

**Paper 9**  
**IS THE EU ETS A SUCCESSFUL MODEL?**  
**CAN IT FORM THE BASIS FOR A WIDER MARKET?**

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**Executive Summary**

The initial intention of the EU-ETS, set up in 2005, was to help Europe to achieve its 8% Kyoto reduction target, with a long-term aim of establishing a low-carbon economy of the future. This cap and trade system, the world's first, can be extended beyond Europe, firstly, by linking with similar schemes in other countries, and secondly, by encouraging investment through the CDM and JI. After three years of implementation, the following conclusions can be drawn: 65% of the companies participating in the scheme had taken steps to make their activities less polluting by 2007. By 2010, The EU-15 will have reduced their emissions by 12.6% below the base year level while, with a 7.9% reduction from 1990 to 2005, the EU-27 has almost reached its target. Through the scheme, the Kyoto target will be reached at a projected cost equivalent of less than 0.1% of the EU's GDP. The EU-ETS has already been linked to three further schemes and linkages with other domestic schemes around the world are under discussion.

A reform, newly introduced by the Commission in January 2008, is being ratified to correct the shortcomings of the EU-ETS and to improve it. Further to the extension regarding the greenhouse gas and sectors covered, the main improvements of the proposal are to fix an EU-wide cap and to auction the EUAs directly to companies. The objectives of this reform are to achieve the target of a 20% reduction by 2020 (with a 30% reduction if an international agreement is found) and at least a 50% reduction by 2050.

Further reforms are needed however to ensure that the goals are met and to enable, in due course, deeper cuts to be made. Such reforms include

- a) A central European Bank for Emissions Trading (EBET) needs to be established that would conduct auctions, regulate the market and conduct market operations to stabilise, as far as possible, a rising carbon price. The political framework – the target for emissions cuts over a period of years - would be established, as at present, by the Council of Ministers and Parliament, on the proposal of the Commission, after taking scientific advice and in the light of international commitments. Implementing the goal would be the task of the new EBET.
- b) The scope for use of the CDM should be given a fixed limit, to avoid weakening the cap. Support for low carbon development in the South should be addressed in other ways, as discussed below, and in other papers.
- c) A position on competitiveness will need to be established. The range of options available to address threatened competitiveness is reviewed, including the net macroeconomic benefit / do nothing approach, various forms of support, and more radical approaches, including the self-imposition of a carbon export tax by the competing country – or the most transformative approach, as discussed below.
- d) The ambitious long term way is suggested by the project for a global climate community of willing states, based on equity. In this approach, participants from north and south would agree a long-term target for carbon reduction, make mutual commitments to cut or limit the rise in their emissions, based on a transition to equal per capita entitlements, facilitate technology transfer, establish common resources to fund sustainable development and adaptation and common institutions to implement the plan. Such a treaty requires a high level of political commitment and ambition. It would have the great advantage of giving all concerned a shared purpose and industry the long term

perspective of a high carbon price which will mobilise investment in new technology and endeavour.

The EU ETS represents a good basis from which to develop a global carbon market. An experimental enlargement of this ETS to India could be possible and timely and might lead the way to a more ambitious Community for Climate Protection and Development between Europe, India and other willing countries in the developing and developed world.

## Introduction

In January 2007, the European Union accounted for 16% of the global emission of greenhouse gases (GHGs). As a way of reducing this total and enabling it to take the lead in reducing its emissions, the EU set up an Emissions Trading System (ETS) that has been innovative, ambitious and reasonably, effective. Three years after its creation, the system has shown some success but also shortcomings which prevent it from being entirely efficient in meeting its targets.

Under the Kyoto Protocol, the EU<sup>1</sup> is committed to an 8% reduction in GHG emissions by 2012 compared to 1990 levels. Additionally the Union has set itself more ambitious objectives: 20% emissions reductions (compared to 1990 levels) by 2020, 30% if an international agreement is reached, as affirmed during the March 2007 European Council<sup>2</sup>, and at least 50% by 2050, agreed by the March 2008 Environmental Council<sup>3</sup>. The EU has also proposed that all developed countries should aim for emissions reductions of 60-80% by 2050.

In order to meet these targets, the European Commission introduced, in January 2008, a proposal for a directive amending the Trading System, which is now going through the co-decision procedure; if accepted, it would undoubtedly bring major improvements to the current system and increase the chance of the EU meeting its ambitious target.

This paper sets out to explore the functioning of the EU-ETS in order to determine whether it is feasible for the EU to achieve its Kyoto target and, indeed, its own longer-term targets as well as Europe's potential for offering leadership in the world on climate change in partnership with the newly emerging economies, most especially India.

## 8% emissions reduction target by 2012: challenging the efficiency of the EU-ETS

*How does the scheme operate?*

- *The principle of the carbon trading scheme*

The origin of the EU-ETS goes back to the Kyoto Protocol (article 17) that defines emissions trading as one of the three mechanisms<sup>4</sup> for countries "included in Annex I" to fulfil their Kyoto commitments. Identifying with the "polluter pays" principle, this option, strongly supported by the United States, was officially adopted by the European Union in 2003 and put into operation in 2005. Although the EU had been initially reluctant to use market mechanisms when engaged with environmental issues, the quick establishment of national trading schemes in some member states (UK, Denmark, The Netherlands, and Germany) pushed the European Commission to review its position on the idea, partly to avoid a patchwork of incompatible systems.

The EU-ETS as established by the Commission<sup>5</sup>, is based on a number of underlying principles: a cap and trade system, an initial focus on CO<sub>2</sub> from big industrial emitters, the ability to change and expand, a periodic revision of emissions allocations, a strong compliance framework, an EU-wide market open to other countries incorporating the Clean

Development Mechanism (CDM) and Joint Implementation (JI), and the compatibility of the EU-ETS with other emissions trading schemes.

A cap-and-trade system such as the EU-ETS has the advantage of clarity in that the totality of emissions is fixed. But it doesn't include a cost certainty related to the price of carbon, nor does it define which marginal costs are included. It combines state intervention, as governments regulate the size of emissions allowances through the allocation plans, and the market, which determines the price of carbon through the process of supply and demand. The advantage of market-based instruments is that they minimise the cost of reaching the defined objective and provide at the same time an incentive for the development of new and innovative technologies.

Ultimately, the success of the scheme will be judged on whether it achieves the necessary cuts in emissions through a high and stable carbon price.

