

**European Sociological Association
Research Network 12 – Environment and Society
9th Conference, Lisbon 2009**

**Climate Policies and the
Politics in the Design of Markets of Carbon Credits
Dr Xavier Lemaire**

FIRST DRAFT PAPER

**Centre for Management under Regulation
Warwick Business School, University of Warwick
COVENTRY CV4 7AL, United Kingdom
Tel: +44 (0)24 76 523 697
Fax: + 44 (0)24 76524 965**

Abstract

Market-based mechanisms for addressing environmental problems are becoming common features of environmental policies and, in particular, are at the core of the Kyoto protocol about climate change. Market-mechanisms are supposed to harness the dynamics of competition and to encourage actors to commit themselves to long-term goals of environmental protection.

Compared to other forms of regulation, market mechanisms could theoretically reduce costs of cutting down carbon emissions, thanks to the flexibility allowed through emissions trading among heterogeneous stakeholders. They could allow states to raise considerable revenues without the need of a new tax. Market mechanisms make it also easier to reach political consensus at an international level, as degrees of freedom are left to local and national actors to elaborate their own road map for carbon reductions. Now economic actors have managed to negotiate not too restrictive measures and have learnt to play with the possibilities offered by market mechanisms: it appears that the popularity of the cap and trade schemes among decision-makers relies also on the possibility for governments and corporations to postpone painful choices.

This paper will examine the rationale behind the adoption of market-oriented policies instead of traditional environmental regulations and some of the practical difficulties encountered in the application of the Kyoto treaty linked to its inherent logic. It surveys the literature on the first stages of the European Union Trading scheme and analyses the system of preferences and the strategies of major polluters, notably from the energy sector, facing the constraint of greenhouse gas emissions reductions. Finally, it will synthesize the main critics of carbon trading schemes and draw some concluding remarks from debates about the current attempts to extend carbon trading systems to a greater number of countries and sectors of the economy.

Key-words: Climate policies, Cap and trade, Carbon credits, Energy.

1. Introduction: the context of climate science and carbon trade

Climate change is presented as one of the major issue of the century if not the issue that will determine the fate of humankind for centuries. As research on climate change intensifies, a number of bio and physical indicators could tend to confirm some of the worst scenarios from the Intergovernmental Panel on Climate change reports. There is now a concern of part of the scientific community that tipping points of the climate system could be/are going to be reached leading to runaway emissions of GHG and abrupt climate change as positive feedbacks could reinforce considerably the effects of initial green house gas emissions¹.

The 2 degrees Celsius increase (compared to pre industrial level) is generally considered as the threshold beyond which climate change may become far too damaging for human societies². To keep on the limit of this 2 degrees target implies that GHG peak by 2030 and that annual GHG emissions will be halved by 2050 (Meinshausen, 2009; Alien, 2009). Ideally the concentration of CO₂ should peak to 450 ppm before quickly coming back to 400 ppm if not 350 ppm. This implies a complete reverse of the trend of increase GHG since the industrial revolution³. One as to note that, instead of decreasing, green house gas emissions (GHG) have been steadily increasing since the Rio Conference of 1992 when the international community expressed concern about limiting emissions of greenhouse gases.⁴

Following the current trend and due to the considerable inertia of economy and political systems, it seems now more and more difficult to remain below the two degrees Celsius threshold. The objective of climate policies remains nevertheless not to overshoot this target for too long so to peak green house gas emissions and curb them as soon as possible, knowing that – according to the now dominant scientific view - every year of delays increase the possibility of triggering potentially devastating climate change.

Climate change becoming a major political issue, decisions makers have been inclined to mobilize market-mechanisms to tackle the burning question of mitigating GHG.

¹ Last developments on the current findings on climate change can be found at the conference website Climate change – global risks, challenges and decisions, Copenhagen 2009, 10-12 March 2009: <http://climatecongress.ku.dk/>

² This two degrees Celsius limit is already very high, as reaching this threshold may have already tremendous detrimental impact on modern economies. Nevertheless this level is still commonly adopted as a political target as it is considered as extremely ambitious.

³ CO₂ has reached 383 ppmv in 2007 (parts per million per volume) compared to less than 280 ppmv before the industrial revolution. Methane has reached 1745 ppb (part per billion) compared to 700 ppb (parts per billion).

