FLORENCE SCHOOL OF REGULATION

workshop
Florence, 20 October 2006

Robert Schuman Centre
for advanced studies

Beyond Kyoto. The initial experience with the EU Emission Trading Scheme and the prospects for a global change strategy after 2012

Report on Proceedings

European University Institute

Summary of the Florence School of Regulation Workshop:

Beyond Kyoto
The initial experience with the EU Emission Trading Scheme and the prospects for a global climate strategy after 2012

20 October 2006
European University Institute, Florence

The Florence School of Regulation organised a workshop on 'Beyond Kyoto. The initial experience with the EU Emission Trading Scheme and the prospects for a global climate strategy after 2012' on 20 October 2006 at the European University Institute in Florence. Nearly thirty experts from the energy industry, regulatory and government bodies, NGOs and research organisations took part.

The workshop had three main objectives:

- Learning from the initial experience in emission trading systems in Europe and the US.
- Examining the requirements for a long-term global strategy on climate change.
- Exploring the range of instruments and institutional requirements needed to succeed in implementing a long-term strategy.

The following is a non-chronological summary of the main aspects which came forward in the presentations and discussions.[1]

1. Lessons from the Initial Experience with Emissions Trading

Achievements

A number of achievements of the early experience with the EU Emission Trading Scheme (ETS) were noted by the workshop participants:

- *It happened!* The first compliance cycle has been successfully completed despite a relatively tight timetable. It has established the feasibility of international emissions trading.
- *Data infrastructure.* A common data set along with the infrastructure for registries and monitoring has been established.
- *Functioning CO2 market.* The allowance market is developing along with the emergence of a reliable CO2 price in Europe.
- *Culture change.* Operators (especially generators) are incorporating CO2 pricing considerations into investment and operation decision making. (Although it is probably too early to assess whether it has lowered the compliance costs of reducing emissions compared to other policies).

[1] The workshop was held under the Chatham House Rule. Accordingly, this summary does not assign any views to specific participants of the workshop. In case of controversy, an effort has been made to report the different points of view. If certain statements in this summary are not contradicted, however, this does ***not*** mean that there was general agreement on the argument in question.

Lessons Learned

A number of lessons have been learned from the first 1 ½ years of the ETS and potential improvements can be suggested for phase II. A recurring theme in the workshop was the need to simplify and harmonise many of the current processes along with the underlying aim of providing regulatory stability.

- *Allocation criteria and benchmarking*. For nearly all of the member countries, the basis for allocations in phase 1 was recent emissions. Benchmarking, while strongly advocated by academics and in spite of many attempts by regulators to use it, was rarely implemented, the main exceptions being for new entrants and electricity generators in Italy and Denmark. Reasons for this included the heterogeneity of installations, lack of pre-existing standards and data limitations. As these problems are being partly solved, regulators are aiming to move towards more benchmarking. One regulator in the workshop presented a simple formula that is intended to be used in NAP2 (see box 1). Many other workshop participants emphasized the need for NAP2 to be simpler and more transparent.

  Another lesson noted was that the inclusion of small facilities is probably not worth the administrative effort (or requires some streamlined process) given the relatively low level of emissions involved.

> Box 1: Benchmarking Allocation Methodology for Generators
>
> Many regulators and industry players are looking for a simplified approach to benchmarking allocations. One simple formula proposed for phase II is:
>
> *Capacity x Load Factor x Emission Factor*
>
> with technology and fuel - specific load and emission factors based on historic averages for gas, coal and other sources.

- *Free allocation versus auctioning.* In phase 1 nearly all allowances were allocated free of charge, even though 5% could have been auctioned. Given that the marginal opportunity costs of carbon allowances have generally been passed through to consumers, the windfall gains have been a target of much criticism from non-emitting stakeholders. A number of presenters agreed with this criticism recommending that auctions should be employed instead. One regulator noted that 100% auctioning would have been a first preference (versus the 10% that will be allowed in phase II.)