- *Allowances and market*

The scheme includes only one GHG - carbon dioxide - with the possibility of including more if the system works well. The activities that face capping are primarily downstream and include the energy sector (coke ovens, mineral oil refineries, combustion installations<sup>6</sup>), the production and processing of ferrous metals (iron and steel, metal ore roasting or sintering installations), the mineral industry (cement, lime, other furnaces, glass, ceramics), wood pulp, and paper and card if production capacity is greater than 20 tonnes/day.

Each installation is given allowances to emit carbon via the National Allocation Plan<sup>7</sup> (NAP) established for each trading period<sup>8</sup> by the government and accepted by the Commission. Following pressure from European industries and the DG Enterprise and Industry of the European Commission, who were worried about the impact on European competitiveness and the cost of technological adaptation it would lead to, it was decided that 95% of the allowances in the first period and 90% in the second period would be given for free. Furthermore, the operator of each installation is required to obtain a permit showing their capacity to monitor and report the emissions. These permits, as well as the operator's activities, are to be checked both by Member States and independent verifiers, who give EUR 100 penalties for each tonne of carbon dioxide equivalent emitted beyond the number allowed. Annual controls are made at each stage of the process (both by the competent authority and by the Commission).

⇒ **First phase (2005-7):** The EU-wide cap was fixed at 2.29 billion allowances per year. 10 800 installations were covered by the scheme in the first two years, representing 41% of the EU-25 GHG emissions in 2005. The countries which received the largest allowances were Germany (22.8%), the United Kingdom (11.2%), Poland (10.9%), Italy (10.6%), Spain (8%) and France (7.1%). Combustion installations received most of the allowances (70%), then cement clinker or lime (9 %), iron and steel (8 %) and mineral oil refineries. The situation was not homogeneous between countries. Member States were allowed to auction 5% of their overall cap with 4 countries<sup>9</sup> using these auctioning rights. This first phase showed elements of flexibility: the infringement penalty was EUR 40, member states could request more non-transferable allowances in the event of 'force majeure' and they were also allowed to exempt installations from the scheme (a tool used to exclude smaller installations and reduce the administrative burden).

⇒ **Second phase (2008-11):** The EU-wide cap has been fixed at 2.08 billion allowances per year, covering 11428 installations<sup>10</sup>. The countries which receive most allowances remain the same (with the same proportions) as for the first phase. Member States are allowed to auction 10% of their overall cap and 10 are so far planning to do so. The lower cap and the increase in the number of installations represent a significant tightening.

The EU carbon market was founded by article 12 of the 2003 Directive: "Member States shall ensure that allowances can be transferred between persons within the Community". The emission allowances become the tradable unit due to the shortage imposed by the caps. In practical terms companies trade directly with each other or through an intermediary: a bank, an allowance market intermediary, a broker. Trading platforms, such as Nordpool, EEX, ECX or EXAA have been created. Supply and demand determines the price of the allowance. It should in theory reflect the cheapest way of implementing emissions reductions. An electronic registry, accessible to the public, that contains information about the transfer of allowances, has also been created.

⇒ **Volume:** According to Point Carbon, during the first six months, more than 90 million EU allowances (EUR 1.37 billion) were traded on the market. In 2007, the value of the European carbon market reached 1.6 billion tonnes of CO<sub>2</sub> credits, resulting in EUR 28 billion changing hands. The European carbon market represents 60 per cent of the global carbon market.

⇒ **Price:** According to the carbon Trust<sup>11</sup>, at the beginning of the first phase, the price rose from around EUR 10/tCO<sub>2</sub> to almost EUR 30/tCO<sub>2</sub> with only low volumes and a few players active in the market. It then oscillated around EUR 20-30/tCO<sub>2</sub> before falling in spring 2006 to less than EUR 10/tCO<sub>2</sub>, collapsing to just above zero in 2007. The fluctuations reflected uncertain expectations. The concluding collapse in price showed allowances had been too generous. The price for second phase allowances (2008-2012) has been more steady, ranging between EUR12-25/tCO<sub>2</sub> in 2007.

- *Links with the EU-ETS*

The Kyoto Protocol has introduced two mechanisms<sup>12</sup> to help countries included in Annex I to reduce their GHG emissions: joint implementation (JI) and the clean development mechanism (CDM). The EU-ETS allows<sup>13</sup> companies to use these *supplementary* mechanisms to achieve their own reduction obligations and thereby increase the cost-effective functioning of the EU-ETS itself. The companies invest abroad in projects to reduce GHG emissions and get credits<sup>14</sup> for their own emission targets. They can trade them freely within the EU as they have been accepted in the EU directive as equivalent to the emission allowances<sup>15</sup> - it is the first such recognition at a world level. There is no quantitative limit: the Commission has fixed as a reference or guideline a cap of 10% but Member States just need to include in their National Allocation Plans the proportion of emission reductions accounted for by investment in developing countries. Launched three years before the first Kyoto commitment period started, it gave a good impulse to investors to prepare for 2008. New businesses have emerged in Europe thanks to the carbon market (carbon traders, carbon finance specialists, carbon management specialists, carbon auditors and verifiers). European banks and financial institutions are also greatly involved.

⇒ **First phase:** 147 countries were linked to the EU-ETS through CDM/JI projects. China, India and Brazil (descending order) receive most of the CDM projects<sup>16</sup>. According to Point Carbon, in 2007 the CDM accounted for a further 947 million tCO<sub>2</sub> (EUR 12 billion). Currently, around 10% of carbon credits purchased by EU companies are CDM or JI credits.

⇒ **Second phase:** around 1400 million tonnes of credits are allowed to enter the EU-ETS (average per year of 280 million tonnes), which corresponds to 13.4% of the EU-wide cap. By mid-2007, EU countries had also committed to investing EUR 7.5 billion by 2012 under CDM and JI in projects to cut emissions, providing reductions totalling more than 2 billion tonnes of carbon dioxide.

Linking to other effective national or international schemes ought to make it easier to cut EU emissions in a cost-effective way and enhance efficiency in fighting GHG emissions globally. The Directive allows the EU-ETS to be linked with other schemes concluded by third countries listed in Annex I to the Kyoto Protocol which have ratified the Protocol. There will

be mutual recognition of allowances. Currently, the EU-ETS has already been linked to schemes in Norway, Iceland and Liechtenstein (since 2008).

#### *The EU and the achievement of its Kyoto Target*

Through the scheme<sup>17</sup>, the Kyoto target will be reached at a cost of between EUR 2.9 billion and EUR 3.7 billion annually (less than 0.1% of the EU's GDP). Without the scheme, it would have cost EUR 6.8 billion annually.