⁴ Annual carbon dioxide emissions from burning fossil fuels and manufacturing cement have grown 37.8% percent since 1992, from 6.1 billion tons of carbon to 8.5 billion tons in 2007, according to data gathered by the US Department of Energy's Carbon Dioxide Information Analysis Center (CDIAC) at Oak Ridge National Laboratory.

The first part of this paper will try to explain why market-mechanisms are now so used in the field of environmental protection in general and notably why politicians and key economic decision-makers of OECD countries who are now almost unanimously officially committed to mitigate climate change tend to rely heavily on some sort of cap and trade mechanism to help them curb GHG emissions.

The second part, taking the example of the first stages of the European Union Trading Scheme, will examine how actors tend to play the new rules set by the cap and trade scheme notably in the electricity sector and how logically the politics get into the design of markets of carbon credits to lower the initial ambitions of tackling the climate change issue. Main criticisms of the carbon trade system and notably of the EUTS are then reviewed.

2. Ecological modernization and trade of GHG emissions

2.a The environment as an extension of the market: why market-mechanisms are preferred?

Market-based mechanisms for addressing environmental problems are becoming one of the most common features of environmental policies and, in particular, are at the core of the Kyoto protocol about climate change. Market-mechanisms are supposed to harness the dynamics of competition and to encourage actors to commit themselves to long-term goals of environmental protection.

Market-mechanisms are now preferred to other forms of regulation, notably taxation system and command and control regulation, which are presented as restrictive for business profitability. Market mechanisms place private corporations at the centre of the process of creating value for the shareholder while using with efficiency natural resources. The way to encourage producers and consumers to use with efficiency natural resources is to give them a price, instead of giving free access. To give a price to natural resources is not something new: territorial space and water have been traded for a long time. Now this is extended to new fields where pollution or congestion needs to be regulated and are traded as commodities: telecoms spectrum, sulphur and CO₂.

This trend complies with the dominant ideology of free trade, is therefore in the sphere of the politically feasible measures and happens also to be beneficial for the banking industry.

The word “trade” - which is with globalization positively connoted - means indeed that carbon can be exchanged at a regional if not an international level which can only please the financial elite constituted of bankers, traders and various financial consultants whose personal source of income and bonuses of all sort are directly linked to the increase of the volume of exchange of commodities.

But one also has to note that cap and trade mechanism can potentially allow states to raise considerable revenues without the need of a new tax. As the word “tax” is now negatively connoted in OECD countries, this has considerable advantages to bring a source of income while allowing public decision makers to pretend remaining in the path of the neo-liberal economic orthodoxy.

Market mechanisms make it also easier to reach political consensus at an international level, as degrees of freedom are left to local and national actors to elaborate their own road map for carbon reductions. This is particularly true in the case of the EUTS (see below). In the current state of lack of global environmental governance to rely on a “neutral” cap and trade mechanism allows to make some progress in the reduction of GHG without having to change the existing treaties and rules (e.g. from the World Trade Organization) or implementing new ones.

In fact, the main advantage of market mechanisms seems to enable to depoliticize the debate and make the process of decarbonization look painless as it is taken in charge by the *deus ex machina* of the market.

This use of new environmental instruments appeared in the US in the 1970’s (Fiorino, 2006: 44). Following the description from Albert Weale, ecological modernization is a new system of belief which can be summarized in the following propositions (G. Spaargaren, 2000:45)

- there is no zero-sum trade-off between economic prosperity and environmental concern
- relations between the state, its citizens and private corporations needs to be redefined
- the most pressing environmental problems exceed the national state level

We will see that to create a market of carbon credits relying on the previous assumptions and what are the limits of this way of thinking.

2.b. Carbon credits: rationale of cap and trade and financial implications of climate change

CO₂ emissions are only one the GHG among water vapor, methane, nitrous oxid and ozone notably. But it is their growth linked to human activities that is “very likely”⁵ to contribute to the increase of temperature; CO₂ is (with methane) the gas the one that is mainly currently targeted by climate policies.