  Industry participants offered the justification for free allocation as compensation for existing assets for the impact of environmental regulation that was not foreseen at the time of construction (i.e. stranded costs on high-carbon emitters). It was also argued that introducing auctions would bring in a whole new allocation problem with respect to the revenue raised. However there were suggestions from others participants on how this revenue could be

usefully deployed (e.g. R&D, developing country programs, lower taxes). Furthermore, it was suggested that auctioning would introduce a new source of uncertainty (in the allocation price) with deleterious effects on investment. However, another discussant outlined how joint minimum-price auctions could be employed to improve stability and investor confidence surrounding CO2 prices. The minimum bid level would act as a price floor.

It was also acknowledged that the current system of free allocation to new entrants and the requirement that closed facilities forfeit post-closure allowances can create perverse incentives. This feature is also not found in other cap-and-trade systems. Member states and the European Commission while aware of these effects seemed unable to resist the political demands that such provisions be included in NAPs. This comes from the desire not to be placed at a disadvantage in the competition for new investment and a complementary concern to avoid an incentive for facilities to shut down in the Member states and to move production elsewhere. However, it was also noted that there are better mechanisms to deal with this concern. One participant noted the lesson from central bank policy of using one instrument for one target – we should limit free allocation for compensation of the cost of transition and not as a type of "capacity payment" for new entrants. Other mechanisms are better suited for this task.
Both regulators and industry also recognized the need for harmonisation across countries of the allocation criteria.

- *Banking*. The Directive enables allowances to be banked from phase II into future periods. Economic analysis tends to assume that this will improve price stability, by reducing exposure to short period variations. In practice, as was pointed out by some discussants, given the present fundamental uncertainty about the nature of post-2012 commitments, this may remain a marginal consideration for much of phase II. Another participant pointed out that some academics believe that banking will allow a greater exercise of market power.

- *CO2 price volatility*. A relatively high price volatility of the allowance prices has been observed in the initial phase of trading. Such price uncertainty is generally agreed to be unhelpful for investment decision making. However, it was pointed out that some volatility should be expected from changes to fundamental drivers (fuel prices, weather patterns, economic growth). It was also noted that high volatility was seen in the early days of other trading programmes. Indeed the question was raised in the workshop as to how this uncertainty differs from, say, oil price uncertainty (where investments are still clearly made). But unlike the oil industry, scarcity in carbon allowances is artificially created, and policy events (e.g. NAP approvals, emission verifications, phase 2 policy framework decisions) have been undoubtedly crucial in the initial volatility and will continue to impact on the market.
  As was repeatedly emphasized by many participants the need for regulatory stability is understood to be extremely important for nurturing a more stable CO2 market. In this regard, a number of participants called for longer phases and a more transparent allocation process. The Commission is believed to be considering longer allocation periods in the post-2012 review.

- *Stringency and harmonisation of targets.* It is generally agreed that there has been over-allocation by most member states during the initial phase. The environmental effectiveness of phase 1 is likely to be limited, partly due to this slack allocation. However, as already mentioned, the primary aim of phase 1 was to establish the infrastructure and learning for the next phase. Many participants in the workshop now see the main priority of the next stage to be creating a more stringent emission trading scheme so as to drive efficiency, fuel switching and new low carbon investment. As one presenter stressed – we must set effective targets for real incentives. One participant also suggested that the cap should be set directly in line with the new EU Kyoto commitments, avoiding a non-transparent NAP process.

- *Simple, stable and transparent.* A key lesson repeated by most of the participants is the need to keep the ETS simple, transparent and predictable. Such a scheme should translate into greater regulatory certainty and thus provide a more stable environment for investment in new low carbon technology.

2. Towards a Long-Term Global Strategy

Climate change is a long-term problem involving long-term impacts. Furthermore, the inertia of long-lived infrastructure means that decisions made now may have consequences up to 40 years ahead. Climate change policy requires a long-term strategy.

Global Frameworks

The Kyoto approach is not the only possible policy framework and presenters outlined some of the many degrees of freedom in creating a suitable architecture of global agreement to address climate change: Centralized (e.g. Kyoto) or decentralized? What time frame? What type of mitigation commitments (top down or bottom up)? Quantitative targets or non-quantitative objectives (e.g. technology standards)? How should the burden be allocated?

