Emissions Trading

<! v:* {behavior:url(#default#VML);} o:* {behavior:url(#default#VML);} w:* {behavior:url(#default#VML);} .shape {behavior:url(#default#VML);} –>

Â

<!–[endif]–>

Coursework Emissions Trading

Â

Â

Â

Global warming is currently present everywhere in the media and most scientists agree that greenhouse gases cause it. This paper emphasises on the EU Emissions Trading Scheme and its connections to other Kyoto Mechanisms.

In 1997 the signing of the Kyoto protocol paved the way for international emissions reductions. Chapter 2 describes the different entities of the Kyoto framework.

The EU Emissions trading scheme as a means to curb greenhouse gas emissions is portrayed in chapter 3. Benefits and detriments are discussed in detail. Lastly section 3.6 gives a summary and an outlook in the future.

Â

Â

Â

Â

MSc Energy, Trade and Finance

Â

Â

Cass Business School

POST MODULE ASSESSMENT

Emissions Trading

Â

Â

Â

Â

Â

Â

Â

Â

Â

Lecturer: Martin Fry

Â

Author: Markus Wachter

Â

Table of Contents

Â

Â

Â

Index of Tables

Â

Â

Â

Â

Index of Graphs

Â

<!–[if !supportLists]–>1<!–[endif]–>Introduction

Global warming is currently present everywhere in the media and most scientists agree that greenhouse gases cause it. This paper emphasises on the EU Emissions Trading Scheme and its connections to other Kyoto Mechanisms.

In 1997 the signing of the Kyoto protocol paved the way for international emissions reductions. Chapter 2 describes the different entities of the Kyoto framework.

The EU Emissions trading scheme as a means to curb greenhouse gas emissions is portrayed in chapter 3. Benefits and detriments are discussed in detail. Lastly section 3.6 gives a summary and an outlook in the future.

Â

Â

<!–[if !supportLists]–>2<!–[endif]–>Kyoto Protocol

According to the Kyoto Protocol, countries will have to limit their annual greenhouse gas emissions in 2010 to below or slightly above their 1990 emission levels.

Emission allowances are based on the following six greenhouse gases: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Hydro Fluorocarbons (HFCs), Per Fluorocarbons (PFCs) and Sulphur Hexafloride (SF_6).

Activities to uptake the CO2 like forest growing will be included to a certain extent. The participating countries have a 5-years commitment period for their emissions. This eases the effect of yearly fluctuations due to bad weather or economic reasons. The first commitment period under the Kyoto protocol runs from 2008 till 2012.

The targets for emission limitation for Annex I countries are agreed in the protocol. In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) already stated that the developed countries have a historical responsibility for greenhouse gas emissions and should therefore take the lead in curbing the problem.

Â

Annex I countries can use three mechanisms to contribute to their emissions target. Allowances generated from these mechanisms outside an Annex I country can be used to offset shortcomings in its domestic reduction requirements.

Â

<!–[if !vml]–>  <!–[endif]–>

Graph 1: Political framing decisions<!–[if !supportFootnotes]–>**[1]**<!–[endif]–>

Â

Â

<!–[if !supportLists]–>2.1<!–[endif]–>Emissions Trading

Annex I countries can trade emission allowances amongst themselves. The EU Emissions Trading Scheme (EU ETS) is currently the biggest trading scheme in place. More information on the EU ETS will be given in chapter 3.

Â

Â

<!–[if !supportLists]–>2.2<!–[endif]–>Clean Development Mechanism (CDM)

An Annex I country (the investor country) can implement emission reduction projects in a non-Annex I country (the host country). The investor country can use (part of) the resulting emission reductions to reach its own emission target.

Â

Â

<!–[if !supportLists]–>2.3<!–[endif]–>Joint Implementation (JI)

An Annex I country (the investor country) can implement emission reduction projects in another Annex I country (the host country). The investor country can use (part of) the resulting emission reductions to reach its own emission target. The reductions can be transferred in the form of an Emission Reduction Unit (ERU).