According to Point Carbon, 65% of the companies participating in the scheme had taken steps to make their activities less polluting by 2007, up from just 18% in 2006.

According to the European Environment Agency<sup>18</sup>, which monitors emissions, from 1990 to 2005, GHG emissions in EU-27 decreased by 7.9%. If planned additional domestic policies are implemented on time, GHG emissions in EU-27 will decrease from 2005 levels down to 11 % below their 1990 levels by 2010. However, without further action, they will increase between 2010 and 2020, reaching a level 2 % higher than in 2005, and only 6 % below their 1990 level.

If we narrow our sphere to the EU-15, from 1990 to 2005 GHG emissions decreased by 1.5%, meaning that the EU-15 is not currently on track to meet its Kyoto target. However, projected 2010 emissions show the EU-15 should achieve the target. With existing domestic policies, GHG emissions will decrease by 4%. With planned additional domestic policies, GHG emissions will decrease by a further 3.9%. Projected use of Kyoto Mechanisms should reduce emissions by a further 2.5%, carbon sinks by a further 0.9%, and the EU-ETS by a further 1.3%. The total projected reduction for 2010 is thus 12.6% relative to the base year level.

If we analyse at the national level, we can see that eight member states are *on track to meet* their targets for 2010: Sweden, UK, Germany<sup>19</sup>, Finland, France, Luxembourg, Netherlands, and Belgium. Four member states *are projected to meet* their targets for 2010: Austria, Greece, Portugal, Ireland, thanks to existing and projected policies, and the use of Kyoto Mechanisms and carbon sinks. Projections for Italy, Denmark and Spain show that they *are not expected to meet* their targets for 2010, despite the use of Kyoto mechanisms and carbon sinks. Denmark and Spain recently reported future additional actions that would help in meeting their target. All new member states with a target are on track to meet their target. Emissions for these states were in 2005 28% below 1990 level but it is projected that they will increase to reach 20% below 1990 level in 2010. Within the EU this is a parallel with the differential growth needs of developing states at world level. Moreover, ten EU-15 Member States<sup>20</sup> and Slovenia have decided to use Kyoto mechanisms to meet their Kyoto targets. This will account for 2.5%, out of the 8% Kyoto reduction target. For the second phase, twelve Member States<sup>21</sup> have allocated EUR 2.9 billion to use the Kyoto mechanisms.

#### *The points to improve at the end of the first phase*

- *Method of allocating the allowances*

The first official result published in May 2006 highlighted the main problem: some countries were left with 44.1 million tonnes extra CO<sub>2</sub> allowances for 2005. Only six countries<sup>22</sup> reported higher emissions compared with their allowances. On average, the allowances exceeded the verified emissions by at least 3%, mostly in new member states. The NAPs favoured industrial sectors: iron and steel producers, ceramics manufacturers and paper, pulp and board production, received more allowances than their verified emissions (respectively 18%, 18% and 19%). Combustion installations, representing 72% of overall emissions covered by the scheme, received the right quantity. The allocations, made on projection-based approaches and not on pragmatic reasoning, were the result of a shortage of information and historic data during the drafting of the National Allocation Plans and of

insufficiency in the early verification system. Most of the NAPs drafted by Member States therefore reflected a lack of ambition; this was partly intentional on the part of the member states, to allow political space for changes to the cap levels, and partly due to pressure from businesses. The scheme wasn't harmonised, which caused a distortion in competition.

Allocating more allowances than necessary results in a useless market and an unstable price. After the publication of results in May 2006, unsurprisingly the price fell below EUR 10, reflecting fewer buyers and too little pressure to invest in carbon reducing technology to meet the target. Some analysts (Global Energy) suggest the allowance price needs to be at least EUR 40 to provide sufficient encouragement to companies to invest and bring down emissions. We would agree with this.

For the second phase, the Commission has been much stricter. The EU-wide cap has been fixed at 2.08 billion allowances per year (a 10.5% reduction on previous allowances). Furthermore, two criteria were added in the allocation formula<sup>23</sup>. The combined NAPs for the second phase represent a 5% decline compared to 2005. Only four NAPs<sup>24</sup> were validated without any cuts.

In phase one some companies passed on most of the carbon costs in their production prices, thus obtaining a significant "windfall" profit, the allocation being given originally for free. This was the case in power generation, which received fewer allocations than other sectors. In the first year of high prices, power generators in the UK made about EUR 1 billion profit (despite being the biggest buyer of allowances in the EU). Power generation does not experience world market competition in the same way as industry and in this particular case the regulator failed to fill the gap in time.

- *Leakage*

The prevention of carbon leakage after the end of the second phase<sup>25</sup> has aroused controversy without as yet an agreed solution. Power companies cannot relocate, but if carbon dumping were to become severe companies in some energy intensive industries, might do so, relocating to third countries which are not covered by the scheme and have less demanding environmental policies. This would be an economic and environmental loss: the scheme would be weakened, failing to convince companies that the best economic and environmental option is to stay inside regulated countries, transferring GHG emissions outside the system and causing job losses within it.

- *Not all the sectors are covered*

So far, carbon dioxide is the only GHG included in the scheme, despite the pollution levels of other gases, such as methane or nitrous oxide.

Similarly, there are entire sectors still not covered by the scheme, including transport and construction, which represent the largest share of CO<sub>2</sub> emissions after power-generating and energy-intensive industries.

In 2005, transport accounted for 21% of EU-15 emissions, agriculture for 9%, waste for 3%, solvents and others for 0.2%. Aviation is to be covered<sup>26</sup> by the EU-ETS from 2011 for flights between EU airports, and from 2012, for all flights originating from or arriving in the EU. Airlines currently account for 3% of European emissions and this figure is expected to double by 2020 (It has increased by 87% since 1990).

- *CDM/JI loopholes*

The *linking* directive<sup>27</sup> links the EU-ETS to both the CDM and JI mechanisms. Except for the *reference* of 10%, the Directive does not indicate any formal or legally binding limitations on the quantity of credits to be included in the scheme.

In practice, CDM projects must be validated by the UN's CDM executive, which relies on specialist private companies to verify compliance with the CDM's objectives. This can result

in subjective bias or vested interests affecting the approval of projects. The effectiveness of emissions reduction can also be questioned. The CDM executive has recognised that, at the beginning, no projects were refused and that some projects were set up even if rejected by the executive. A team of experts now checks the work of the private companies.