Meeting the difficult political, design and negotiating challenges in creating such an architecture may require new forms and forums of engagement. This includes having dialogue inside and outside formal UNFCC processes. There may also need to be acceptance of parallel tracks as efforts proceed independently. Furthermore, the equity and ethical principles underlying the allocation of responsibilities need to be carefully thought through and articulated.

Engaging Developing Countries

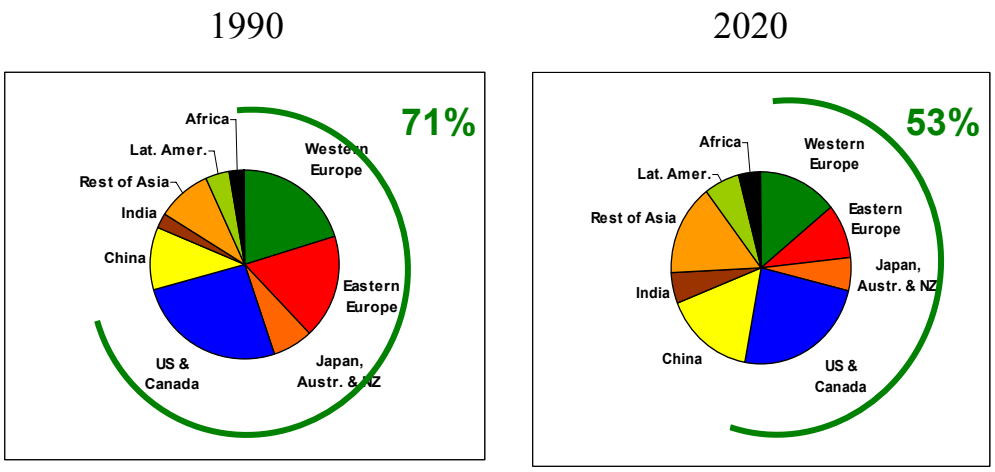
At present developing countries do not have quantified emission targets. In the next decades, these countries are expected to show the highest rate of growth in GHG emissions (see box 2). In 1990 71% of CO2 emissions were accounted for by annex 1 countries (Europe, N. America, Australasia, Japan). In 2020 this is expected to lower to 53%. Any plan that may have a chance of succeeding in addressing climate change must engage developing countries.

One reason for the lack of involvement from developing countries is that industrialised countries did not originally make an effort to broaden the debate to sustainable development issues. Furthermore, climate change in developing countries is not a politically important focus of economic or development policy and is only

recently being considered among national environmental policy objectives in some of these countries. Climate change remains marginal to the pressing issues of poverty, natural resource management, food security, energy needs and access, urban transport and land use.

Thus as one presenter highlighted, there is a pressing need to better integrate climate and development concerns – to turn climate change into a driver for development. However, as another presenter noted, re-framing global environmental policies as deriving from development priorities will not automatically make climate change easier to solve. It was suggested that changes for the global collaboration framework on climate change should be approached on multiple levels through local and national development programmes.

Box 2: Changing Proportion of Developed Countries (Annex 1) Emissions of Total Global C02 Emissions



Clean Development Mechanism

At present, developing countries are involved only indirectly in GHG emission limitation through the possibility of hosting CDM projects. The workshop was told that CDMs are not likely to be sufficient to drive developing countries to a cleaner environment because they only influence large industry and energy sectors and there are no projects concerning infrastructure, urban development (construction, transport) or the production of efficient equipment which are nevertheless essential in terms of energy and climate objective. In these latter type of projects, the CDM financing is not of a sufficient level to have significant influence on investment decision making. Money is thus presently going where investment and initiative is already present.

Some industry participants noted that while they are involved, and have ambitions to continue involvement, with the mechanism, they pointed out that it is not a simple task. Judging the credibility of projects substantially increases the transactions costs involved.

Role of a Global Carbon Market

The presenters in the workshop placed varying emphasis on the necessity of a global carbon market as a long-term strategic issue. Some saw the strong desirability of linking the ETS with other emerging carbon markets, not only in terms of economic efficiency but also as a means to finance low-carbon developments in developing countries. Others saw it as less important task as compared to other policy mechanisms especially given the risks associated with the negative impact on the poorest countries of a uniform, potentially high, carbon price. Rather they saw the need for Kyoto policy to be rooted into local action, with targets being transferred to lower political levels to reach consumers.