Â

Â

Â

<!–[if !supportLists]–>3<!–[endif]–>European Union Emissions Trading Scheme

Â

<!–[if !supportLists]–>3.1<!–[endif]–>Characteristics

Since January 1st 2005 the EU Emissions Trading Scheme (EU ETS) is in place. It covers five sectors, which emit almost half of all EU CO2 emissions. About 4500 installations are covered in the sectors of Electricity and heat production, mineral oil refineries and coke ovens, iron and steel and metal industries, glass, pottery and building materials (including cement), paper and printing (including paper pulping).

It intends to put a value to reducing CO2 emissions and leaves it to the market to find the least cost way to do this. The market it has formed is worth tens of billions annually.<!–[if !supportFootnotes]–>[2]<!–[endif]–>

When the first data on emissions were released in spring 2006 the market price for emissions fell sharply. It became apparent that emissions were below their initially allocated allowances.

Â

<!–[if !vml]–>  <!–[endif]–>

Graph 2: Price of carbon in the EU ETS

Â

Â

The fall in price can clearly be seen on the graph above. There is also a high volatility in the market with prices ranging from 10.4â,¬ to 29.95â,¬ over the last year.

Â

Â

<!–[if !supportLists]–>3.2<!–[endif]–>Allocation of Allowances

Allowances are allocated via National Allocation Plans (NAP). These are lists of all ETS covered installations and the allocated allowances for a commitment period. The allowances are free and can be banked across years but not cross phases. A NAP is prepared by each member state each year by 28 February and builds the foundation of the emissions trading.

Â

About 95% of the emissions allowances have been allocated via grandfathering using the firms emissions in the past and setting a reduction target accordingly.

Â

The EU Burden Sharing Agreement adjusted the individual emissions targets of the member states to meet an overall EU target of 8% from 1990 emissions levels. The Agreement lets some member states increase its emission while it imposes reduction target greater than 8% on others. Germany for example has to reduce its emission to 79% whilst Greece is allowed to emit 125% compared to 1990 emissions.

Â

Â

<!–[if !supportLists]–>3.3<!–[endif]–>Connectivity to other Systems

The EU ETS is not a self-contained system. A company or state can choose to achieve its reduction target through different options. Firstly it can either implement changes like energy saving measures and technology improvements to reduce its own emissions. Secondly CERs generated by investing in CDM projects can be used to a limited extent to offset the emissions. Thirdly ERUs generated from projects through the JI in Annex I countries can be used in the period from 2008 to 2012 to offset emissions. Lastly there is an indirect connection to voluntary systems since these will

also be competing on the projects to generate allowances. If the demand for voluntary or certified emissions credits increases, the limited number of projects of available projects will lead to a price increase in both systems.

Â

The EU linking Directive entered into force in September 2004 included carbon credits from JI and CDM into the EU ETS. To comply with their reduction targets, companies will be able to use CDM credits (CERs) from 2005 onwards and JI credits (ERUs) from 2008 onwards. Each member state can impose an individual limit on the number of CDM/JI credits that can be used by companies in their country. Further the directive opened the EU ETS for possible connections with other countries or trading schemes.

Greenhouse gas allowance types

AAU Assigned Amount Unit	The main currency of international emissions trading. Allocated initial emissions allowances.
CER Certified Emission Reduction	Kyoto credits resulting from CDM (Clean Development Mechanism) projects. Transferred to the investor country.
EUA European Union Allowances	The credits traded within the EU Emissions Trading Scheme
ERU Emission Reduction Unit	Kyoto credits resulting from JI (Joint Implementation) projects and transferred to investor country
RMU Removal Unit	Kyoto credits from human induced removal of greenhouse gases through LULUCF (Land Use, Land-Use Change and Forestry) activities in Annex I countries

Table 1: Different types of allowances

Â

The table above shows the types of allowances that exist in the Kyoto framework and the EU ETS. Each unit is equivalent to one tonne of CO2.

Each Annex I country maintains a registry where it keeps track of the transferred units.

Â

<!–[if !vml]–><!–[endif]–>

Graph 3: Timing of projects, crediting and commitment period<!–[if !supportFootnotes]–>**[3]**<!–[endif]–>

Â

The different timelines of CDM, JI and Emissions Trading are shown in â€˜Graph 3: Timing of projects, crediting and commitment period3â€™. The EU ETS starts its first phase (2005-2007) before the first Kyoto commitment period (2008-2012). In addition the crediting periods for CDM and JI can be seen.

