A tale of two cities: Kyoto in the light of Lisbon, an analysis of the EU emissions trading scheme before its entry into force.

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In your dreams
You saw a steady state a bounty for eternity
Silent screams
but now the wisdom that sustains us is in full retreat
Don't allow
this mythological hopeful monster isn't worth the risk
Kyoto now!

(Lyrics of "Kyoto Now!" by the punk band "Bad Religion")

Punk music has rarely been a source of inspiration for EU legislation. However, the Kyoto Protocol, ratified in 1997, seems to have inspired both the European Commission and the punk band mentioned above. Pursuant to Directive 2003/87C, the EU is about to launch the first international CO2 emissions trading scheme, which should pave the way for attainment of the Kyoto commitment of 8% of CO2 emissions reductions by the EU by 2008-2012. Enforcement of the Kyoto Protocol was, until recently, dependent on Russia's decision to ratify this international agreement. The US had already stated its refusal to do so, whereas one of the provisions of the Protocol made its entry into force conditional on the ratification by countries representing at least 55% of the world CO2 emissions. As a result, the future of Kyoto lay in the hands of the Russian Duma and President Putin. In the weeks ahead of this paper, President Putin announced the ratification of the Protocol by Russia, thus giving additional impetus to the EU Emissions Trading Scheme (EU ETS). This scheme, scheduled to be launched on 1 January 2005, will represent a breakthrough in the global fight against climate change.

It is unquestionable that the implementation of the EU trading scheme and the fulfillment of the Kyoto objectives will to a large extent be affected by geopolitical considerations. It must be recalled that Russia was lured into the Protocol by the "carrot" of more favorable terms of negotiation for WTO membership. However, the major trigger for this ratification was the promise of holding on to the 1990 CO2 emissions level before the collapse of the Soviet industrial sector. As a consequence, in an international CO2 emissions trading scheme, Russia is bound to become an allowance exporter, reaping revenues from the gap between its CO2 emissions allowance under Kyoto and its current level of emissions.

However, the business community in Europe did not welcome Russia's decision on ratification for the sole reason that it would generate additional revenues for this transition economy. This decision was greeted with relief in the EU because it will create a surplus of emissions, extremely useful in case the allowance price reaches unaffordable levels for EU industrial operators. The main concern over the EU ETS boils down to its costs for

EU industry and the effect on overall competitiveness. Member State officials, and the industrial operators opposed to the European scheme were keen to point out the contradiction between the fulfillment of the Kyoto targets and the pursuit of the Lisbon Strategy. This Strategy was designed to turn Europe's economy into a long-term growth machine, placing a strong emphasis on competitiveness, and thus external demand, to fuel growth. The EU ETS is expected to create additional costs for the European industries concerned, whereas most of the competitors will continue to operate free of to this type of regulatory constraints. This apparent contradiction within the EU policy agenda raises the following questions: Do Lisbon and Kyoto adversely affect one another? And if not, does this also mean that all costs and drawbacks associated with the EU ETS are fully anticipated and addressed by Directive 2003/87EC?

It will be argued in this paper that the European emissions trading scheme is an appropriate instrument to conciliate the attainment of the Kyoto and Lisbon objectives (part I). However, due account must also be given to the uncertainties characterising the scheme with respect to the price fluctuation of emissions allowances and the market distortions these might induce (part II). These uncertainties will be reflected upon to put forward precise proposals as to how the scheme can be improved, most notably in light of the "mid-term" review planned by the Commission in 2006 (part III).

(I) Killing two birds with the same stone, in an environmentally-friendly manner: How the EU ETS can contribute to fulfilling the Kyoto and Lisbon objectives

Sketching the EU emissions trading scheme takes only a few words: it is a cap-and-trade scheme intended to enable the EU to conform to its Kyoto targets in 2008-12. However, this concise introduction needs to be complemented by an analysis of the internal and external obstacles that may arise shortly after the EU scheme enters into practice. Will this EU emissions trading scheme be a strain on the Lisbon objectives of higher growth and competitiveness? In other words, are Lisbon and Kyoto conflicting in nature? In addition to that, can the EU rally other major emitters, or does the EU scheme run the risk of backfiring, in isolation from the rest of the international community?

A) Implementing Kyoto: the EU ETS as from 1 January 2005

a) A scheme embedded in the Kyoto Protocol

Public concerns over climate change induced by human activity mounted after repeated reports in the 1980's on the hole in the ozone layer. The discovery of this major effect of environmental damage prompted the international community to negotiate a progressive ban on substances found to deplete the ozone layer. The relevant international agreement, the Montreal Protocol, was originally signed in 1987 and amended in 1990 and 1992, laying the ground for the phase-out of substances such as chlorofluorocarbons (CFCs) by 2000. The difficult international negotiations aimed at having as many developing countries as possible on board showed the potentially conflicting nature of economic development and environmental considerations. A large coalition of developing countries finally agreed to ratify the Montreal Protocol, after a fund (the Multilateral Fund) was created to financially assist these economies during the phase-out period.

The greater attention paid to atmospheric damages induced by human activity by the international community led to the creation of a United Nations Framework Convention on Climate Change (UNFCCC) at the beginning of the 1990's. Building on the experience of multilateral cooperation under the Montreal Protocol, this UN forum endeavoured to stabilise the concentration of greenhouse gases (GHGs) in the atmosphere, in order to "prevent dangerous anthropogenic interference with the climate system." Taking account of the continuing climate change occurring in spite of this international cooperation, the countries belonging to the UNFCCC signed the Kyoto Protocol in 1997, and agreed thereby on a reduction by 5.2% below their 1990 levels of six greenhouse gases' emissions.[1] It must be noted that under the Protocol, only industrialised countries are forced to reduce their GHG emissions below their 1990 levels. Among them, the EU committed itself to an 8% reduction by 2008-2012. In mid-November 2004, 128 countries, including Russia, had ratified the Treaty, allowing for its entry into force on 16 February 2005. It must be recalled that Russia's ratification pre-conditioned the effectiveness of the Protocol. This resulted from the fact that this international agreement had to be ratified by those countries who together were responsible for at least 55% of 1990 global GHG emissions, in order to become legally binding.

[1] Namely Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_20), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF_6). Carbon dioxide (CO_2) accounts for 80% of the Community's GHG emissions. The main sectors contributing to total EU GHG emissions in 2001 were: energy industries (28%), transport (21%), industry (20%), agriculture (10%).

In addition to national measures meant to curb greenhouse gas emissions, Annex 1 Parties (the industrialised countries) could resort to the three so-called "Kyoto flexible mechanisms," namely Joint Implementation (JI), Clean Development Mechanism (CDM),[2] and international emissions trading. At the EU level, the "burden sharing" agreement reached in June 1998 drew on Art 4. of the Kyoto Protocol to redistribute the EU target among Member States, provided that the outcome would amount to an overall reduction of 8%. This was the first step in the direction of an emissions trading scheme. The second step was taken in 2003, when Directive 2003/87C entrusted Member States with the task of drafting national allocation plans as of 2004, in order to allow for a EU-wide market of emissions allowances to come into place on 1 January 2005.

b) The functioning of the EU emissions trading scheme

The emissions trading scheme will enter into force on 1 January 2005, whereas the targets set by the Kyoto Protocol will apply to the period 2008-2012. This early move by the EU was mainly driven by the objective of establishing a transition period, permitting the Member States, their industry, and the monitoring authorities to adapt and make the trading scheme fully operational before the EU becomes legally bound to meet the target of 8% of GHG emissions reduction.

The EU scheme is a so-called cap-and-trade scheme, divided up in phases: 2005-07, 2008-12, 2012-16 etc. Before the beginning of each period, the Member States must submit a national allocation plan (NAP) to the Commission, in which they specify the identity of the industrial sites concerned and the amount of allowances they are allocated. In the first phase (2005-08), 12,000 industrial sites[3] are included in the trading scheme, representing 45% of all industrial CO2 emissions, and 28% of total EU GHG emissions.[4] The cap is defined by the reduction objective agreed on by all Member-States under the "burden sharing agreement." This cap is transferred to the industrial level under the NAPs, as each industrial site in the relevant sector is allocated a definite amount of allowances, defined as a permit "to emit one tonne of CO2[5]." It must be

[2] JI (art. 6 of the Kyoto Protocol) and CDM (art. 12 of the Kyoto Protocol) allow both industrialised countries to finance and import emissions reductions from third countries. JI projects are to be undertaken in developed countries or countries with economies in transition, including at least two countries whose emissions are capped. CDM projects are to be located in developing countries that are not submitted to emissions caps.