The climate change threat push to move toward a low carbon economy. As the development of current societies has been founded on the intensive use of carbon, this is a major shift for almost all sectors of activities: it implies massive investment in new technologies and raises the issue of stranded assets. This is particularly true for the electricity supply system of modern societies, electricity generation being one of the main contributors of CO₂ (around 30% of the total emission of CO₂).

The central tool idea is to put a cap on the emissions allowances of the biggest polluters so to encourage them to take themselves the most appropriate cost-effective measures to reduce their carbon emissions, instead of using the traditional command and control regulation. The cap and trade scheme is supposed theoretically to reduce costs of cutting down carbon emissions, thanks to the flexibility allowed through emissions trading among heterogeneous stakeholders. In this system, each actor is free to pick the technology that will enable him to meet its target.

⁵ Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations. ⁷ It is likely that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica). IPCC report 2007 – summary for policy-makers, p. 5. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

States fix a global strategy/cap leaving to private actors the central role of what is the best way of achieving the target. This leads to a complete defusing of a global political issue potentially corrosive for the stability of the political and economic system into a series of local technical and managerial problems: enterprises, administrations and other actors included in the scheme are given a quota of carbon credits which will either be sufficient to cover their own emissions, or it will have to buy credits to other organizations that have an excess of credits compared to their own emissions.

The market approach seems to have been successful in dealing with some pollutants (notably sulphur in the US), but climate change could be a quite bigger issue which may need more direct measures. The idea of a carbon market in theory leads to a progressive decrease of emissions. Now like all market, it is a social construction and like all social construction its concrete realization may differ from the pure market of the economists. As we will with the case of Kyoto mechanisms and with the EU- ETS, there are a lot of imperfections in the design of carbon market.

3. Cap and Trade in the Kyoto protocol⁶

3.a. The history and the rationale of the mechanisms of the Kyoto cap and trade

As scientists were increasingly becoming vocal in the public sphere, an international treaty on climate change was ratified in 1992 with a general objective of stabilizing GHG. Following this treaty, the Kyoto protocol in 1997 was to introduce detailed targets and mechanisms. The US, even if they [the Senate in 1997 and then the Bush administration in 2001] declined finally to sign this protocol, were quite influential during the negotiation in the choice of a cap and trade system to reduce GHG emissions.

Cap and trade appeared in the field of climate change policies in the 1990's, after the so-called success of the sulphur emissions trading in the US⁷, which inspired the negotiators of the Kyoto protocol. The European Union initially against the cap and trade system rallied the idea during the negotiation. The Kyoto protocol entered in force in 2005 after the ratification from Russia in 2004.

Developed countries listed in Annex 1 of the treaty agreed to reduce their emissions of -5.2 per cent on average below 1990 emissions level during the commitment period, 2008-2012.

Several mechanisms have been put in place on top of emissions trading to allow some flexibility and reduce cost of compliance.

Clean Development Mechanism (CDM): allows annex I countries (i.e. OECD industrialized countries) to achieve additional emissions reduction in non Annex I countries (i.e. emerging and developing countries)

⁶ The mechanisms of the Kyoto protocol are quite complex. This is a brief description emphasizing some aspects of the Kyoto mechanisms, notably the ideological context. For more details see the bibliography, notably Tim Jackson, 2001.

⁷ The Clean Air Act passed in 1990 was the first legal document establishing a mandatory emissions trading scheme.

Joint Implementation: allows emissions credit to be earned using emissions reductions projects in other countries subject to binding targets (annex B⁸ countries: i.e. between OECD countries and Eastern countries)

3.b. Flaws and criticisms of the design of the Kyoto protocol

There has been number of criticisms of this protocol.

A first set of criticisms have been about the idea of the creation of a carbon market itself. First radical environmentalists consider the market as intrinsically bad, so are therefore against their extension in new field like carbon or any other pollutants or natural resources. Guided on the principle that you shall not give emissions rights to the polluters, they are in favour of the traditional command and control regulation where a state agency monitors and penalizes companies who do not comply to regulation or a taxation system.