Â

Â

<!–[if !supportLists]–>3.4<!–[endif]–>Benefits of the EU ETS

The market-based approach of the EU ETS provides a means to reach the imposed Emissions target at the lowest cost. The seller of EUAs will be the one who is able to reduce his emissions at lower costs. This creates another source of income for companies who proactively reduce their emission. The price for the allowances will be determined by the supply and demand in the market but is capped by the 40â,¬ penalty per ton of CO2 for non-compliance during the first phase of the EU ETS.

When the EU ETS was set up it not only increased the awareness on global warming, it also required the countries to implement a system which enables them to monitor and report their emissions. Previously this was only based on estimations.

The integration with CDM and JI supports emissions reducing projects in other Annex I countries (JI) and in developing countries (CDM). The transferability of these project-generated units ensures that there are no distractions in the price determination. Of course prices will still differ because of different project risks or the countryâ€™s risk.

Â

Â

Â

<!–[if !supportLists]–>3.5<!–[endif]–>Detriments of the EU ETS

One of the major detriments of the EU ETS is that the Allowance allocation has to be done in a way that there are fewer allowances allocated than needed. With hindsight this did not happen in 2005. Based on grandfathering 1.848 billion tons of carbon were allocated were the actual emissions were only 1.785 billion.<!–[if !supportFootnotes]–>[4]<!–[endif]–>

Â

No proper measurement of carbon emission has been in place before the scheme started. Therefore the emissions allowances allocated by national governments were generous. Now that the monitoring is in place we could expect a more accurate allocation in the future.

But the proposed allocations for the period 2008 â€“ 2012 also do not seem to force difficult targets on the companies. Germany has set the emissions reduction at a mere 1.25% (although power companies are given a target of 15%)<!–[if !supportFootnotes]–>[5]<!–[endif]–>

Â

A further problem emerged with regard to the free allocation. The polluters passed on extra costs to the consumers and pocketed the allowances. When the trading started the allowances (EUA) were sold at the market and companies bought CERs from CDM projects to offset their emissions. The CERs were trading at about half the price of the EUAs because of higher risk. â€˜According to a report by IPA Energy Consulting, Britain’s power companies alone have profited to the tune of around Â£800m ($1.5 billion) a year.<!–[if !supportFootnotes]–>[6]<!–[endif]–>

Â

Another factor is the market domination by a small number of big power companies and investment banks, which increases the risk of asymmetric information.

The mismatch between duration of the current phase of the EU ETS (3 years) and the payback period for cleaner power-generation projects (minimum 5 years) does not provide producers enough certainty to undertake huge investments.

There will be windfall profits for power generators. As other companies become more energy efficient to reduce their emissions, power generators will also have to supply them with less energy and therefore generate less emissions themselves. Because of this reason power generators were excluded from the UK Emissions Trading System.

Â

Â

<!–[if !supportLists]–>3.6<!–[endif]–>Summary and Issues to resolve

One of the major issues the EU has to work on the timing they report the information. On an official EU website the Emissions Data has been reported three days early. This has to be resolved to have a transparent and fair market for all participants. The scheme has to be based on reliable information and make sure that no leakages exists.

Â

Another issue to resolve is the integration of aircraft emissions into the scheme. Currently these are not covered due to the inability of the countries to agree on an allocation method. Since air traffic is growing rapidly it is very important to curb these emissions as well. The most likely implementation would be an extra Scheme for Aviation where airlines are able to trade the aviation allowances between them and could also cover shortfalls through EUAs. A selling into the EU ETS should not be permitted to prevent distortion of the emissions market.

Â

The Carbontrust recommends three improvements for the allocations for next phase of the scheme.

Firstly, to give all sectors substantially less free allowances than the business needs but to differentiate the cutback according to the sector exposure. This would help to establish higher carbon prices and therefore lead to higher incentives to cut back emissions.

Â

Secondly, to benchmark the allocations per unit of capacity installed and type of plant. Giving more to coal than to gas to avoid big shifts I the assets. However, the Carbontrust would not use this benchmarking for new entrants, since this would not incentivise the cleanest technology.