[3] The biggest single sector is power generation, plus iron and steel, non-metallic minerals and pulp and paper. Refineries, coke ovens and all industrial boilers/generators down to 20MW thermal input are also part of the industries covered. These categories of activities, enlisted in annex I of Directive 2003/87/EC, must be covered by the 25 NAPs.

[4] European Environment Agency, GHG Emissions Trends and Projections in Europe 2003, Environmental Issue Report 36 (2003), Internet, 6 Nov. 2004

[5] Directive 2003/87/EC of the European Parliament and of the Council of October 2003

noted that the first phase of the EU trading scheme will exclusively concentrate on CO2 emissions. No later than on 30 April of each year, the industrial installations concerned must surrender a number of allowances corresponding to the amount of their annual emissions. In case the industrial operators realise that they will not be able to conform to the cap represented by the initial amount of allowances allocated, two solutions remain available to them:

- Pay the penalty of EUR 40 (and EUR 100 from 2008 onwards) per tonne of CO2 emitted for which the operator has not given allowances.
- Let the emissions exceed the initial amount of allowances, and buy the needed number of allowances on the new trading market. Firms curbing their emissions below the level fixed by the NAP, and selling the surplus to the industrial sites in need will constitute the supply side on this market.

The National Allocation Plans will be the cornerstone of this system. Their proper design and enforcement will guarantee both the attainment of the EU's targets in terms of CO2 reductions, and the emergence of a well-functioning European CO2 emissions market. The NAPs are assessed by the Commission on the basis of criteria spelt out in annex III, including conformity to the Kyoto commitments of the EU, compliance with EU law and non-discriminating nature of the allocations. According to Art. 9 of Directive 2003/87/EC, the NAPs must be submitted to the Commission at least 18 months before the start of the next phase. For the transition period 2004-07, the deadline initially set by the Commission was on 31 March 2004, which Italy and Greece failed to comply with, prompting the Commission to send written warnings. Within three months of notification of an NAP by a Member State, the Commission can reject the plan, notifying the reasons for this decision. The Member State must then integrate the changes requested by the Commission in a subsequent version of its NAP. Member States are responsible for the enforcement of the National Plan, the monitoring of the emissions, and the use of penalties. They must set up a registry to keep track of the transfer and cancellation of allowances, whereas a hub at European level must automatically verify the conformity of these movements with Directive 2003/87/EC.

B) Fulfilling the Lisbon Agenda on sustainable development

a) A common feature to all Lisbon instruments: a lack of delivery from Member States

In its Presidency Conclusions in March 2004, the European Council reaffirmed the EU's commitment to reach the Kyoto Protocol targets in the

period 2008-12. It must be recalled that, pursuant to the Conclusions of the Lisbon European Council in March 2000, the Union set itself the strategic goal of becoming "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth." The Lisbon agenda on sustainable development was introduced via the terms of "sustainable economic growth." Reductions in greenhouse gas emissions can therefore be categorised as a Lisbon instrument, as they should assist the EU in attaining the major objective of sustainable growth. Based on voluntary reductions from Member States before the launch of the EU ETS, this instrument has until now been characterised by the type of syndrome affecting most of the Lisbon Strategy: a lack of delivery from Member States.

The latest estimates compiled by the European Environmental Agency showed a slight improvement in 2002.[6] Annual greenhouse gas emissions from the EU-15[7] dropped by 0.5% compared to 2001, after previous increases over two years. These facts hardly contribute to reinforcing optimism on the attainment of the 8% reduction in emissions in 2008-12. The European Environmental Agency calculated that if the 8% reduction between the base year (1990 in most of the cases) and 2008-12 was to follow a linear trajectory, emissions should have fallen by 4.8% in 2002 (compared with 1990 = {(8/20)*12}), instead of 0.5%. Using the same assumption, four countries (France, Germany, Sweden and the UK) were on track to comply with the national targets sets under the "burden sharing agreement," whereas the remaining EU-11 were overstepping their emission targets. Among them, Spain seemed to be faced with a daunting task, as its emissions in 2002 were 39.4% above their base year level. It must be noted that Spain was initially placed in a favourable situation: its relatively lower degree of economic development in 1990 led the European negotiators to attribute it an initial 15% increase in its 1990-level of emissions. The Spanish increase in 2002 turned out to be well over double this initial increase.

The 8 new Member States from Central Europe[8] also benefited from a relatively favourable treatment during the negotiations of the "burden sharing agreement." Spain, Portugal, Greece and Ireland were allowed to increase their emissions in comparison with their 1990-levels, so that CO2 reduction-related objectives would not create a strain on the additional development needed by these economies. On the contrary, the 8 new Member States were asked to curb their emissions below their 1990-level.

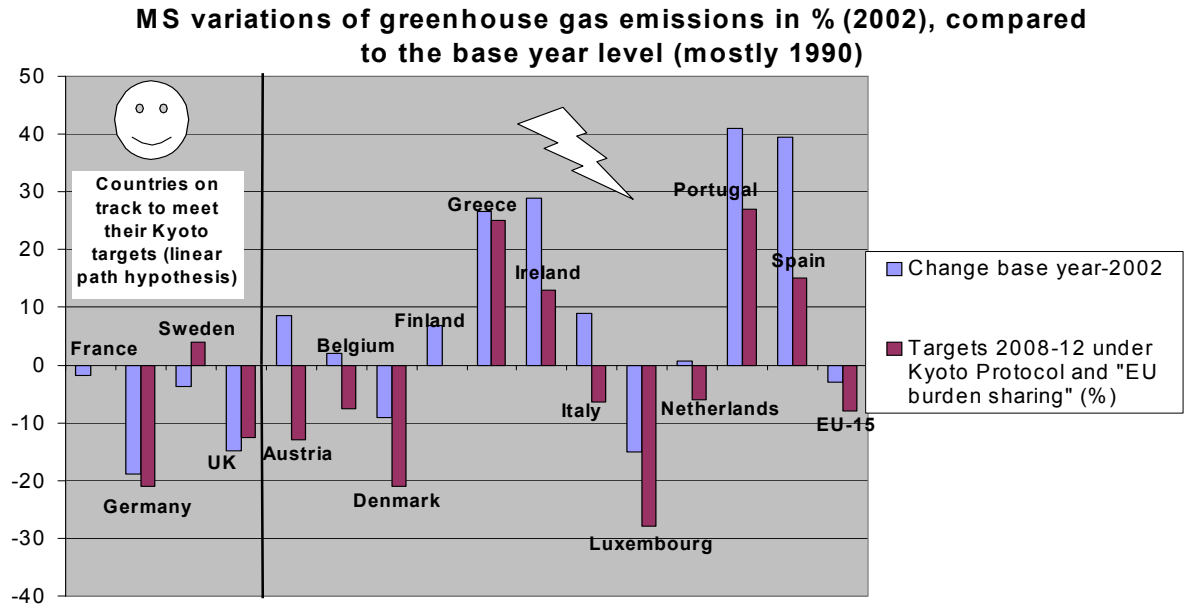
[6] European Environment Agency, EU15 Greenhouse Gas Emissions Decline After Two Years of Increase, Press Release (15 July 2004), Internet, 28 Oct. 2004

[7] EU Member-States pre-2004 enlargement.

[8] Cyprus and Malta are not submitted to Kyoto targets. These two exceptions are the result of their formal status as "developing countries" within the meaning of the UNFCCC.