Another problem is linked to the cultural differences between Europe and other parts of the world and, as has been shown in several reports, makes the question of conformity between a project and the Kyoto standards delicate. The principle itself can also be questioned: allowing countries to use the CDM and JI mechanisms to get credits and comply with their own target is often seen as a way of allowing developed rich countries to avoid making cuts at home and thereby indirectly avoiding investment in new technologies. It makes sense to use these mechanisms because they encourage the transfer of technologies – even if already in existence – to developing countries and the cutting of emissions via the cheapest methods. However the political and environmental benefit is not so clear. No reductions are made at home even if the emissions target has apparently been reached. According to the World Wildlife Fund, only the UK and Sweden will be required to make the majority of cuts at home during the second phase.

- *Uncertainty regarding post-2012 years*

The uncertainty with regard to policy post-2012 means that companies are not offered a long-term perspective and stable framework in which to invest in clean and expensive new technologies. Much investment in the power sector is made on a long term basis – 30 years or more. Because of the uncertainty, the risk is bigger so the cost of capital is higher. Logically, the price (e.g. of electricity) is higher to legitimately recover the investment. Equally, delay due to uncertainty will make the price higher because of the delay in adapting to new technologies (the capacity of an installation will continually reduce). According to an analysis<sup>28</sup> made by the International Energy agency, electricity prices are expected to increase in the order of 5-10% if regulatory interventions occur every 5-10 years instead of providing a long-term framework. The need for such a framework is a constant theme of key companies in the European Energy industry.

- *Unbalanced burden-sharing agreement*

Some countries received a generous cap because of their levels of economic development or other exceptional circumstances. This does not give them adequate incentives to invest in reducing carbon emissions. The emissions of “less-developed” countries<sup>29</sup> have risen quickly between 1990 and 2004. The emissions of Spain are projected to rise by at least 50% between 1990 and 2012. They will still meet their Kyoto target but only because of the very extensive use of CDM and JI.

- *Insufficient auctioning*

Auctioning is the most economically efficient way of harmonising the scheme, avoiding differences between allocations and ending windfall profits. It is also a good way of using the revenue generated for environmental or economic purposes. In the first phase of the scheme, only four Member States<sup>30</sup> used auctions, with only Denmark employing the full limit of 5% and using the revenue to purchase JI/CDM credits. In the second phase, ten countries intend<sup>31</sup> to auction permits and Denmark is expected to auction the maximum 10% allowed. There is no incentive for a country to auction if others do not as it will make the carbon price higher for energy users in the auctioning country which will distort competition.

⇒ The first two phases of the scheme are explicitly defined as “learn-by-doing” stages in achieving the most efficient ETS possible. The experience so far is encouraging with the likely achievement of Europe’s Kyoto Target. However it has also shown weaknesses which prevent the system from being entirely efficient and which therefore prevent it from setting a good example to the world. Both the strength and weaknesses of the system reflect the fact that it is the first of its kind. In January 2008, the Commission introduced a new package of reforms on its climate change policy, including a proposal to improve the Trading System.

Might this be the solution for the EU to achieve its own more ambitious target of 20% or more by 2020?

## **20% emissions reduction target by 2020: reforming and improving the Scheme**

*The Commission's proposal, 23 January 2008*

The new European strategy was approved during the European Council of March 2007. The Council invited the Commission to make a concrete proposal to reform the Emission Trading System, which the Commission did, after working with the ECCP Working Group<sup>32</sup> on Emission Trading.

The proposal<sup>33</sup>, included in the "20-20-20" climate and energy package, moves on from the decentralised approach of the 2003 Directive, with its contentious national targets, to a common approach. The main challenge was and is to reconcile the fight against climate change (environment) with economic growth and prosperity (business). The Commission estimates<sup>34</sup> revenue of EUR 50 billion per year by 2020 generated by the scheme via auctioning, 20% of which it hopes would be dedicated by Member States to innovation<sup>35</sup> in Europe and adaptation in developing countries.

At the last European Council in March 2008, EU leaders agreed to make the proposals law by March 2009 just before the European Parliament will close for the June elections. The political deal on national targets will be reached at the end of 2008.

### ▪ *Coverage of the Scheme extended*

It was agreed that nitrous oxide gases and perfluorocarbons would be included in GHG emission targets. New industries are also included: aluminium and ammonia producers, and the petrochemical and aviation industries. Agriculture, forestry, road transport and shipping remain excluded (shipping is likely to be included later). According to the Commission, this extension should lead to an increase of 6% in the coverage of the scheme, compared with the second phase of the scheme, taking into account the exclusion of small emitters. To reduce the administrative burden, industries emitting less than 10 000 tCO<sub>2</sub> equivalent will be excluded if they can prove alternative reduction measures.

Sectors not covered by the scheme would have emission targets, albeit less strictly enforced: by 2020 the EU would have to reduce emissions from sectors such as buildings, transport, agriculture, and waste by 10% below 2005 levels. Each country would have binding national targets according to their GDP. Richer countries are asked to make bigger cuts (Denmark, Ireland and Luxembourg - 20%) and poorer countries can increase their GHG emissions in these sectors (Romania +19% and Bulgaria +20%).

### ▪ *An annual EU-wide cap*

An annual EU-wide cap would replace the 27 national caps made through the National Allocation Plans. This will be a major step to create a transparent common market, a level playing field no longer distorted by invidious national or sector pressures. Companies in the EU with the same or similar activities will be governed by the same rules. The annual cap would be reduced year-on-year in order to reduce emissions covered by the scheme by 21% in 2020 from 2005 level (a cap of 1720 million allowances in 2020<sup>36</sup>). Starting from the quantity of allowances of the second phase, the decrease would be of 1.74% annually. The scheme would still work periodically (even if the cap is annual), the third phase being of eight years. Allowances would remain valid throughout the trading period and could be banked for use in the next period<sup>37</sup> - which gives more certainty to industry.