The Role of the US

The likely US contribution to the creation and implementation of a post-2012 global climate strategy after 2012 will be via support for technology innovation in the US and of trade liberalization and international investment abroad (which may assist in technology transfer). The workshop was presented details of current and planned regional emission trading systems and was told that efforts in the US to create a mandatory national cap and trade system will continue to gain support, especially after 2008, and will likely be successful in 2010-2012. However, the US is not expected to participate in the Kyoto Protocol for many years.

Consistency with other Government Policies

A number of presenters and discussants noted that another long-term strategic issue that has perhaps been underestimated is the potential conflict between environmental policy and other government policies (and not just in developing countries). These include energy security of supply and fuel poverty considerations.

Credibility and Minimizing Political Interference

Another theme that reoccurred during the workshop was the importance of credibility in any long term strategy. With regard to political tinkering of the ETS, it was noted by one industry participant that once reputation is lost, it can take a very long to repair. The provocation was offered that given most governments change (or at least face re-election) every 4-8 years, can we ever hope from long-term credibility in climate policies? In this regard clearly the role of supra-national entities can provide some independence and discipline, but establishing such agencies is problematic. Instead of thinking in terms of one agency or regime, it was noted that a pluralistic set of agencies can often perform a useful role. Two examples were offered in the workshop – the Basle agreement on capital adequacy requirements and the US-EU agreement on competition policy case information sharing. Commitments are important and are possible under certain conditions. Thus the question of how to engineer strong enough and practical enough commitments that may help in addressing the problem of climate change is an important area of further research

An important word of warning from one participant was the reminder that what has been established in Kyoto is one of the most ambitious achievements ever of global coordination. We have to ensure that we do not lose it and must keep it in place. As such we have to be careful about putting too much pressure on the next round of negotiations. We have to find an agreement to ensure that Kyoto survives.

3. Instruments for a Global Strategy

Single versus Multiple Instrument Approach

The ETS is one instrument operating at an international level. Another theme of the workshop was to examine the wider context of instruments available to policy makers.

The danger of segmenting a climate change strategy under multiple instruments may be a reduction in the efficiency of the solution. However, each instrument may have weaknesses that need to be complemented by other means. For example, not all sectors may be suitable for the implementation of the same instrument (e.g. tradable permits may not be easily implemented in a sector characterised by diffuse sources, e.g. households and road transport).

One presenter classified three types of instruments available to policy markers:

- instruments involving the creation of a CO2 price (emissions trading, CO2 taxation);
- institutional and behaviour policies (market design, labelling, standards);
- instruments designed to advance new carbon technologies (e.g. public research, R&D support, deployment support).

There is general agreement that robust policy probably requires all three approaches.

Research and Development

At least two presenters emphasized the need in Europe for increased and focused effort in R&D. The only route to a sustainable energy system is through new or improved energy technologies that will have to be found through research and development. It was noted that no single energy technology on its own will provide the solution, so research must be carried out on a wide range of technology options. At present research across Europe is fragmented and it is necessary to have a well coordinated approach and a pooling of resources available at regional and national levels.

It was also argued that the CO2 price signals need to be higher and more credible to stimulate new breakthrough low carbon technology. The workshop was informed that in the US, where current emphasis is on technology policy, the support for emission trading can be advanced by focusing on how emission trading creates carbon prices, which creates incentives for technological change.

Sector Coverage and Sectoral Policies

The ETS covers emissions from energy and some industrial sectors (ferrous metals, mineral industries, pulp and paper). There were differing opinions on the extent of expanding the ETS over a broader range of sectors, including transport. It was mentioned that the Commission has in principle decided to extend the ETS to aviation. Under current CO2 prices, a one-way flight from the US to Europe would cost an extra 18 euros: hardly enough to induce a change of behaviour. The Commissions post-2012 review is also considering expanding coverage to further sectors. However not all sectors may be so easily suitable for the implementation of the tradable permits.

The workshop also addressed the idea of transnational sectoral agreements. These could operate separately from the UNFCC process. One regulator commented on their suspicion of such sectoral agreements - they can be quite challenging to put in place, and it was not clear how effective they are.