However, this initial level did not reflect the state of play in these economies, as it had been determined before the collapse of the Soviet industrial sector. Following the post-Soviet restructuring process, the 8 new Member States from Central Europe had already met their Kyoto targets in the early 1990's, which gave them an emission surplus that would represent a valuable resource in the years to come in the case of an EU wide emissions trading scheme.[9] However, the sacrosanct 8% target set for 2008-12 applies only to the EU-15 and rapid improvement in terms of GHG emissions reductions will be needed if the EU-15 are to comply with Kyoto in 2008-2012. The EEA estimated that reductions had reached only 2.9% in 2002, which compared poorly to the 8% target for 2008-2012.

The following graph shows the situation in terms of emission levels and objectives, as it stood in the EU-15 in 2002:



Source: European Environment Agency, 2004

b) Coherence within the Lisbon Strategy: Does sustainable development conflict with higher competitiveness?

Adversaries of the EU ETS argue that the cap constraining the emissions level of EU industrial operators, as well as the correlated obligation for them to purchase allowances or to pay penalties when they exceed their emissions allocation, could undermine the attainment of the arguably two

[9] Slovenia is the only exception. The most developed economy of the CEECs did not undergo a drastic post-Soviet industrial restructuring. As a result, its development after the collapse of the Yugoslavian state structure and the relative smoothness of its post-1989 industrial restructuring caused it to overshoot its Kyoto target in 2002, by 6.7 percentage points (Kyoto target: 92% of its 1990-emissions level).

most prominent Lisbon objectives: sustained economic growth and high competitiveness. The relation between Lisbon and Kyoto, from that perspective, is mutually adverse: implementing the EU ETS can pose an obstacle to the attainment of the Lisbon objectives on growth and competitiveness and, conversely, a rapidly growing economy will increase demand for transport, energy and manufacturing, all major sources of greenhouse gas emissions. The industries covered by the scheme, so the argument goes, will not be able to compete on an equal footing at the international level, as they will be facing financial constraints created through the compliance with the targets set in the NAPs, whereas competitors from the USA or China will operate freely, using this regulatory advantage to offer lower prices. The negative impact the European economy could be even higher if energy producers translate higher costs due to the EU ETS into higher energy prices for all consumers. This in turn would represent a strain on domestic supply and demand, thereby limiting economic growth.

Two main counterarguments can be raised against this pessimistic view on the conciliation of Lisbon and Kyoto. Firstly, it must be noted that the more third countries that adopt trading schemes in connection with the EU ETS, the more the European cap-and-trade scheme becomes compatible with the objective of high competitiveness. Indeed, the extension of this scheme beyond the EU creates a level playing field in which international competitors are confronted with similar constraints and costs associated with greenhouse gases. Secondly, if there is a decline in competitiveness, it should affect the industries directly covered by the current NAPs. Some of these industries are not submitted to a high degree of external competition, such as the energy sector. Consequently, the negative impact on the competitiveness of the entire European sector should be limited. So should the negative impact on employment in the entire European sector. The net impact on employment could even be positive, provided that a sizeable proportion of the estimated 1.5-2% of GDP spent over time on technical adaptation to emissions restrictions goes to European suppliers. Over time, the number of employees in this newly emerging sector in Europe (including the services and counseling required for this adaptation) could overtake the number of posts lost in sectors directly affected by the NAPs. The establishment of an international trading area would reinforce the positive effect of the EU ETS on employment, as emissions-saving technologies and expertise supplied by European agents would benefit from higher demand.

The negative impact of the rise in energy prices remains to be assessed. Furthermore, it is also predictable that more industries will be covered by the scheme, in the second (2008-12) or third phase which should increase its negative impact on competitiveness and employment. These factors may counteract the positive effect of the establishment of an international

emissions trading area on the Lisbon Strategy, and of the development of EU expertise in the field of emissions-saving technologies and services. To conclude, whereas the scheme aimed at the fulfillment of the Kyoto targets in Europe will surely accelerate the attainment of the Lisbon objectives on sustainable development, it is also possible that this scheme could impact positively on employment and competitiveness. A number of hypotheses make this balance sheet conditional, but it shows at least that the mutually reinforcing nature of Kyoto and Lisbon (defined in the broadest sense) is more than wishful thinking.

C) Creating a blueprint for an international emissions trading scheme

a) Linking the EU ETS with other emissions trading schemes

Two major changes in the field of Kyoto provide, or will provide, incentives for third countries to establish emissions trading schemes and to link them to the EU ETS:

- The Russian decision to ratify the Kyoto Protocol, announced on 30 September 2004, will allow this treaty to come into effect seven years after it was agreed.[10] 126 countries, among them Japan, Canada, Switzerland, Norway and New Zealand, are now legally bound to meet their Kyoto targets in 2008-12. An emissions trading scheme can be the main instrument utilised to face up to this challenge.
- The functioning and the costs for the industry induced by the EU ETS will undoubtedly have an impact on the decision of the 126 countries. In particular, the months following the launch of the European system, on 1 January 2005, will be under close scrutiny from these potential trading partners.

The EU ETS is not an end in itself and is not meant to function in isolation from other emissions trading schemes developed by third countries. The Kyoto Protocol mentions international emissions trading as one of its Flexible Mechanisms, which should facilitate the attainment of the related national targets. Art. 25 of Directive 2003/87/EC provides for the mutual recognition of allowances between the EU and external trading schemes. Norway, Switzerland, Canada and Japan have already had formal discussions with the EU about the possibility of linking the different trading systems. There are some limits related to this interlinking of emissions schemes. First, it must be noted that EU Member States have agreed to meet more than half of their emissions targets at home. Second, from an environmental perspective, the purchase of allowances outside the

[10] The price for this Russian concession is said to be the generous terms of entry into the WTO granted by the EU to its Eastern partner. Russia was in particular asked to remove only a fraction of the distortions in its domestic energy market.

area of origin of the industrial operator will be neutral in terms of emissions if it is ensured that these external allowances are produced in the same conditions as in the area of origin. This implies that the units of allowances are harmonised, be it one metric tonne of CO2 or an amount of any other greenhouse gas as listed in Annex II of Directive 2003/87/EC. More importantly, it necessitates that the requirements on monitoring and reporting of emissions are equally stringent in all interlinked trading areas.

If these conditions are not met, the following might happen: imagine that a Canadian firm offers 2 tonnes of allowances, but the conditions for monitoring and measurement of emissions reductions are different from the EU's. This means that the reduction in emissions creating these allowances of 2 tonnes of emissions is not equivalent, in European terms, to 2 tonnes but to let's say, 1.9 tonnes. A European firm buys these allowances on the international market for greenhouse gas emissions allowances, as it needs 2 tonnes more to comply with the cap set in its NAP. The net impact on the environment is 0.1 tonne of supplementary emissions worldwide, compared to what would have happened if the EU ETS had not been interlinked with the Canadian scheme. This rather simplistic example illustrates the importance of the harmonisation of monitoring and measurement provisions in the agreements leading to the interlinking of third countries schemes with the EU ETS. This also explains why the negotiations of such agreements may take more time than initially expected.

b) Opening up to emissions-saving projects in developing countries

Finally, it must be pointed out that the EU ETS is open towards developing countries. The adoption of the so-called "linking Directive" by the Council in September 2004 permitted the integration of the Kyoto "flexible mechanisms" such as Joint Implementation (JI) and Clean Development Mechanisms (CDM). More specifically, CDM projects can be hosted by developing countries, which under the Kyoto Protocol have no targets in terms of reductions in greenhouse gas emissions. On the basis of these provisions, companies that carry out emission reductions projects in developing countries will be able to convert the credits they earn from these projects into emissions allowances.