### ▪ *Towards full auctioning*

The proposal would be for full auctioning for some sectors from 2013<sup>38</sup> and the end of free allocation by 2020. 90% of the total quantity of allowances to be auctioned would be shared between all member states according to their share of verified emissions in 2005 and the

10% left would be kept for certain member states according to their historical emissions and the wealth of each country, in order to give more to poorer countries. 5% of the total quantity of allowances would be kept for new entrants<sup>39</sup>. The full auctioning from 2013 would be for the power sector<sup>40</sup> and carbon capture and storage, newly included in the scheme. Some sectors would still receive free allowances, such as the ones suffering from leakage<sup>41</sup>, and others would gradually move to full auctioning in 2020<sup>42</sup>, (sectors such as aviation and others yet to be determined). Real prices of electricity are expected to rise by 10-15% because of the higher carbon price. The penalty for exceeding pollution regulations would be fixed and adjusted according to the annual inflation rate of the Eurozone. Member states would be in charge of the auctioning, but every operator would be allowed to buy allowances in any European country. At least 20% of the revenue generated from auctioning would be dedicated to: reducing GHG emissions, research and development, adaptation in developing countries, renewable energy sources, carbon capture and storage, deforestation, social aspects and administrative expenses. The new regulation to be adopted by the Commission for monitoring and reporting emissions would be made through 'comitology', to avoid divergence in the practice of individual member states. A Community registry, containing information on emission allowances, would replace national registries.

Three main ways of acquiring allowances will now be available: from companies on the market, from governments auctioning, and from projects abroad. Furthermore, projects in member states which reduce emissions not covered by the scheme could deliver credits (domestic offset credits).

- *Preventing leakage*

If there is no post-2012 agreement, the risk of leakage for certain energy-intensive sectors and sub-sectors of the Community will be higher. What is included in the proposal is the possibility of having a free allocation of allowances<sup>43</sup> for the risky sectors. But the Commission plans to wait until June 2011 before making any review of the system. The insecure sectors will not be identified before the end of June 2010. The idea is to wait for the outcome of the post-2012 negotiations. In the case of non-agreement, a "carbon equalisation system" will be introduced. Another possibility mentioned would be to set up a "border adjustment scheme" to include indirectly within the scheme imported goods from industrialised countries refusing to be part of any international climate pact.

- *Reforming the linking of the Scheme*

Pending the conclusion of an international agreement, credits obtained through CDM/JI projects during the second phase would still be validated as equivalent to allowances. The only new requirement for any kind of project would be the acceptance by all member states. CDM projects starting from 2013 would not need any agreement if they involve a least developed country. According to projections made by the Commission, 1/3 of the emissions reduction required between 2013 and 2020 will be made via the use of the mechanisms. During the last UN Bangkok talks at the beginning of April, the delegates agreed to extend the use of the Kyoto Mechanisms after 2012. After the conclusion of an international agreement, the use of the mechanisms would be limited to half of the reduction effort of the EU annual cap. The credits from projects made during the second phase would still be valid if the third country concerned has ratified the international agreement or if approved by the Commission according to its criteria for "additional types of project", which are yet to be determined. The use of credits from carbon sinks<sup>44</sup> is not allowed in either case.

The possibility of linking the EU-ETS to other trading schemes would be extended to countries or administrative entities<sup>45</sup> that would have established a cap-and-trade system, subject to respecting the "environmental integrity of the EU-ETS". There would be mutual recognition of allowances.

### *Relevance of the Commission's proposal*

This proposal has aroused a number of reactions. The European Parliament is generally supportive of the text. Some newspapers, such as the UK paper 'The Guardian', call for a "cautious welcome". Environmentalists and business groups are both contesting the proposal.

The intent is indeed praiseworthy as the proposal tries to satisfy both sides while eliminating the malfunctions of the scheme. It is an attempt to harmonise, extend, correct the distortions, exploit more efficiently the benefits, reinforce the market, and reduce the costs. In particular, the Commission's decision to auction the allowances must be welcome, as it is the most cost-efficient and equitable means of distributing allowances, eliminating windfall profits (such as for power companies) and dedicating the revenue obtained to investment and adaptation. One criticism is that the auctioning revenue of 20% dedicated to environmental purposes or social compensation for higher carbon costs could be much higher. The EU-wide cap is similarly essential as it eliminates the contradiction and the dysfunction of the National Allocation Plans, notably the influence exerted on member states from industry groups, and helps to stabilise the carbon price on the market to a certain extent.

But it is argued that important points have been forgotten or postponed. The official target of 20% emission reduction by 2020 is in reality weaker than it appears at first sight since it uses the 2005 level as its base, and not the 1990 level. Previous targets had always used the 1990 level, which is significantly lower than the 2005 level. Two conflicts exist here. Firstly, the economic concern versus the environmental concern. As the Enterprise Commissioner Gunter Verheugen declared<sup>46</sup> "I am all for setting an example for the rest of the world, but I am against committing economic suicide." This raises the question of whether Europe could find another way, rather than simply reducing its targets to protect the economy. The second conflict pits political concerns against environmental concerns. As stated by the UNEP Executive Director Achim Steiner<sup>47</sup> "a credible target versus a politically feasible target is always in a sense the tension that is there". Can a European consensus be mobilised around sufficient cuts?

Another criticism we could make is that there is an absence of incentives for EU countries to reduce their emissions at home; in short the proposal does not deal with the shortcomings of the Kyoto mechanisms (CDM/ JI). The only restriction is the agreement between all member states to validate a project. But the only means to force companies to invest in *new* clean technologies is to make them invest at home. The CDM/JI projects enable a transfer<sup>48</sup> of technologies to developing countries but only existing technologies. In this way, European countries help reduce emissions abroad – indeed GHG emissions do not respect international borders – but investment in new clean technologies and new lean social and industrial practice in Europe will be necessary if we want to mitigate climate change. For this, European countries must reduce emissions at home. Is it possible to find a way of both transferring existing technologies to developing countries *and* investing in new technologies?

The risk of leakage remains a major economic preoccupation that is not yet taken into account in the proposal. This is the major criticism expressed by industries. Any action to protect European competitiveness is postponed to 2011, so the uncertainties remain. According to the European Trade Union Confederation, the worst scenario would be the loss of up to 50 000 jobs in the iron and steel sector threatened by the lack of action against leakage. Giving stability to industries is essential for investment. The ETUC and many others support the idea of the Commission creating border adjustments as the real solution to leakage. Would this be the solution? According to a study<sup>49</sup> made by the Carbon Trust that looked at more than 150 sub-sectors in detail, six could be worried by leakage: cement, steel, aluminium, pulp and paper, basic inorganic chemicals and fertilisers/ammonia. These six industries represent 0.2% of employment in the UK and 1/3 of the manufacturing sector's carbon dioxide emissions – 10% of the UK total. The Carbon Trust affirms that leakage from

these six industries is likely to represent no more than 1% of total European CO<sub>2</sub> emissions. The Trust therefore recommends keeping *temporarily* free allowances for these sectors in particular without curbing the advances made by the scheme in auctioning, expanding and cutting emissions: “Businesses constantly face external impacts on pricing and competitiveness, be it from exchange rate fluctuations or differences in the cost of labour or raw materials. For more than 90% of manufacturing industry, carbon costs will remain trivial compared to these other influences on international competitiveness”.

