrative data identifying installation
- ▣ Activity Data
- ▣ Emission Factors
- ▣ Oxidation Factors
- ▣ Total Emissions
- ▣ Reliability of measurement Methods
- ▣ Uncertainty



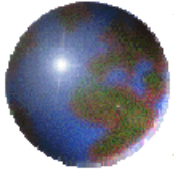
Verification

- Independent Third Party Verification
 - Strategic Analysis
 - Process Analysis
 - Risk Analysis
- Verification to be completed by March 31st for the prior calendar year
- Specific criteria for establishing qualifications of verifier



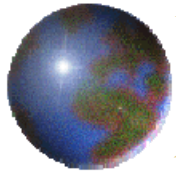
Performance of the EU ETS

- Emissions increased by 1.88 % from 2005 – 2007 and 0.8% from 2006-2007
- GDP increase in 2007 – 2.8%
- Total 2007 Emissions 5% below the annual average allowance allocation
- Indications of over-allocation
- Resulted in dramatic drop of CO₂ market price starting May 2006
- Call for more stringent CO₂ caps



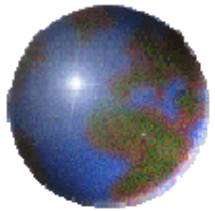
Phase III EU ETS – Post 2012

- Implements lessons learned
- Eliminates NAPs
- Eliminates annual average cap
- Annual cap to decrease linearly by a factor of 1.74%
- Increase in auctioning of allowances
- Redistribution of rights of auctioning of allowances
- New Industries and New GHGs
 - Aviation, Ammonia Production and Aluminum Production
 - N₂O and Perfluorocarbons
- Exclusion of Small Installations



Lessons Learned

- Time Constraints
- Technical and Data Constraints
- Emissions Projections
- Uneven Burden
- Competitive Forces
- New Entrant and Closure Provisions
- Free Allocations vs. Auctioning



Thank you