The Netherlands is the only country that has already explicitly integrated the credits and allowances generated by such projects into its forecasted emissions levels by 2008-2012. Accordingly, the Dutch emissions level in 2002 was on track to meet its Kyoto targets, as its distance-to-target indicator was only -1.4 percentage points, but this held true only if the anticipated credits generated by investment in emissions-saving projects in third countries (JI and CDM) were taken into account. Without these credits taken into account, the Netherlands was off the target, by +4.2

percentage points.[11] It must be noted that some ambiguity persists as to whether the allowances generated by these projects will be valid before 2008. A Commission Staff Working Paper on the subject stated that this would constitute a breach of the Kyoto Protocol, as the treaty provided that "certified emissions reductions (credits convertible into allowances) obtained before 2008 may be used to assist in achieving compliance in the first commitment period (2008-12)." Does the conversion of credits into allowances before 2008 contradict the Kyoto Protocol? This needs further clarification, as some Member States are already making use of these mechanisms to accelerate the fulfilment of their Kyoto targets, using CDM and JI-based projects abroad. Some major industrial operators are keen to stress that clarification is also needed concerning the use of the credits generated through these projects. It seems that there are still uncertainties as to what extent and in which conditions these credits can be converted into emissions allowances in the EU trading scheme. This lack of clarity may turn out to be a major obstacle to the investment in CDM projects in developing countries by European companies, a major company operating in the energy sector said.

The major argument in favour of these compliance mechanisms with the Kyoto targets is the prevention of a technological gap between Kyoto-bound developed countries engineering emissions-saving solutions, and developing countries relying on pre-Kyoto technologies. This gap would be detrimental to emissions reductions worldwide. It would also make the entry of developing countries into Kyoto and emissions trading schemes uncertain, thereby calling into question the sustainability of the Protocol and the EU ETS. However, the reservations raised concerning the internationalisation of the EU ETS apply even more forcefully to the provision of allowances through "green" projects in developing countries, as the actual national standards in monitoring and measurement could differ more largely than between the EU and Japan or Canada for example. If the Commission does not closely scrutinise these mechanisms in the NAPs, it is likely that the net impact of the opening of the EU ETS towards developing countries will be negative in environmental terms.

Conclusion

It remains unsure whether such a change would have been in tune with the rhythm of the song quoted earlier. However, from an economic viewpoint, the punk group "bad religion" could have inserted "Lisbon" in the lyrics of its song "Kyoto now" without altering its ecological thrust. The complementary nature of Lisbon and the Kyoto-committed EU trading scheme is conditional on several factors, in particular on Europe's ability to create a niche in the emissions-saving technologies for itself, but it

[11] European Environment Agency, EU15 Greenhouse Gas Emissions Decline After Two Years of Increase, Press Release (15 July 2004), Internet, 28 Oct. 2004.

cannot be argued convincingly, as several industrialists do, that this system will *de facto* impose a strain on European growth and competitiveness. The same *a priori* rejection seems to sustain the argument that the EU will go its own way, isolated, thereby undermining its competitiveness. It is difficult to predict the outcome of the current negotiations with other major emitters such as Japan. Nonetheless, it seems unfounded to argue that Europe is combining scheme environmental protection with isolationism through its emissions trading, as several provisions in Directive 2003/87EC provide already for the internationalisation of the system and the integration of green projects realised in developing countries. Whether these provisions on the opening of the EU ETS will actually come into effect remains to be seen. The answer to this question relates largely to the uncertainties concerning the effective functioning of the system, and more precisely the price of emissions allowances.

(II) A business-friendly scheme? The cloud of uncertainties on the drawbacks of the EU ETS

The point was made in part I that compliance with the Kyoto-targets can also operate to the benefit of the Lisbon objectives, including growth and competitiveness. The solution adopted by the EU to comply with Kyoto must be considered more precisely: what is the economic rationale behind the EU emissions trading scheme, especially in comparison with alternative schemes such as taxation on emissions? It seems that no black-and-white analysis can be carried out: such an emissions scheme is economically justifiable but a high number of uncertainties persist regarding the price of the allowances or the market distortions the scheme might lead to. In the worst-case scenario, these uncertainties could substantially weaken the case for the choice of an emissions trading scheme in the combat against climate change.

A) The economic rationale behind the EU ETS

a) The "polluter pays" principle

There are two questions to be distinguished in the economic justification of the EU ETS. The first question refers to the "polluter pays" principle. Should a regulatory framework become obligatory for industrial operators, in order to make them pay for their emissions exceeding the cap set by the national authorities?

The principle behind "polluter pays" solutions is that the economic agent causing pollution is faced with higher production costs, which integrate the negative externalities originating from his activities. The production costs can be augmented with the help of taxation or costly regulatory requirements. The purchase of allowances to comply with the NAPs

exemplifies the latter option. This internalisation process provides an incentive for the economic agent to reduce activity in the polluting sector or to couple this activity with pollution-saving techniques. The second option is hoped for in the case of the EU ETS. The counterargument on the point of internalisation is that climate change and other negative externalities brought about by the emission of greenhouse gases are not geographically delimited. This has two consequences:

- Fully internalising the costs at the industrial level results in the creation of an unfair burden on EU industrial activity, as the industrial agents are not responsible for the integrality of climate change and greenhouse effect in Europe (according to the estimates shown above, energy industry accounted for only 28% of EU GHG emissions in 2001).
- Making the EU explore the possibility of a cap-and-trade scheme alone is inefficient, as it will benefit the EU only marginally and will only slightly decrease world greenhouse gas emissions (in 1990, the EU-15 accounted for 24.2% of Annex 1 – industrialised countries – CO2 emissions[12]).

The first point does not adequately reflect the situation in the EU. It must be recalled that the European Environment Agency's estimations indicate that the overall cost of the integration of emissions-saving technologies in the production chain should be an amount equivalent to 1.5-2% of GDP in Western European countries. This is undoubtedly a vast amount of money, and it does not take into account the uncertain price of emissions allowances for those firms, which will not be able to comply with their initial emissions caps. But two factors should help to curb compliance costs within the EU ETS, for the industrial operators concerned. First, as environmentalists like to point out,[13] the ambition driving the Kyoto objectives is quite moderate. It must be recalled that the EU ETS is primarily based on the limited objective of an 8% reduction in the 1990-emissions level of the EU-15. In addition to that, the EU decided to massively opt for initial allocations of allowances on a free basis. This applies to the first period, 2005-2008, where at least 95% of the allowances should be attributed free of charge. But this also applies to the second period, 2008-2012, where the proportion of free allowances will only slightly go down, to 90%.

[12] Peter C. Fusaro, Energy Convergence: The Beginning of the Multi-Commodity Market, ([New York]: [John Wiley and SonsGlobal]), chapt. 14, Internet, Global Change Associates website, 8 Nov. 2004.

[13] Some environmentalists are eager to point to the fact that without the US's participation, the Kyoto Protocol and the related targets in greenhouse gas emissions provide for a reduction of only 2% in the amount of carbon the world produces. In comparison, some hold the view that a 60% reduction would be needed to halt global warming. See Fiona Harvey, "Trade in carbon credit takes off," Financial Times, Internet, 21 October 2004.

The second point illustrates a typical "prisoner's dilemma." The worst outcome would arise if no move were made by any global player. This situation would aggravate the greenhouse effect and make later adjustment more drastic and more costly. The best outcome would be obtained in the case of full cooperation between the players. The EU, the USA, China, Australia, Russia and the other major emitters would cooperate, allowing for a marked decline in world greenhouse gas emissions. The worst-case scenario for the EU, much publicised by the critics of the EU ETS, would consist of the EU making a first move (such as launching the EU ETS and living up to its Kyoto commitments), thereby permitting other major emitters such as China to increase their level of emissions without any aggravation at the global level. The counterargument in favour of the EU ETS is that a positive signal must be sent by one of the players, in order to encourage the other players to cooperate. The EU ETS can be interpreted as such an initial positive signal, especially if the system turns out to be economically and practically feasible, without imposing too much of a financial strain on EU industry.

b) The efficiency hypothesis of a trading scheme

The second argument in the economic justification of the EU ETS refers to the emissions trading scheme itself. If the polluter is to pay, is an emissions trading scheme the appropriate solution, compared to alternative solutions such as specific taxes on the emission of greenhouse gases?