*What reforms are needed for the EU to achieve its long-term targets?*

Because of its wish to keep some negotiating cards in hand, particularly towards the United States, the EU’s long term targets are ambivalent. It has declared, in general terms, that developed countries should cut emissions by 60 to 80 per cent by 2050, but set a 50 per cent cut by 2050 as its own specific goal. For 2020, it has declared readiness to cut by 30 per cent if other countries reciprocate and spoken, at Bali, of a general need for developed countries to cut by 25 to 40 per cent. But the specific target for the EU ETS is a 21 per cent cut below 2005 levels by 2020. What further reforms are needed to meet this goal and in due course make the deeper cuts that are necessary?

- *Creating a central European emissions bank to bring stability, independence and equity*

How can we reform the EU-ETS for better carbon pricing and long-term stability?

To be entirely efficient, a market has, by definition, to be independent from governments. This has been evident in financial markets, where central banks with a defined mandate, but at arm’s length from Governments, have an encouraging record. Current turmoils have underlined the value of this separation and the need for effective regulation of market players. In the new carbon market governments, advised by scientists, should set the goal. An independent body should manage the market ensuring objectives are achieved.

Phase two of the ETS looks encouraging. The cut in allowances has helped stabilise the carbon price while the move to auctioning under a single community cap will mark decisive progress towards a transparent, deep and even market. But three weaknesses remain:

One is the need for effective regulation – for example to apply standards to proliferating carbon “offsets” and make sure only bona fide carbon emission assets determine the carbon price.

A second is that no central body “manages” the market by having the discretion to buy and sell to iron out short term speculative swings (even though some national bodies do).

The third is that even after 2012 27 member states will still have the discretionary right to conduct auctions within the community cap. The distorting national political pressures will be much diminished but they will still be there and will have to be held in check by Commission regulation. The market will be more erratic, and less transparent and manageable than under a single auctioning authority.

What is needed instead is a central body that would conduct auctions, regulate the market and conduct market operations to stabilise, as far as possible, a rising carbon price. This is more ambitious, and a different proposal from that of the Centre for European Reform for a new agency to regulate the carbon market, but leave auctioning in the hands of Governments.

The political framework – the target for emissions cuts over a period of years – would be established, as at present, by the Council of Ministers and Parliament, on the proposal of the Commission, after taking scientific advice and in the light of international commitments, just as the ECB and Bank of England are given an inflation target by Governments. Implementing

the goal through auctioning emission rights, issuing free allowances to new entrants, market operations to stabilise the market, and regulation would be the task of the new European Bank for Emissions Trading (EBET).

The large sums of money that would be brought in through auctioning, however, would not be spent by EBET but returned to Governments under an equitable financial regulation, perhaps based on GNP or some other equitably weighted formula. A separate political decision, of Council and Parliament, would be required if it were proposed to spend a proportion of this revenue in common – for example to subsidise carbon capture in the coal industry or fund new technology or as part of a commitment to help technology or adaptation in developing countries outside Europe.

How much discretion should EBET have to modify the pace of auctioning to sustain a target carbon price crucial to long term investment? Its principle political guide must be the annual community cap but it would be given considerable discretion to adapt timing of auctioning or purchasing in the market to sustain a long term carbon price and thus ensure longer term emissions targets are fulfilled. It would report each year to the political authorities and advise on changes in the cap needed to implement targets for the relevant trading period.

With more resources the Commission could in theory undertake this task. But the Commission is, like Governments, a political body. The task, like that of central banks, needs to be taken out of politics as much as possible.

Two options for the structure of EBET would be:

- a) Following the example of the European Central Bank, the board would be composed of one representative from each country and they would each have one vote; any decision would be made by simple majority. To be entirely independent, these representatives would come from the equivalent of the National Central Banks or more simply from national and independent agencies, and not from environment ministries. A rotation system could also be established if it was felt that one representative for each of the 27 member states was too many, still following the ECB example.
- b) A smaller body, with no representatives, but composed of experts in markets and climate change, elected through the Council and Parliament for every trading period. It would be using the model of the Executive Board of the ECB.

Creating a new body would involve an EU budget decision, though in due course costs should be funded from auctioning. New legal regulations would be required to lay down the procedures for appointing personnel and the status of the new body relative to the EU's other institutions.

Various proposals have been made for a comparable body at world level (for example by the German Government's Advisory Committee on Global Environmental Change and by Lord Browne, former Chief Executive of BP). The European level, where an Emissions Trading Scheme exists, is a more realistic place to make a start.

- *EU ETS and the role of the CDM/JI*

The CDM and JI from an Annex 1 country's perspective, have provided the opportunity to access emission reduction projects at a competitive price. There has been the downside within the European Union that, by making CERs fungible with EUAs, the pressure to achieve reductions within Europe has been reduced. From a developing country's perspective the CDM has engaged developing countries in Kyoto and climate change in a tangible manner and provided access to funds for emission reduction projects. Significantly, much of the funding has come from the private sector within Annex 1 countries, funds that could not have been expected to be received without the CDM.

To date the CDM has been subject to criticism due to what is perceived as a slow bureaucratic process. Its failings are partly due to its nature - it is a project based support system which necessitates a heavy administrative process. Secondly, it has been managed by a small team working for a part time Executive Board. The staff team has been strengthened significantly but it needs to be set up to cope with the volume properly if it is to stay. There were probably unrealistic expectations for the CDM which, due to the slowness of the process, have not been realised. The CDM has also not delivered the technologies expected.

The recent announcement that the CDM will be pursued after 2012 (with or without an international agreement) at least gives more certainty and confidence for starting a project. It is important to find a happy medium between closing the CDM/JI option and reducing the pressure within Annex I countries to make reductions. Making the Commission's 10% reference mandatory would be a first step. At the same time steps could be taken to address the balance between countries benefiting from the CDM, and to ensure the smooth and effective running of the process.