One of the main flaws of the current stage of the carbon credit market is the existence of large supply of "hot air"⁹ This is due to several different factors:

- some countries may have overallocated emissions allowances
- other countries have been allocated a number of emissions allowances according to the state of their economy in 1990 but meanwhile their economy went down (e.g. Russia and Eastern countries)
- the US withdrawn from the treaty

The last point had dramatic implications for the Kyoto protocol: with the withdrawal of the US, the total amount of hot air exceeds the cumulative cutback requirements across remaining Annex B countries (D. Helm, 2005: 269).

Furthermore, CDM projects are used exactly in the way they were designed to: to reduce the cost of avoided GHG emissions. For instance the destruction of HFC23, one of the GHG which is now used is the fridge, enables fridge manufacturers in India to earn twice as much money by destroying the HFC23 and selling emission credits than by selling fridges¹⁰. This is due to the very high global warming potential of HFC23¹¹.

As companies go logically to the easiest CDM project with the lowest cost, they do not invest in the poorest countries with low level of GHG emissions (i.e Africa) where there are few opportunities or on new technologies notably renewable project, which are more difficult to set up. This may change progressively as the opportunities of low-cost CDM project tend to rarify.

⁸ Annex B countries are the same as annex 1 countries, except Russia and Turkey.

⁹ "Hot air" is the word used to mean an excess of allowances compared to the real GHG emission of the world economy or a given country.

¹⁰ According to M. Wara, if capture and destruction of HFC facilities were fully and directly subsidized it would cost only \$100 million, whereas via the CDM it costs more than \$6 billion (M. Wara, Nature 2007 quoted in A. Brohe and al, 2009: 940).

¹¹ 1 tons of HFC23 has according to the IPPC 2007 report the global warming potential of 14,800 tons of CO₂ (A. Brohe and al., 2009: 70).

Third point, the current monitoring of the market by UNFCCC and audit companies seems very loose. In fact it relies heavily on self-regulation: companies building a CDM project provide all the data that are required to get accredited, notably the baseline and the GHG avoided. Overexaggeration of the environmental benefits of some CDM project and even fraud occurred.

All these critics can be defused by proponents of the projects saying that we are only at the first stage of the carbon credits and so the scheme will gradually improve as institutions learn how to deal with this innovative approach. Nevertheless, one has to note that this delay effective reduction of GHGs as most of the reduction that have happened since 1990 would have happened anyway (i.e. in Eastern countries).

4. The case of the European Union Trading Scheme

4.a. The history and the rationale of the mechanisms of the EU ETS

At the very beginning of the 1990s, the European Commission was initially in favour of and proposed a fully harmonized carbon/energy tax. The propositions failed for due to the objections of energy industries, the reluctance of European states to leave taxation issues to the European Union. Finally the Maastricht Treaty which requires the unanimity of European states to adopt common fiscal laws made any agreement impossible.

While the negotiations around the Kyoto Protocol were lagging, Europe decided to develop its own common carbon scheme. After agreeing the experiments of the limited voluntary UKTS and of the Danish carbon trade in the energy sector, an harmonised EU carbon market was perceived as needed in order to avoid to have to deal with too many disparate national schemes. The EU ETS was launched with the idea for the EU to take the leadership on climate change and go ahead with the creation with the first international carbon market, which eventually could prepare the path for the EU compliance to the Kyoto protocol.

The EU ETS focuses only on the biggest polluters with more than 10,000 installations covered by the scheme. Participants include electricity generators, oil refineries and energy – intensive manufacturers installations like iron and steel, concrete, paper. Each state develop a National Allocation Plan (NAP), which defines the number of allowances available for national participants. Phase 1 runs from 2005-2007, while phase 2 coincides with the first commitment period of the Kyoto protocol (2008-2012).

4.b. Flaws and criticisms of the design of the EU ETS

The first set of criticisms is on the scope of the scheme. The first phases of the EU ETS cap and trade tackle only the carbon and leave aside other GHGs. But CO₂ emissions constitute only part of GHG¹². Some important sectors like aviation were excluded. But aviation will be included soon in 2011-2012, which is a source of tension between Europe and the US.

¹² In fact it is estimated they contribute to only less than half of GHG effect due to human activities.

The second is on the NAP and the overallocation of emissions allowances by some member states. Indeed, in the first phases of the EU ETS, as it was up to each government to fix the number of allowances to national companies, a lot were inclined to be very generous.