The main economic argument in favour of the emissions trading scheme can be summed up as the "arbitrage" argument. The emergence of an EU-wide emissions allowances market will guarantee that the purchasers acquire supplementary allowances in the region/country where the cost of CO2 emissions reductions is the lowest. In more economic terms, following a process of arbitrage by the industrial operators, it is expected that the production of emissions allowances and resulting allowances will be relocated to the zone presenting the lowest production costs. For this reason, allowance trading should lower the costs of compliance and this effect should even be reinforced by the extension of the scheme to third countries. According to the Commission's own estimates, cross-border trading reduces the costs of implementing the Kyoto commitments by nearly a fifth compared to separate national schemes.[14]

Comparatively to emissions trading schemes, the problems of taxation on greenhouse gas emissions are twofold:

[14] European Commission, Green Paper on Greenhouse Gas Emissions Trading with the European Union, COM/2000/087.

- The authorities set the amount levied arbitrarily and it can be either too high or too low, comparative to the marginal cost of CO2 emissions cut for each industrial operator. If the levy is too low, "business as usual" will prevail and there will be no marked improvement on the front of greenhouse gas emissions. On the contrary, if the levy is too high, taxation on greenhouse gas emissions will lead to an excessive burden on business. The amount of this burden will depend on the transition period needed by the industry to reduce its emissions, and the margin existing between the levy for one tonne of greenhouse gas emissions and the (marginal) cost of one tonne of reduction in greenhouse gas emissions.
- The second drawback is a consequence of the first one: The result in terms of emissions control is rather uncertain, contrary to the EU ETS. Depending on the levy and on the cost of emissions reductions for each operator, the result will either exceed or fall short of the reductions targeted by the national and European authorities.

In addition, it is also often argued that the establishment of such taxes can be politically quite difficult to sell. But this point represents an argument in favour of the EU ETS only in the short-term, as the European scheme will also draw its effectiveness from the costs it creates for greenhouse gas emissions. The emergence of emissions-related costs may be more gradual in the case of the EU ETS, but the "polluter pays" principle is subject to taxation as well as allowances trading, and in both cases this principle implies that the emitters are finally faced with the environmental costs of their emissions.

B) The uncertainties over the price of greenhouse gas emissions allowances

a) A limited risk … initially

The emissions price on the informal carbon market in Europe has been fairly low and stable until now. Prices in October 2004 have varied in a tight margin between 8.75 Euro and 8.85 Euro,[15] which represents less than a quarter of the current penalty for excessive emissions and one tenth of the same penalty for the period 2008-2012 (100 Euro per tonne). Moreover, one must remember that a few years ago, most experts expected the industrial operators to be confronted with a price of 20-25 Euro ($ 25-31) per tonne.[16]

[15] Point Carbon, Carbon Market Report, 22 Oct. 2004, Internet, 17 Nov. 2004.
[16] "Kyoto a-Go-Go", The Economist Global Agenda, Internet, 30 Sept. 2004.

The penalty for excessive emissions creates a *de facto* ceiling for the fluctuation of the price for additional allowances in the EU ETS: if the penalty is lower than the market price for allowances, the industrial operators will prefer to breach their initial cap and pay the resulting penalties. However, this ceiling will not be very effective after the penalty is raised to Euro 100 per tonne of CO2 emissions in 2008, as it is unlikely that the market price for allowances will ever reach this (comparatively) stratospheric level in the foreseeable future (this does not preclude, however, the emergence of derivatives, such as call options, the price of which are difficult to anticipate today).

But there are other reasons why the price of GHG emissions allowances on the EU trading market is not expected to skyrocket to unaffordable levels for European business. The internal factors have already been mentioned: They include the "hot air" (high supply of allowances generated by an outdated base year for authorised emissions level) provided for by the new Member States and the high proportion of allowances granted on a free basis (at least until 2012) These factors will interact with external factors to exert downward pressure on the market-based price of emissions allowances.

The dominant external factor at the moment is the combined early withdrawal by the potential leading buyer (the USA) and late entry of a major seller (Russia, after the Duma ratifies the Kyoto Protocol). This combined move prevents the emergence of major tensions on the allowances market. It must be recalled that Kyoto capped Russia's carbon emissions at the 1990 levels of 647 million tonnes, but the subsequent collapse of the Soviet industrial sector brought these emissions down to 400 million tonnes. This "hot air" blown in by Russia (and Ukraine[17]) after ratification of the Kyoto Protocol would be absorbed to a large extent by the US entry into the game. In 2000, the US's CO2 emissions amounted to 1.5 billion tonnes, exceeding its 1990 level by 100 million tonnes. If one makes the bold assumption that the US ratifies the Kyoto Protocol and sets itself a target of 8% of CO2 emissions reductions compared to its 1990 level, there would then be a net demand of 112 million tonnes for CO2 emissions reductions or allowances, which would represent nearly half of the emissions surplus offered by Ukraine and Russia. However, the situation is unlikely to change, as the spokesman of the State Department stated, shortly after George W. Bush's reelection. The US Congress is also considered to be firmly opposed to the ratification of Kyoto and is unlikely

[17] Ukraine was able to exhibit a negative balance (i.e. potential allowances) of 86.5 m tonnes of CO2 emissions in 2000, in conformity with the 1990 level set under the Kyoto Protocol (191.5 m tonnes). See Michael Grubb, On Carbon Prices and Volumes in the Evolving "Kyoto Market," Greenhouse gas Emissions Trading and Project-Based Mechanisms, OECD Global Forum on Sustainable Development: Emissions Trading (March 2003), Internet, 18 Nov. 2004.

to change its position. Different models confirm the deflationary effect of the American withdrawal on the price for CO2 emissions: depending on the model and variables selected, the decline of the price caused by the US withdrawal varies from 55% to 84%.[18]

b) The international market for GHG emissions: another oil market?

The similarity between the oil market and the GHG emissions market lies primarily in the high degree of exposure of the market price to geopolitical disorders. The inflationary pressure emerging from these external factors could then impact on the price of the allowances in the EU ETS. For Warwick J. Mc Kibbin and Peter J. Wilcoxen, this risk calls for a hybrid solution, consisting of markets of emissions permits separated between countries and linked only by the common price of an emissions permit[19]. As its inventors noted, the main criticism leveled against it is that it does not guarantee precisely how much emissions abatement will take place. On the contrary, in the EU ETS, the uncertainty is placed on the costs, and not on the results (provided that the NAPs are properly enforced). However, a certain level of control over the price of allowances should be maintained, so that the Kyoto targets for the EU are not attained at any price, regardless of the impact on EU industry

The behaviour of Russia will be of decisive character. Michael Grubb predicts in his OECD article that Russia, together with Ukraine, will play the role of Saudi Arabia in the oil market. Cartels are notoriously difficult to hold together, not least because of the temptation for each player to sell more than the initial quantity allocated in accordance with the price sought collectively. However, there is no doubt that Russia and Ukraine are fully aware that their revenues will be maximised if they refrain from selling the maximal amount of allowances. The outcome of this Eastern European collaboration, and the nature of the relations with the major buyers (most notably the EU) are still uncertain, but it is bound to have a marked impact on the market price of the GHG emissions allowances in the EU.

The flexible mechanisms recognised by Kyoto (JI and CDM) and allowing the EU Member States to give themselves allowances based on emissions-

[18] Michael Grubb, On Carbon Prices and Volumes in the Evolving "Kyoto Market", Greenhouse gas Emissions Trading and Project-Based Mechanisms, OECD Global Forum on Sustainable Development: Emissions Trading (March 2003), Internet, 18 Nov. 2004.

[19] Two kinds of permits would be offered in this system: perpetual and annual permits. The number of perpetual permits each country could issue would be decided by international agreement and could be based on the limits in the Kyoto Protocol. Annual permits would be sold at a stipulated price determined by international negotiations, providing an upper limit on the cost of compliance.
See Warwick J Mc Kibbin and Peter J Wilcoxen, Estimates of the Costs of Kyoto-Marrakech Versus the McKibbin-Wilcoxen Blueprint, Australian National University, Working Paper (July 2003), Internet, 6 Nov. 2004.

saving projects in third countries, are frequently mentioned by the Commission as instruments "lowering the costs and protecting the competitiveness of EU businesses."[20] The deflationary effect of these instruments is taken for granted, even though some interrogations persist on their practical functioning. It cannot be overlooked that the price of this type of investment will be increased by transaction costs (search for the appropriate site, financial transactions) and a relatively high degree of risk (political instability, remoteness preventing careful monitoring), which may limit the number of CDM and JI-based projects, diminishing the downward effect of these Kyoto mechanisms on the price of emissions allowances in turn.