There is therefore a way forward for CDM, within a fixed limit but it is not the optimum long-term solution. The level of funding through the system has been relatively poor and a project based system cannot hope to cope with the size of the challenge. Much greater resources are needed and some different funding mechanisms are required which do not weaken the cap on emissions in developing countries. Some medium-term alternatives include

- a) Further development of the programmatic CDM, embracing technology transfer. Whilst this approach is going in the right direction, it may need to be replaced by a higher level programmatic approach altogether.
- b) An alternative could involve India and potentially other developing countries establishing an emissions trading system which is then linked with the EUETS – or becoming part of an enlarged Emissions Trading Scheme as part of an EU-India agreement. This is addressed further below.

- *Issues of competitiveness*

When a significant new tax, or charge or other such scheme is introduced, concern is typically expressed as to the threat to the international competitiveness of the industry or industries affected. Such concern has been expressed with regard to the introduction and development of the EU ETS. There is a difference however. There is no doubt that the future will be a low carbon future. The businesses that adjust their business models sooner than others, to be able to pursue the new opportunities presented by this new world, will be the first to benefit. Those individuals that are able to develop rapidly relevant skills will be the first to benefit from the new opportunities presented by this new world. The citizens that succeed in modifying their lifestyles will become the leaders in this new world.

Where a sector is under heavy international competitive pressure and risk of leakage and unable to adapt to these new opportunities, it will typically lobby for some form of support. The EU would have four prime options, set out below.

The first is to accept the consequences, whatever they might turn out to be. This would reflect the macroeconomic school of thought: some sectors may disappear altogether, but overall the economy will benefit.

Secondly, support could be provided. This can be done in a variety of ways, including

- a) Providing general support to industry in the form of reduced taxation such as labour related tax and national insurance. This could be funded from the auction revenues.
- b) Adjusting the treatment of the sector within the scheme. The Carbon Trust concluded that only six activities should suffer from possible leakage because of the absence of an international agreement, that is, pressure from competition such that the businesses

decide to relocate. The European Commission's proposal offers the possibility for the sectors at risk to receive some free allowances pending an international agreement. Alternatively the sectors concerned could be exempted from the scheme altogether but this might defeat reduction of emissions

- c) Imposing a border tax adjustment. Paper 9, page 5 explores such options in more depth. Action of this nature should be seen as a last resort – but nevertheless one that can be taken if need be.

A third approach, allied to the second, is that of pursuing a transformative agenda. For instance, if, say Chinese industry in a particular sector was proving overwhelmingly competitive, but largely due to the differential impact on the cost of carbon, an attempt could be made to persuade China to impose an export tax to the value of the carbon emitted, and use the revenue to fund CO<sub>2</sub> mitigation. As with the second option, there is a change in the flow of funds between Government and business. In the second option the funds flowing to or from the EU Government are affected whereas with the third option, it is the Government of the competitor that is affected. The effect of this third approach is to enable that competitor industry and nation to move more rapidly down the low carbon path.

Fourthly, and perhaps the most natural, would be to bring the countries providing the overwhelming competition into the pool, into the Emissions Trading System. This approach is explored further below.

- *A broader market*

Hitherto the market of the EU ETS has only been extended to European developed countries under a Kyoto cap such as Norway. Associating California if this were possible, or Japan, would be a comparable application of the Commission's key principle that the market can be opened to countries committed to an adequate system of cap and trade. Short of a global post 2012 agreement in the UNFCCC framework, might it be possible to go further, enlarging the EU-ETS to developing countries, such as India, in a way that benefits all concerned?

**A Global Community for Climate Protection and Development:** The ambitious long term way is suggested by the project for a global climate community of willing states, based on equity. In this approach, participants from north and south would agree a long-term target for carbon reduction, make mutual commitments to cut or limit the rise in their emissions, based on a transition to equal per capita entitlements, facilitate technology transfer, establish common resources to fund sustainable development and adaptation and common institutions to implement the plan. Such a treaty requires a high level of political commitment and ambition. It would have the great advantage of giving all concerned a shared purpose and industry the long term perspective of a high carbon price which will mobilise investment in new technology and endeavour.

The project requires political bravery, however, and trust needs to be built. Might it be possible to start with a more modest experimental scheme, linking the EU-ETS with India?

**An experimental scheme:** One suggestion is to start with a sector approach. Since the EU-ETS is already a sector approach, applying only to the power sector and a few key energy intensive industries, and leaving out small enterprises, it might start now. This could mean:

- a) For the sectors concerned India or other developing country participants might fix an annual cap on carbon emissions for the same initial periods as the European scheme. The cap would be fixed at a level that allowed growth for development each year before settling at a trajectory appropriate to the global target and eventual per capita emissions. New entrants would initially receive free allowances but move into the cap and share in auctioning at a later stage.

- b) Resources from auctioning might be used to create a common fund which could support post carbon technology such as carbon capture for the major investments in coal fired power which now seem inevitable in countries such as India, or small scale solar power to electrify Indian villages, or, for cities, the new large scale solar technology which uses mirrors. Such a fund could support adaptation too. In the period before full auctioning gets under way it would have to be funded by European states in equitable proportions. Programmatic help would be made available to partners with an approved programme for sustainable development and to projects of companies or public authorities within such a context.

An alternative means of supplying funds for development technology would be the sale of emission entitlements held by a developing country, within a long term model (such as Contraction and Convergence) which gives them a surplus in the early years. Such a model would only be satisfactory if the overall cap was tight enough to drive a vigorous cutback in emissions as well as significant transfers of funding as Europeans purchased carbon currency in the developing world.

Both means would avoid the current weakness of CDM and JI, that they allow Europeans and other developed states to escape emission cuts.

Both would also deal with the problem of carbon leakage for trade between those who join the partnership. But if others stayed outside, a global climate community of willing states which achieved ambitious cuts would ultimately have to be ready to act, judiciously, against carbon dumping, action which would help stimulate outsiders to join the process of tackling climate change.

## Conclusion

The shortcomings and the failures of the EU-ETS in the first phase need not be taken too seriously as this was an experimental phase. The cuts in allowances under the second phase have stabilised carbon prices and look set to enable the Union to meet its targets under the Kyoto Protocol. The improvements now proposed by the Commission, above all the move to auctioning under a community cap, would give the EU the capacity to reach its 20% emissions reduction target by 2020. But more measures, outlined in this paper, in particular the creation of a central European Bank for Emissions Trading, are necessary to secure this achievement and reach the European target in an efficient, stable and safe way. The EU ETS represents a good basis from which to develop a global carbon market. An experimental enlargement of this ETS to India could be possible and timely and might lead the way to a more ambitious Community for Climate Protection and Development between Europe, India and other willing countries in the developing and developed world.