Â

Thirdly, using auctions to a higher extent to stabilize prize, increase the supply. The EU ETS

directive allows for up to 10% of allowances allocated through auctions. The revenue could be invested to research for new technologies. Auctioning of the permits would also help penalise big polluters immediately and make it more attractive for them to curb emissions.

Â

Alternatives to Emissions Trading could be the implementation of a Tax on carbon or simple quotas imposed by thegovernment. These would probably not be as efficient as a trading scheme, since for quotas companies would only profit from reducing their emission not further than the quota. Taxes would lead to their usual problems of a high administrative effort and very complicated laws to fine-tune the system.

Â

From my point of view the EU ETS is a sensible thing to implement and after it has overcome its teething troubles it will be a very efficient and cost effective way to reduce carbon emissions. The built in international linkage leaves it open for arbitrage and integration with other Emissions Trading Systems and the project based mechanisms of the Kyoto protocol.

The EU ETS therefore seems to me the best way to let the market decide on the price of emissions and to let market participants compete for projects and reductions.

Â

<!–[if !supportLists]–>4<!–[endif]–>References

Â

- <!–[if !vml]–><!–[endif]–> Lecture Notes
- <!–[if !vml]–><!–[endif]–> Fundamental Series 4, Module 1, Current thinking on Emissions Trading, may 2006, Robert Gevargiz
- <!–[if !vml]–><!–[endif]–> Petroleum Review, Is the EU ETS working?, September 2005
- <!–[if !vml]–><!–[endif]–> IAEE Energy Journal, Carbon Abatement Costs: Why the Wide Range of Estimates?
- <!–[if !vml]–><!–[endif]–> The Economist, â€˜Emission Tradingâ€™, June 8th 2006 Edition.
- <!–[if !vml]–><!–[endif]–> The Economist, â€˜Aircraft Emissionsâ€™, June 8th 2006 Edition
- <!–[if !vml]–><!–[endif]–> Business Insights, Ecofys, â€˜Corporate Carbon Strategiesâ€™, 2003 Edition.
- <!–[if !vml]–><!–[endif]–> Business Insights, Ecofys, â€˜The UK Green Energy Outlookâ€™, 2003 Edition.
- <!–[if !vml]–><!–[endif]–> Energy research Centre of the Netherlands , CO2 Cost Pass Through and Windfall Profits in the Power Sector
- <!–[if !vml]–><!–[endif]–> www.ft.com Ask the experts: Getting to grips with global warming, February 2006
- <!–[if !vml]–><!–[endif]–> â€˜The State and trends of the Carbon Market 2006â€™ IETA & The World Bank, 2006.

- <!–[if !vml]–><!–[endif]–> IEA Information paper, Emissions Trading and its possible impacts on investment decisions in the power sector, April 2004
- <!–[if !vml]–><!–[endif]–> Allocation and competitiveness in the EU Emissions Trading Scheme Options for Phase II and beyond, The Carbontrust, June 2006
- <!–[if !vml]–><!–[endif]–> Investor Guide to Climate Change, January 2005
- <!–[if !vml]–><!–[endif]–> Carbon 2006: Towards a truly global market, Point Carbon, February 2006

<!–[if !supportFootnotes]–>

<!–[endif]–>

Footnotes:

[1]<!–[endif]–> Carbon 2006: Towards a truly global market, Point Carbon, February 2006

Â

<!–[if !supportFootnotes]–>[2]<!–[endif]–> Allocation and competitiveness in the EU Emissions Trading Scheme Options for Phase II and beyond, The Carbontrust, June 2006

<!–[if !supportFootnotes]–>[3]<!–[endif]–> Source: Business Insights, Corporate Carbon Strategies

<!–[if !supportFootnotes]–>[4]<!–[endif]–> Economist, Buttonwood, July 2006

<!–[if !supportFootnotes]–>[5]<!–[endif]–> Economist, Buttonwood, July 2006

<!–[if !supportFootnotes]–>[6]<!–[endif]–> Economist, Emissions Trading, Gaming Gases,June 2006