Macroeconomic and technological changes should also be integrated as variables into the modeling of the price fluctuation of GHG emissions allowances. The recent rise in economic growth in Europe and Japan might drive up this price. Moreover, the price on the oil markets does not only offer an illustration of the possible price fluctuations on the EU ETS. It also represents a variable that needs to be integrated into any price forecast, as the expected return of oil prices to more reasonable levels ($ 35 a barrel of crude oil) could dilute the current efforts devoted to energy-saving solutions. The integration of oil prices in the modeling of the price fluctuations of GHG emissions allowances suffices to show how complex such forecasting will be. It follows from this short analysis that the price issue pertaining to the EU ETS should be taken seriously, despite the apparent lack of tensions on this market today.

C) The risks of market distortions

a) Pre-emptive action by the Commission: the current evaluation of the NAPs

The Commission seized the opportunity to stress the risks of market distortions arising from differing national rules on allowance allocations, as early as 2000 in its Green Paper. In the Commission's words, "there is (…) a trade-off between providing greater equality of treatment and more simplicity on the one hand, and Member States maintaining greater autonomy on the other."[21] If the EU ETS cannot be seen in isolation from the other major emitters in the world, it is also true that this scheme must be in tune with one of the most prominent achievements of the EU, the Internal Market. More generally, it must be ensured that that the environmental objectives pursued by the EU ETS do not run counter to the achievements and ongoing conduct of other EU policy areas.

[20] DG Environment of the European Commission, Question and answers on Emissions Trading and National Allocation plans (26 Oct. 2004), Internet, 2 Nov. 2004.
[21] European Commission, Green Paper on Greenhouse Gas Emissions Trading with the European Union, COM/2000/087

Two issues came to the fore during the evaluation of the NAPs by the Commission.

The first one referred to the potential for discrimination between firms covered by the allocation plans and new entrants after the EU ETS was launched. Since most allowances for the already existing firms had been "grandfathered" (meaning distributed on a free basis and based on past emissions) it seemed quite problematic to either prevent new firms from entering the markets covered by the EU ETS or to discourage entry by making new entrants pay for their emissions, whereas the incumbents had not been confronted with such expenses. This issue of potential discrimination against new entrants was tackled by Member States and the Commission through the enforcement of Criterion 6 in Annex III of Directive 2003/87EC. This criterion provided for clear rules on the treatment of new entrants, and in the light of this requirement, the Commission declared itself satisfied with the mechanisms laid out in the 16 allocation plans assessed.[22] The solution adopted by all 16 Member States had been that of a reserve of allowances for the new entrants, which would be granted on a free basis. "grandfathering" will therefore apply to both the incumbents and the new entrants, which will guarantee equal treatment and prevention of rents on the markets covered by the EU ETS. Nevertheless, the Commission must remain careful as to whether the size of the reserve is set in accordance with the predictable trends in terms of growth and competition on the markets covered. If the reserve is deemed insufficient, it will amount *de facto* to re-creating discrimination between incumbents and new entrants.

The second issue boiled down to "ex-post adjustments." In the 16 NAPs assessed before the end of October 2004, two Member States, namely Austria and Germany, were singled out for inserting in their allocation plans mechanisms to redistribute allowances in the course of the period 2005-2008, depending on the actual level of emissions. The Commission found these provisions to be in breach of Article 11 and Criterion 10 of Directive 2003/87EC, as Member States were bound to decide before the trading period about the quantity of allowances allocated in total to each site. This type of breach posed a problem of crucial importance. It could be considered that these adjustments would cause uncertainty for industrial operators, thereby discouraging emissions-saving investments. The German plan best exemplifies this type of adverse incentive against emissions-saving investment. Germany intended to revise the amount of allowances for existing installations with annual emissions lower than 40%

[22] The first batch of decisions came out on 7 July 2004 and included Austria, Denmark, Germany, Ireland, the Netherlands, Sweden, and the UK. On 20 October 2004, similar Commission Decisions were addressed to 8 other Member States, namely Belgium, Estonia, Finland, France, Latvia, Luxembourg, Portugal, and the Slovak Republic.

of base period emissions. In this context, it was quite predictable that firms, which could potentially reduce their emissions below the 40% threshold, would refrain from doing so, in order to maintain their initial amount of allowances. Consequently, they would emit slightly more than 40% of base period emissions, whereas it would have been from an environmental viewpoint more beneficial that they use their full potential for emissions reductions, be it above or below the 40% threshold. Germany had to remove this ex-post adjustment mechanism, like Austria, whereas the 8 national plans assessed on 20 October 2004 were judged to be in compliance with Directive 2003/87EC on this type of market distortion.

b) The enduring distortions

The assessment of the NAPs performed by the Commission does not suffice in itself to remove all market distortions. Some of them are inherently linked to the division of labour between the Member States and the Commission.

Despite the verification process ensured by the Commission, the fact that each Member State decides individually on the amount of allowances for each industrial installation might lay the ground for undue state aid and breach of competition law. It cannot be ruled out that industrial operators call on the Commission to take action against state aids, in case they perceive the amount of allowances granted by other Member States to their competitors as being excessive or at least superior to their own amount of allowances.

Another type of distortion to the Internal Market is created by the fact that, in compliance with the minimal share of allowances granted on a free basis and set by the Commission, Member States can decide on the share of allowances they want to auction. For the period 2005-2008, among the Member States resorting to auction, Denmark has indicated that 5% of its allowances would be auctioned, which was higher than the share of allowances blocked for auction in Ireland (0.75%) or in Lithuania (1.5%). The share of allowances auctioned will differ more widely when the floor for free allowances will drop to a minimum of 90% in 2008-2012. In such a regulatory setting, it is quite clear that those countries attributing a proportion of allowances close to 100% on a free basis will create more favourable conditions for the establishment and activities of GHG-emitting industries. This regulatory advantage might lead to practices ruled equivalent to state aids by the Commission, and would also slow down the process of emissions transfer to emissions producers located in other Member States with a lower marginal cost for emission. Moreover, it might result in creating a dynamic of collective reaction, prompting all Member States to bring the share of free allowances up to 100% or slightly

less. EU Member States would then be deprived of a crucial instrument to control the upward moves of the allowance price or at least to alleviate, if need be, the emerging tension on the market for emissions allowances.

Conclusion

The economic case for an emissions trading scheme is based on the signal sent by the allowance price and the process of relocation of allowances production to the most efficient regions or Member States. This economic rationale does not preclude the persistence of uncertainties for the businesses covered by the scheme. The first source of uncertainty stems from the numerous variables set to influence the price of emissions allowances. One of the most decisive factors, the behaviour of third countries involved in international emissions trading, is by definition extremely difficult to anticipate, making predictions on allowance price in the medium-term a mere gamble. The second source of uncertainty originates from the market distortions generated by the variety of allocation procedures and decisions at the national level. It is still too early to assess the degree of distortion to the Internal Market that these differences in the content of the NAPs will cause. However, these two interrogations on the allowance price and EU ETS-related market distortions call for further improvement, both in the action of the Commission and in the allocation procedures defined by the NAPs.

(III) Improvement is in the air: making the EU ETS effective, reactive, and ready for extension

Member States have maintained a high number of prerogatives under Directive 2003/87EC, mostly in the drafting of the NAPs. This means that a large part of the allocation procedures are still defined at the national level. However, paradoxically, this stronghold of national sovereignty within the EU ETS might reduce the Member States' leverage in case of inflationary tensions on the allowance market. In that case, the lack of harmonisation might considerably restrict the room for maneuver, as no national or European actor would be capable of responding effectively to drive down the allowance price. This risk calls for further harmonisation of the NAPs, and hence for the Commission to complete Directive 2003/87/EC on this point. The need for adjustments is not restricted to the founding directive: the Commission must ensure that Member States fully comply with the requirements relating to the NAPs, and it should not hesitate to adapt its internal structure to guarantee assessments in line with other EU policy areas.

