

# IMPLEMENTING THE KYOTO CLIMATE CHANGE AGREEMENT



**POST 147**

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At the so-called 'COP6'<sup>1</sup> meeting that begins in The Hague on 13<sup>th</sup> November 2000, it is intended to reach agreement on setting the global rules for implementing the 1997 'Kyoto Protocol' to reduce greenhouse gas emissions.

*This briefing outlines the Kyoto Protocol 'Mechanisms', and discusses key issues to be raised at the meeting.*

## THE KYOTO PROTOCOL

In December 1997, more than 150 countries ('the Parties') adopted the Kyoto Protocol on greenhouse gas emission reductions (**Box 1**). For the first time, this set legally binding targets for industrialised countries (Annex 1 Parties) to reduce emissions. It also established three so-called 'Kyoto Mechanisms' by which some or all of these reductions might be achieved<sup>2</sup> (Box 1).

- **International Emissions Trading**
- **Joint Implementation (JI)**
- **Clean Development Mechanism (CDM)**

Although the Kyoto Protocol does not contain details of the workings of the mechanisms, Parties agreed that the rules should be finalised at COP6 in November 2000. Negotiations have continued since the Kyoto meeting, with the UK participating as part of the European Union. In June 2000, the Council of the EU set out some elements of its negotiating position for COP6<sup>3</sup> (discussed in this note). A September 2000 meeting of the subsidiary bodies<sup>4</sup> of the FCCC aimed to narrow the areas of disagreements between the parties in preparation for COP6. It was unable to make a breakthrough on the key issues that divide Parties but made some progress on less contentious issues.

## PRINCIPAL ISSUES FOR COP6

### Absorbing carbon

A potential contribution to tackling climate change is to increase the uptake of atmospheric carbon dioxide by natural systems in so-called carbon 'sinks' such as vegetation (**Box 2**). This raises issues for developing and developed countries. The critical point is that **increasing carbon sinks does not necessarily remove carbon from the atmosphere permanently.**

### BOX 1 CLIMATE CHANGE AND THE KYOTO PROTOCOL

In 1995, the Intergovernmental Panel on Climate Change (IPCC) concluded, "*the balance of evidence suggests a discernable human influence on global climate.*" As a result, in 1997, the signatories to the United Nations Framework Convention on Climate Change (FCCC) agreed legally binding **targets** for industrialised nations to reduce their emissions of the gases believed to be responsible for human-induced climate change. In Kyoto, Japan in December 1997, targets were agreed. The Kyoto protocol aims to reduce developed countries' emissions by 5.2% based on a 1990 baseline, between the years 2008 and 2012. Within this overall agreement, different countries would be required to reduce their emissions by different amounts. The EU as a whole agreed to an 8% decrease, with the UK taking on a 12.5% reduction target. Subsequent to this, the UK government adopted a voluntary target to reduce carbon dioxide emissions (thought to be responsible for over 80% of total UK greenhouse gas emissions) by 20% by 2010. A key part of the agreements reached at Kyoto was that there would be internationally agreed **mechanisms** to enable countries to reduce emissions cost-effectively.

**International emissions trading** – A country that achieves emissions reductions over and above its target can sell its excess 'Assigned Amounts' (AAs) to countries who find emissions reductions more problematic. This reflects both the scientific notion that (as a global pollutant) carbon emission reductions are of equal value wherever in the world they are achieved, and also the economic notion that the most cost-effective means should be used to achieve reductions. The implication is that an international carbon trading system will be established at COP6.

**Joint Implementation (JI)** – An industrialised country (Annex I to the FCCC) may undertake a project in another Annex I country that results in emissions being reduced beyond those that would have occurred without the project (the principle of 'additionality'). The investing country may then earn emission reduction units (ERUs) that can be set against its internationally agreed emission reduction target. JI would commence in 2008.

**Clean Development Mechanism (CDM)** – This is similar to JI, except that the country 'hosting' the project is a developing (non-Annex I) country. Again, if the project leads to additional emissions reductions (and contributes to 'sustainable development' in the host country), the investing country earns certified emission reductions (CERs). CDM projects can start from 2000, and a share of the proceeds will fund adaptation to climate change in the most vulnerable countries. The types of projects eligible under the CDM have not yet been agreed. The protocol does not permit carbon sinks to be included in the CDM, but this is contentious (**Box 2**).

The length of time that the carbon is stored depends on how long the original vegetation (e.g. trees) lasts, whether it is replaced and what happens to it after it is harvested or dies. Nevertheless, even a 'temporary' removal period (e.g. a few decades) may have a role in a climate management strategy. However, any intended storage period may be ended prematurely by events such as forest fires. Similar arguments also arise over the contribution that could arise from changing agricultural practices (e.g. adopting no-till agriculture or expanding grasslands).

<sup>1</sup> The 6<sup>th</sup> Conference of the Parties (COP6) of the UN Framework Convention on Climate Change (UN FCCC)

<sup>2</sup> These are also known, unofficially, as the 'flexibility mechanisms'

<sup>3</sup> It is due to meet again on 7 November to finalise its position.

<sup>4</sup> These are the subsidiary body for implementation (SBI) and the subsidiary body for scientific and technological advice (SBSTA). They provide assistance to the Conference of the Parties and have no legal status.