The overallocation of emissions allowances means that – once participants knew about this situation in 2006 - prices of carbon credits (European Union Allowances - EUA) went down under 10 and then even under 1 euro per tons. During the second phase the EUA went to more than 30 euros to less than 15 euros currently with the on-going economic recession.

The very low price of carbon credits, its variations and the short duration of each phase means that this system does not encourage industrials to invest on new technologies. For instance in the electricity sector, power generation will switch from coal to gas according to the price of each fuel and the prices of allowances, but will not invest in renewable technologies.

Another source of critics has targeted the windfall profit made mainly by electricity companies in some countries. Allowances in the EU ETS are not auctioned but given for free. They represent an asset for the companies. Now electricity companies have the possibility of passing through the price of allowances to their consumer. This added to the fact that electric companies can sell part of their allowances (which they got for free) enabled them to earn large sum of money.

All these points could be corrected and the EU ETS phase 3 which will start in 2013 will take into account the following improvement:

- extension of the scheme to cover other sector
- NAP negotiated directly by the EC so to avoid overallocation
- auctioning of part of the allowances

4. Conclusion

Sustainable living – in the sense of reducing emissions per capita to an acceptable threshold - implies a complete overhaul of modern economies¹³.

One of the main tools currently considered to decarbonise economic activities is to implement a carbon trade scheme. Now remains open some crucial questions: can technological fixes be sufficient to solve the climate change issue? Can even local private actors solve by themselves this now technical question without a clear industrial policy? And are the incentives high enough to push local actors to become more efficient? And also important what are the time frames?

In the case of EU ETS, politicians to bring in the system the maximum of economic actors had to be conciliatory. Economic actors have managed to negotiate not too restrictive measures generating a lot of "hot air" and have learnt to play with the possibilities offered by market mechanisms: it appears that the popularity of the cap and trade schemes among decision-makers relies also on the possibility for governments and corporations to postpone painful choices.

¹³ The average Carbon emission per capita is in most European countries over 10 tons. This needs to be reduced to 1 tons per capita. See carbon calculator produced by the Norwegian University of Science and Technology, which takes into account carbon leakage from import on countries with an emission limitation from countries like China. <http://www.carbonfootprintofnations.com/index.php>

But cap and trade push private corporations to integrate the carbon trade in their accountability and daily operation; they cannot ignore the climate issue anymore which is now on their "radar screen" (pers. comm. Ecofys consultant). This in itself can be considered as a progress compared to the previous situation where climate change was only a matter of discussion between the scientific community and policy-makers.

To set up an international market with all the institutions and mechanisms needed can be considered in itself as an achievement. Companies of countries like the UK or the Netherlands with already some experience in financial trade have been the most active on the market. Other are at the start of the learning curb (A Engels et al. 2008).

But in terms of concrete reduction of emissions, it seems that the carbon credit system will only very progressively produce results. If the carbon market contributes to increase economic actors' awareness toward the necessity of reducing carbon emissions, other policies notably in the energy sectors are far more effective to lead to the diffusion of new low-carbon technologies and are needed to complement this tool. In any case self-regulation is not sufficient and there may be some trade-off between (the usual definition of economic prosperity) and environmental concern.

References

Brohe A, N. Eyre and N. Howarth. Carbon Markets – An International Business Guide. London: Earthscan. 2009.

Dieter H.(ed.). Climate-change Policy, Oxford: Oxford University Press, 2005.

Engels A. Knoll L. and M Huth, Preparing for the 'Real' Market: National Patterns of Institutional Learning and Company Behaviour in the European Emissions Trading Scheme (EU ETS), European Environment 2008: 267-297.

Fiorino D J., The New Environmental Regulation. Cambridge (US) – London: MIT Press: 2006.

Jackson T, K Begg and S. Parkinson. Flexibility in Climate Policy – marking the Kyoto mechanisms work. London: Earthscan. 2001.

Labatt S. and White R., Carbon finance – the financial implications of climate change. Hoboken, New Jersey: Wiley Finance, 2007.

Spaargaren G., A P.J. Mol and F. H. Buttel (eds.). Environment and Global Modernity. AIS- ISA. London: SAGE pubs. 2000.