A) Making the emissions scheme an effective EU policy instrument

a) What full enforcement means…

The timing of the submission of NAPs by Member States turned out to be quite chaotic in 2004, despite the unambiguous deadline of 31 March 2004 for the EU-15 and 1 May 2004 for the EU-10, initially laid down by Directive 2003/87EC. By 25 June 2004, only 16 Member States had fulfilled their duties by having notified their NAP to the Commission. Among these plans, only 8 of them were sufficiently complete to enable the Commission to make a decision on the compatibility with the relevant Directive. At the end of October 2004, the Commission had not yet assessed 7 NAPs, while the Greek plan was still being awaited. The Commission stood firmly by its initial position that it would not take action against delays in the submission of NAPs. This position can be criticised, as it sent the wrong signal to Member States, suggesting that the Commission would be equally lenient in 2007, during the next series of NAP assessments. The Commission must make it clear that compliance with the deadline for the submission of NAPs is critical, as it is a precondition for the quality and precision of the assessment of the national plans, which in turn will determine the degree of attainment of the Kyoto targets in 2008-2012. In other terms, in the course of the initial phase from 2005 to 2008, the Commission must forcefully stress that the deadline (18 months before the beginning of the relevant period) is binding for all and in case of failure to comply, would lead to action for infringement.

Action for infringement procedures must become a credible threat for Member States, not least if they fail to revise their national plan in accordance with the adjustments required by the Commission. This strict follow-up by the Commission should apply to France and Finland today, as the NAP of these two countries was rejected on the grounds that it did not include all installations of the sectors mentioned in annex I of Directive 2003/87EC. Strict assessment of the NAP and the revisions asked for by the Commission must prevail in any case. If it does not, the EU ETS runs the risk of generating discrimination among Member States and among industrial operators, while postponing the adoption of emissions-saving techniques by the industries concerned. This delay would, in turn, make subsequent "green investment" more costly for the firms involved, thereby creating more political pressure for a revision of the whole scheme.

The full enforcement of Directive 2003/87EC can be described as an extremely complex task for the Commission. This challenge revolves around 3 key issues, and it is important that the Commission does not lose sight of any one of these aspects, which constitute the backbone of the enforcement process:

- Proper assessment of the NAP, including the clauses on the temporary exclusion of certain installations and the cases of *force majeure*.
- Proper monitoring and reporting of emissions. Pursuant to Directive 2003/87EC, this task is delegated to the Member States,[23] but the Commission must be ready to carry out inquiries whenever doubts are raised on the validity of the data submitted by Member States.
- Opening of the EU ETS towards other trading schemes and international emissions trading starting in 2008, in accordance with the Kyoto commitments of the EU. This implies constant verification by the Commission that the allowances purchased in other trading schemes are duly equivalent to an emissions reduction by the same amount in Europe. As regards the suppliers of "hot air" such as Russia or Ukraine, it can be argued that the credits bought from these countries and turned into allowances are not equivalent to reductions in CO2 emissions: the emissions reductions, resulting from the choice of a base year prior to the collapse of the Soviet industrial sector, can be considered as purely "notional." One counterargument could be that despite its accidental nature, the sharp decline in Russian and Ukrainian emissions has effectively taken place from 1990 onwards, thereby markedly reducing the amount of global GHG emissions.

b) Inserting this piece into the wider EU policy puzzle

Apart from the environmental field, the EU ETS will have spillover effects in at least 3 other different EU policy areas. The first and second areas have already been touched upon in this paper: competition and the internal market. The third area is industrial policy, as the EU ETS will play a part in the emergence and decline of specific European industries. Development, trade, research and development are other fields, which are likely to be affected by the launch and functioning of the EU ETS.

The involvement of DG Competition and DG Internal Market represents an essential element of the sound management of the EU ETS. Without a review of the NAPs by these DGs, the allocation of emissions by Member States are likely to be called into question and perhaps even ruled illegal, undermining the smooth functioning of the scheme and the certainty of the business environment for those industries concerned. For this reason, it seems highly desirable to adopt (in a slightly different manner) the solution chosen for Maritime Affairs under the incoming Commission:

[23] On the basis of Article 14 of Directive 2003/87EC, the Commission shall adopt guidelines for monitoring and reporting of emissions, and the Member States shall ensure that emissions are monitored in accordance with these guidelines.

create a task-force at the operational level to monitor the NAPs, in order to prevent the occurrence of cases of state aids and distortions to the Internal Market. This task-force should be mobilised just ahead of each new period of the EU ETS, in order to monitor the NAPs before their entry into force. This task-force should also seek to transmit information in the same preliminary phase to the other DGs, in order to inform them of the expected impact of the EU ETS on their policy area in advance. The fact that these DGs (namely Industry, Development, Trade and R&D) would not be involved in decision-making on the NAP is to be linked to the necessity of maintaining a rather small and efficient task-force, which would be asked to meet tight deadlines before the launch of the next period under the EU ETS.

B) A reactive scheme: the reform needed to gain control over price

a) The need for further harmonisation of the allocation procedure

In Article 30, entitled "review and further development," Directive 2003/87EC sketches the improvements that will need to be elaborated upon in a "mid-term review", due by the Commission by 30 June 2006. Among the improvements listed, the Commission acknowledges that attention should be paid to "further harmonisation of the method of allocation" (Art. 30/2/c). In addition, the Commission will want to reflect further on the "functioning of the allowance market, covering in particular any possible market disturbance" (Art. 30/2/h). These two improvements seemingly address two separate issues. However, the need to intervene in case of "possible market disturbance" indicates precisely the direction toward which further harmonisation of the allocation procedure should be oriented: more control by Member States over the price fluctuations of the emissions allowances.

It was emphasised in part II that national differences in the proportion of allowances "grandfathered" and auctioned could be expected to generate distortions in the Internal Market, interfering with the economic dynamic of the relocation of emissions production to the most efficient Member-State (lowest marginal cost of GHG emissions). It was also noted that competition could emerge among Member States, exerting upward pressure towards the hypothetical ratio of 100% of allowances allocated free of charge. Finally, and this is where harmonisation of the allocation procedures and control over the price fluctuations converge, Member States would gradually reduce their ability to intervene in case of tension on the market of emissions allowances, if they gave in to a general tendency for more and more allowances granted free of charge. Consequently, the "mid-term review" should address these converging imperatives by proposing a reform for further harmonisation of the national allocation procedures.

b) Keeping a lid on the allowance price

Pursuant to Annex III of Directive 2003/87/EC, the criterion for a reserve of free allowances for new entrants should continue to be enforced. This reserve prevents discrimination between new entrants and incumbents, and does not create rents for the latter. However, the threshold for the share of allowances "grandfathered" (granted free of charge) should become binding. In other words, the cap of 90% of allowances "grandfathered" in period 2008-2012 should represent a ceiling for all Member States: those could only allocate at most 90% of their allowances on a free basis and correspondingly, they should auction at least 10% of their allowances.

The Commission should harmonise the auctioning procedures. Auctioning should take place every year and lead to the allocation of an equal part of allowances. For instance, if 10% of total allowances are to be auctioned over 2008-2012, 2,5% of these should be auctioned every year. All allowances should be auctioned at the same time, at the beginning of each year, in each Member State, following the principle of "blind" bidding. All bidders make one single offer simultaneously for each amount of emissions they are interested in and submit it in due time to the national authorities. This procedure seeks to prevent attempts of "gaming" by the bidders, meaning tacit agreement reached through the emission of signals such as the price offered or the decision to bid or not. It must be recalled that such behaviours helped to drive down the price of UMTS licenses in several Member States recently, to the advantage of the phone operators.

The binding ceiling on free allowances should gradually decrease (90% in 2008-2012, 85% in 2012-2015...). This process would provide increasing room to maneuver for Member States to intervene in case the price of emissions allowances is surging to unaffordable levels for businesses. Under these circumstances, the Commission would issue a green light on the free allocation of allowances meant for auction. These free allowances should benefit the industrial operators exhibiting the best conduct in terms of emissions. This best conduct would be illustrated by a clear-cut criterion: this would preferably be the share in emissions reductions of each industrial installation.