International support of national policy and leadership

As already mentioned international arrangements add commitment and credibility to many of the above mentioned instruments. One presenter emphasized the importance of the coordinating role of the Commission in the success of the ETS scheme. This included its role as the enforcer of scarcity as well as the agent insisting upon certain rules (such as no ex-post adjustments). The ability to shift blame for unpopular decisions to an external authority is not to be underestimated. The role of the Commission as an educator and facilitator of decisions, particularly through low key back channel informal consultations, is also valuable.

Another participant highlighted that leadership (implementing more stringent targets than Kyoto) has a number of potential national and international benefits, including driving technological breakthroughs and demonstrating the viability of climate change policies.

Tradable permits vs. GHG taxes

The possibility of GHG taxes was briefly discussed in the workshop. Tradable permits and GHG taxes are dual approaches to the externality problem and in a world of certainty are equally effective. With uncertainty, tradable permits have the advantage of ensuring the achievement of a set target. However, the price for such permits can fluctuate, which may discourage investment in abatement/low carbon technologies. By contrast, GHG taxes set a limit to compliance costs but the achievement of the target is not ensured and/or requires repeated adjustments in the taxes level as abatement technologies change over time.

Long-Term Carbon Contracts

One interesting suggestion by a participant as an alternative way to support the ETS was the use of long term carbon contracts. Such contracts could be awarded through technology - neutral auctions to buy abatement. They would provide long-term certainty to investors. They could also be funded through auctions of EU ETS allowances.

4. Summing Up

There is increasing consensus that there is a problem (denied until short ago) and that progress can only be achieved through a complex strategy. Even the most enthusiastic proponents of the technological progress approach will agree that we can not just sit and wait for these advances.

Europe leads the way in turning the concept of market based climate policy into reality and a continent - wide carbon price signal has emerged. The EU ETS in its current shape is the first step in an evolution to a global carbon market. It is an important tool but one that requires fostering and development. The establishment of the ETS is a welcome event creating, as one participant described, a ‘fact on the ground’, determining the shape of a future global system.

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Florence, 20 October 2006
Villa La Fonte, via delle Fontanelle, 10

Anthropogenic climate change is a global, long-term issue, and its control requires a global, long-term strategy.

The Kyoto protocol outlined a Climate Change Control (CCC) strategy and set targets for greenhouse gas (GHG) emissions from developed countries (those included in Annex 1) for the period 2008 – 2012. Developing countries are involved in this CCC strategy by hosting "Clean Development Mechanism" projects aimed at reducing emissions with respect to a baseline. These projects result in Emission Reduction Units which can be used by developed countries against their emission targets.

In Europe, compliance with the Kyoto targets is pursued through a Burden Sharing Agreement, which reallocates emissions targets among the Member States, and the Emissions Trading Scheme (ETS), which was introduced by Directive 2003/87/EC and became operational on January 1st, 2005. This is the world's largest emissions trading scheme to date, but not all sectors which are responsible for GHG emissions participate; for example, the transportation sector is outside the scope of the ETS. The experience which can be drawn from the initial implementation period of the EU ETS usefully complements the longer-standing experience with emissions trading in the US.

Over the last two years, discussions have intensified over CCC strategies beyond the timeframe covered by the Kyoto protocol. The Montreal Conference in December 2005 formally opened the process for a strategy beyond the current Kyoto commitments.

A number of issues are emerging as crucial for any longer-term global strategy to contrast climate change:

– the need for global cooperation within a consistent framework. At present, some large developed economies – the US and Australia – having not ratified the Kyoto protocol are not committed to limit their emissions. Moreover, some developing countries – notably China, India and Brazil - are set to become major sources of GHG emissions and their contribution to a global CCC strategy is essential if any meaningful result could be achieved;

– the advantages of a longer-term strategy in the face of a long-term issue. Any CCC strategy which aims at significantly reduce GHG emissions with respect to the current levels should be based on significant changes in individual lifestyle patterns and economic activities. This in turn requires significant investment in technologies which either abate emissions from current processes or introduce less-carbon-intensive processes. The Kyoto protocol finally entered into force in February 2005 - when its ratification by the Russian Federation delivered the required minimum level of global commitment – only a few years ahead of the 2008 - 2012 period. It is unlikely that any major investment is economically justified over such a short horizon. A longer-term strategy represents a more conducive environment for the investment in emission abatement or lower-carbon-intensive technologies which typically have an economic viability only over a longer period of time;