## Endnotes

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<sup>1</sup> The 10 new member states have their own reduction target of 6% or 8% under the Kyoto Protocol and are not covered by the EU target. Cyprus and Malta don't have any target. The others (EU-15) are full participants in the ETS and have to apply the Kyoto target under a legally binding burden-sharing agreement (Council decision 2002/358/EC).

<sup>2</sup> Brussels European Council 8/9 March 2007, Presidency Conclusions

<sup>3</sup> Press release, Environment Council meeting, 3 March 2008

<sup>4</sup> The two others are the Clean Development Mechanism and the Joint Implementation

<sup>5</sup> European Commission (2005) *EU Action against Climate Change, EU Emissions Trading – an Open Scheme Promoting Global Innovation*

<sup>6</sup> representing 2/3 of all installations and accounting for 72% of overall emissions covered by the scheme

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- <sup>7</sup> COM(2003) 830 final defines 11 criteria: Kyoto commitment, assessments of emissions development, potential to reduce emissions, consistency with other legislations, non-discrimination, new entrants, early action, clean technology, involvement of the public, list of installations, competition. COM(2005) 703 final adds one more: amount of CERs and ERUs
- <sup>8</sup> A trading period is spread over 5 years, except the first period of 3 years
- <sup>9</sup> Denmark, Hungary, Lithuania and Ireland
- <sup>10</sup> This increase compared with the first phase is due to the end of exemption of installations from the Scheme allowed first
- <sup>11</sup> Carbon Trust (June 2006) *Allocation and competitiveness in the EU Emissions Trading Scheme, options for phase II and beyond*
- <sup>12</sup> In addition to the trading scheme mechanism
- <sup>13</sup> Directive 2004/101/EC of the EP and Council of 27 October 2004, amending Directive 2003/87/EC in respect of the Kyoto Protocol's project mechanisms
- <sup>14</sup> CDM projects in developing countries give CER from 2005; JI projects in industrialised and in transition countries give ERU from 2008
- <sup>15</sup> except credits from nuclear facilities, land use, land-use change and forestry activities
- <sup>16</sup> In December 2007, they receive all together 63% of the totality of CDM projects registered at the CDM Executive, and 73% of the projects submitted for validation. Castro P. and Benecke G. (February 2008) *Empirical analysis of performance of CDM projects: case study India*, Climate Strategies
- <sup>17</sup> Stankeviciute L. and Criqui P. (January 2008) *Energy and Climate Policies to 2020: The impacts of the European "20/20/20" approach*, Cahier de recherche n°5, Laboratoire d'Economie de la production et de l'intégration internationale
- <sup>18</sup> EEA Report (2007) *Greenhouse gas emission trends and projections in Europe 2007, tracking progress towards Kyoto targets*
- <sup>19</sup> Germany is the biggest European emitter with 24% of EU emissions in 2005, then UK, Italy and France
- <sup>20</sup> Austria, Belgium, Denmark, Finland, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain
- <sup>21</sup> The same as in footnote 18 plus Germany and Sweden
- <sup>22</sup> Ireland, the UK, Italy, Spain, Sweden and Austria
- <sup>23</sup> Emission cap must not exceed the level of its 2005 emissions and NAPs must be consistent with Kyoto targets after taking account of other policies to curb emissions and the purchase of imported allowances through the Kyoto offset mechanisms
- <sup>24</sup> Denmark, France, Slovenia, the UK
- <sup>25</sup> The "free-of-charge" condition for the allowances allocation in the two first phases was made to help industries against competition outside the Scheme (article 10, Directive 2003/87/EC), which worked: no leakage has been noticed so far
- <sup>26</sup> Proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme, 20 December 2006
- <sup>27</sup> Directive 2004/87/EC of the European Parliament and of the Council of 27 October 2004
- <sup>28</sup> Blyth W. (June 2007) *Incentives, Risk and Decision-Making in mitigating climate change*, Briefing paper, Chatham House
- <sup>29</sup> Spain (8% of EU allowances for 819 installations covered), Greece (3.4% for 141), Ireland (1% for 143)
- <sup>30</sup> Denmark (5%), Hungary (2.4%), Lithuania (1.5%), Ireland (0.75%). Projects only in Europe and it served to cover the administrative cost of the Scheme
- <sup>31</sup> Countries don't have to say immediately how many permits they will auction, so they can adjust according to the effective amount of emissions
- <sup>32</sup> The European Climate Change Programme, launched by the Commission in 2000, set up working groups to build a climate change strategy and adopt a wide range of policies, among them the EU-ETS – European Commission (September 2007) *Combating Climate Change, The EU leads the way*
- <sup>33</sup> Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community
- <sup>34</sup> IP/08/80 (23 January 2008) *Boosting Growth and Jobs by Meeting our Climate Change Commitments*, Brussels
- <sup>35</sup> Carbon Capture and Storage, R&D and renewable energy
- <sup>36</sup> Memo/08/35 (23 January 2008), *Questions and Answers on the Commission's proposal to revise the EU Emissions Trading System*, Brussels

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- <sup>37</sup> This was possible between the first and the second phase only if the banking of an allowance didn't lead to an allocation beyond the total allocation approved by the Commission
- <sup>38</sup> Estimation of 60% of the total number of allowances to be auctioned in 2013
- <sup>39</sup> Installations and aviation entering in the Scheme after 2013, except for electricity production
- <sup>40</sup> Electricity generators for heat delivered to district heating or industrial installations could receive free allowances
- <sup>41</sup> See next section
- <sup>42</sup> This would start with 80% free allocation of their share in the total of allowances, decreasing equally each year to arrive at zero free allocation by 2020
- <sup>43</sup> The method to distribute free allowances will be discussed through the comitology procedure
- <sup>44</sup> Land use, land-use change and forestry (LULUCF)
- <sup>45</sup> State or group of States under a federal system
- <sup>46</sup> "Europe goes light green", The Guardian, 24 January 2008
- <sup>47</sup> "Europe climate targets strong signal to others: UN", Reuters, 25 January 2008
- <sup>48</sup> Seres S. (December 2007) *Analysis of Technology Transfer in CDM Projects*, UNFCCC
- <sup>49</sup> Carbon Trust (January 2007) *EU-ETS impacts on profitability and trade, a sector by sector analysis*