Scenario: 2013, Commission and Member States called into action

Period 2012-2015. Member States are obliged to allocate at least 15% of their allowances through auctioning. In 2013, deteriorating relations with Russia, coupled with a low oil price ($35 a barrel of crude oil) and a persistent lack of innovation in terms of emissions-saving technologies have pushed up the price of a unit of allowance to the record high of 40 Euros. Industrial operators press the Commission to take action. The Commission allows the free allocation of the 5% of allowances previously meant to be auctioned in each Member State. The national authorities select the industrial sites exhibiting the fastest reduction in emissions over the five-year period leading to 2012, to award them an extra 5% of allowances, free of charge. This joint move by the Commission and the national authorities contributes to alleviate the current tension on the market of GHG emissions allowances. The price of emissions allowances returns to a more affordable 30 Euros.

One supplementary adjustment is needed. The Commission should ensure that Member States do not use the funds raised through auctioning for other purposes than a reduction in GHG emissions. The alternative use of these revenues for unrelated long-term projects or for the reduction of public deficits would de facto annihilate the effectiveness of this "safety valve" on price fluctuation. Despite the permission of the Commission to allocate allowances free of charge, some Member States would find themselves unable to renounce these revenues, because they would be indispensable to the continuation of certain projects or because such a decision would aggravate public deficits. In order to avoid this budgetary trap, the Commission should ensure that Member States save the revenues reaped through auctioning for emissions-saving projects, financing R&D or "green" facilities in the public sector.

The harmonisation of the national allocation procedures described above should be the centerpiece of a new directive proposal, amending Directive 2003/87EC. The Commission should seize the opportunity of the "mid-term review" to put forward this proposal, or at least to consult Member States and industrial operators on its content.

C) A promising first step…

a) Insufficient to tackle climate change…so what?

While major environmental organizations such as the WWF are displaying public support for the Kyoto Protocol and the EU ETS, other environmental actors are eager to point out sobering facts, such as the rather disappointing 2% reduction in world CO2 emissions that will result from a Protocol implemented without the US. For these environmentalists, the Protocol and all related schemes are too weak, as a cut of 60% in world CO2 emissions would be required to halt global warming.[24]

The urgency prevailing on climate change will not be called into question in this work. It must be recalled that prominent international bodies such as the UN's Intergovernmental Panel on Climate Change forecast a range of warming between 1.4°C and 5.8°C over the next century, adequately illustrating the rather timely character of schemes such as the EU ETS. The extremist position of ruling out any initial improvement in terms of GHG emissions, whatever the percentage of reduction is, for the reason that it fails to live up immediately to the challenge of global warming cannot be left without criticism. The variable of "political acceptance" must not be ignored, as it preconditions the sustainability of the solutions devised to tackle climate change. Reducing emissions by 60% would be overly costly in political terms, and this type of drastic measures is doomed to remain wishful thinking. The EU ETS has the merit of having integrated the imperative of political acceptability. Its second merit is its offer of an interesting basis for the progressive tightening of the regulation on emissions, thereby representing both an ambitious and realistic solution in the long term.

b) A starting point for a sustainable scheme

Pezzey (2002) defines three variables to be considered in the design and implementation of emissions trading schemes: cost minimisation, information efficiency, and political acceptability.[25] It was described in part II how the allowance price plays an informational role, indicating to the industrial operators where the most efficient location for emissions are. It was also noted that the resulting process of reallocation to the region/country with the lowest marginal cost for emissions largely contributes to reducing costs for EU industry. However, the principal advantage of the EU ETS, comparatively to more ambitious trading

[24] Fiona Harvey, "Trade in carbon credit takes off", Financial Times, Internet, 21 October 2004.
[25] Jack Pezzey, Distributing the Value of a Country's Tradable Carbon Permits, Paper Presented at a CATEP Workshop at University College in London (2002), Internet, 2 Dec. 2004.

schemes and taxation-based scheme, relates to the criterion of political acceptability. Starting moderately, the EU ETS gives the industrial operators time to adapt and allows for the emissions-saving expertise and technologies to develop. These advancements in technology and knowledge can be expected to later facilitate the extension of the scheme to additional sectors and additional greenhouse gases, by reducing the costs of emission reductions and offering solutions to overcome technical difficulties that arise in the additional sectors.

It cannot be convincingly argued that political acceptability will run counter to the effectiveness of the EU ETS on climate change. The main asset of the EU ETS in that perspective is precisely its conciliation of political acceptability and environmental effectiveness. The frictionless launch of the EU ETS will serve as the best promotion for the adoption of emissions trading schemes by third countries. The emergence of a possible leading position for the EU, in emissions-saving technologies and expertise will have the same impact. This point is crucial, as the environmental benefits of the EU ETS will be close to zero as long as other countries do not imitate the European efforts in emission reductions. From that perspective, political acceptability and environmental effectiveness are mutually reinforcing under the EU ETS. Gradualism was a founding principle of European integration. Encapsulated into the EU ETS, it should be given a second life as from 1 January 2005, hopefully permitting the international integration of schemes aimed at the same objective, effectively combating climate change.

Conclusion

The Commission set itself the task of reporting to the European Parliament and the Council on the proper functioning of the EU ETS in 2006, a year and a half after the official launch of this trading scheme. This seems to be a reasonable commitment, as some uncertainties persist on the fluctuation margins of the allowance price and the market distortions caused by the allocation plans. However, the Commission should be more ambitious, using the deadline of 30 June 2006 to draft a report on the scheme and, on the basis of this report, to pass a Directive proposal amending Directive 2003/87EC. The amendments should be intended to fill the gaps in terms of harmonisation of the allocation procedures, primarily to enable the Commission and Member States to respond if the allowance price reaches a record high. It should also establish a task force within the Commission to allow for a thorough assessment of the NAP, in full enforcement of Directive 2003/87/EC and the principles driving the Internal Market.

Overall conclusion

In the first half of the Lisbon Process the Commission repeatedly stressed the need to foster the emergence of new industrial and technological sectors, where Member States could develop a competitive advantage and even take the global lead. The Kyoto Protocol offered this opportunity, and the EU rightly seized it by devising a blueprint for emissions trading. This blueprint, established by Directive 2003/87EC, will turn into a fully-fledged allowance-trading scheme from 1 January 2005 onward. A great deal of skepticism has prevailed in the preliminary phase, from the founding Directive to the launch of the scheme. This skepticism was based, above all, on the potential costs for European industry imposed by this solution. This position was additionally backed by the US's refusal to ratify Kyoto, and by an enduring scientific controversy on the reality of climate change.

It cannot be denied that the EU ETS is, partly at least, characterised by uncertainty. This bet does not relate to the tangibility of climate change. It must be accepted that scientific evidence can always be called into question, which does not contradict the fact that the large majority of data available so far sustains the existence of anthropomorphic interferences with the climate. This uncertainty does not relate to the price of emissions allowances either. The informal European carbon market does not hint at unsustainable prices for the industrial operators concerned. The adjustment proposed in this paper, namely further harmonisation of the allocation procedures to create a common mechanism for intervention in the case of a surging allowance price, should help keep a lid on this adverse factor for European industrial activities. The real uncertainty pertains rather to the attraction exerted by the EU trading scheme on other signatories of Kyoto, and on non-Kyoto countries to ratify the Protocol or re-enter international negotiations on the subject.

In addition to further harmonisation of the allocation procedures, stricter assessment of the NAPs and improved coordination within the Commission should give rise to a more effective emissions trading scheme. These adjustments should also allow for increased compatibility between the EU ETS and the Internal Market, not to mention other relevant EU policy areas (trade, R&D, industry). In that regard, the devil is in the details: the proposed changes should reinforce the efficient functioning of the EU emissions trading scheme, thus augmenting its international appeal and its capability to combat climate change. Regarding the international appeal of the EU ETS, developing countries are considered, alongside the current US position, as a major obstacle to effective reductions in global GHG emissions. However, the EU ETS could also represent an inspirational system for developing economies.

The prospect of additional revenues generated by the supply of emissions allowances, under an international trading scheme, could constitute a major incentive for developing countries to enter emissions trading.

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