– the instruments for a global CCC strategy. Traditionally, environmental control has been based on administrative measures (prescriptions on processes, emission limits). However market-based approaches are becoming an increasing component of environmental policies. After the experience of SOx and NOx trading in the US, the EU ETS is the first multi-jurisdiction scheme, and the largest to date. The efficiency advantages of market-based instruments are clear and the challenge is to apply them as widely as possible;

– the implications of a market-based approach to emissions control on energy prices. One of the most controversial aspects of the EU ETS has been its effect on energy prices. To the extent that market-based instruments aim at internalising environmental costs and work through price signals, their impact on energy prices and on the price of energy-intensive products is to be considered as a normal, and even necessary outcome. However, the distributional consequences of these effects require a more careful consideration.

– There is more than one type of market-based instrument. A carbon tax was discussed and implemented in various European countries before the EU ETS was introduced, and is proposed again today as an alternative to the EU ETS by some critics of its functioning.

The Workshop aims at providing an opportunity for a first evaluation of the experience from the EU ETS and for discussing the crucial issues for a CCC strategy beyond the current Kyoto horizon.

Workshop structure

The Workshop is structured in three sessions. Each session is opened by two presentations, followed by two planned interventions providing the regulatory and industry perspective respectively. A general discussion concludes each session.

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PROGRAMME

08.15 – 08.45	*Registration and coffee*
08.45 – 09.00	**Welcome Address** **Stefano Bartolini**, Robert Schuman Centre for Advanced Studies **Pippo Ranci**, Florence School of Regulation
	Session I – *Experiences with Emissions Trading* Chair: **Jean-Michel Glachant**, University of Paris Sud
09.00 – 09.20	***Climate Change Strategies beyond Kyoto: An Agenda for the Workshop***, **Alberto Pototschnig**, FSR
09.20 – 09.45	***The Initial Experience with the EU ETS: The EU Perspective***, **Peter Zapfel**, EU Commission
09.45 – 10.10	***The Initial Experience with the EU ETS: An Academic Perspective***, **Carlo Carraro**, University of Venice
10.10 – 10.35	***The Status of GHG Emissions Trading in the US and Perspectives on the EU ETS***, **Thomas L. Brewer**, Georgetown University and CEPS
10.35 – 10.55	*Coffee break*
10.55 – 11.10	***The Regulatory Perspective***, **Sarah Samuel**, Ofgem
11.10 – 11.25	***The Environmental Perspective***, **Matteo Leonardi**, WWF Italy
11.25 – 12.15	***The Industry Perspective: A round table of representatives from energy sector companies***, FSR major sponsors
12.15 – 13.00	General discussion
13.00 – 14.30	*Lunch*
	Session II – *Towards a Longer-Term Global Strategy* Chair: **Mark Thatcher,** London School of Economics
14.30 – 14.55	***Achieving Global Cooperation: How to involve developing countries***, **Michel Colombier**, CIRAD
14.55 – 15.20	***The Challenges of a Longer-Term Strategy***, **Ignacio Pérez Arriaga**, Comillas University
15.20 – 15.30	The regulatory perspective
15.30 – 15.40	The industry perspective
15.40 – 16.00	Comments and general discussion
16.00 – 16.20	*Coffee break*
	Session III – *Instruments for a Global Strategy: The Potential Scope for Market Mechanisms* Chair: **Alberto Pototschnig**, FSR
16.20 – 16.45	***Which Instruments for an Effective Strategy?***, **Karsten Neuhoff**, Cambridge University
16.45 – 17.10	***The Harmonisation Requirements, Institutional and Governance Issues***, Mark Thatcher, London School of Economics
17.10 – 17.20	The regulatory perspective
17.20 – 17.30	The industry perspective
17.30 – 17.50	Comments and general discussion
17.50 – 18.00	***Closing remarks***, **Pippo Ranci**
	Followed by dinner