### **Carbon sinks in developing countries**

In June 2000, the EU Council stated that it did not wish to see sinks included in the CDM. It based this on a concern that sinks in developing countries may be so large that their use could negate the need for developed countries to take any domestic action to reduce greenhouse gas emissions. Others see this as a specific attraction for using sinks.

There are also concerns over the issue of 'leakage' of carbon from sinks. For instance, a country may gain credits from planting forests, but large areas of forest elsewhere in that country may be being removed. Further credits could be gained from subsequent replanting, although there would have been no net increase in the country's capacity to absorb carbon. Questions also arise over whether countries should gain credits for *avoiding* deforestation. For example, a country could say that it had intended to remove 100 km<sup>2</sup> of forest but that it had modified this for climate protection purposes and would remove only 75km<sup>2</sup>, thereby claiming credits for the 25km<sup>2</sup> of 'avoided' deforestation.

Countries remain widely divided on this issue. The 'Umbrella Group' (the USA, Russia, Japan, Canada, Australia, New Zealand and Norway) together with Bolivia, Columbia, Chile and Costa Rica would like to see carbon sinks included in the CDM. The EU, China, Peru and the 43 members of the Alliance of Small Island States (AOSIS) remain opposed. Other countries have reserved their position until further details can be worked out.

### **Carbon sinks in developed countries**

While not permitted under the CDM, carbon sink projects are currently allowed under the JI strand of the Kyoto Mechanisms – i.e. within developed countries. This apparent inconsistency arises because the Kyoto Protocol targets for developed countries' emission reductions were set, taking some account of the likely extent of carbon sinks in those countries by the time of the commitment period (2008-2012).

The continued eligibility of carbon sink projects under JI remains a highly contentious matter. This has been particularly brought into focus by a recent analysis by the IPCC (Box 1) of the extent of carbon sinks in industrialised countries. Its report suggests that these may be so large that they have the potential to absorb more carbon as set out in the Kyoto Protocol emissions reduction targets. If these potential sinks prove to be as large as suggested by the IPCC, some countries may choose to enhance their carbon sinks as their principal strategy for tackling climate change, rather than reducing emissions of greenhouse gases.

### **BOX 2 CARBON SINKS**

On the Earth, carbon moves between different **reservoirs**, such as the oceans, the atmosphere, rocks and soils and living things. This **carbon cycle** has been studied in great detail. Processes within the cycle occur over timescales ranging from seconds (such as the fixing of carbon by plants – photosynthesis) to millions of years (e.g. the conversion of carbon from living organisms into rocks such as limestone or chalk). The rate at which carbon moves between the different reservoirs and their absorption capacity varies across the globe. For instance, the tropical rainforests contain a large quantity of carbon, but it moves very quickly between the atmosphere, soils and living things. On the other hand, the rate of exchange between the atmosphere and oceans is relatively long (with carbon dioxide taking many hundreds of years to return to the atmosphere once dissolved in seawater).

It is the removal of carbon out of the atmosphere and its incorporation into oceans, soils, rocks and living things that gives rise to **carbon sinks**. Prior to industrialisation, for many thousands of years, the carbon cycle was relatively stable, with the rate of release roughly matching the speed of removal. However, as described in Box 1, the IPCC now believes that human activities (such as burning fossil fuels, deforestation and wetland drainage) are having an effect on the climate by releasing greenhouse gases (principally carbon dioxide and methane) from stores of carbon such as fossil fuels, at a rate faster than sinks are currently absorbing them.

To combat this, it has been proposed that the world's carbon sinks could be enhanced to accelerate the rate at which carbon is removed from the atmosphere. This could be done by increasing vegetation cover, accelerating absorption of carbon dioxide into the ocean or by injection into geological strata. However, IPCC believes that not enough is yet known about the size or location of the world's carbon sinks, and that measurements of carbon fluxes between the atmosphere, ocean, living things, soils and rocks are, on the whole, uncertain. For instance, some evidence suggests that North America, between southern Canada and Mexico, may be the largest terrestrial sink, but lack of data from elsewhere in the world makes this contentious.

As well as uncertainties over location and size, there are also doubts over the processes by which sinks might 'lock up' the excess carbon. In particular, research undertaken through the UK Natural Environment Research Council's TIGER programme shows that in many plant species, increased concentrations of carbon dioxide in the atmosphere initially stimulate photosynthesis (i.e. carbon take-up), but this slows over time. Indeed, research indicates that as carbon dioxide levels continue to rise, many plant species switch from being sinks to becoming net sources of carbon. Research is needed on the ability of any enhanced sinks to retain fixed carbon over different lengths of time.

Carbon is fixed in growing plants, but once they reach maturity (e.g. after about 50 years for many trees), no more is taken up<sup>5</sup>. Thus, once plants are removed (e.g. in a commercial forestry project), or even if they die and then rot, the carbon can be released again. The planting of fresh trees will ensure that carbon emissions continue to be offset but there are limits to which planting of carbon-absorbing vegetation can continue to expand. Similarly, there are no guarantees that replanting will occur. Thus, this topic is subject to considerable uncertainties.

The validity of this approach will depend on resolving uncertainties about the workings of carbon sinks and, in particular, how strongly the lifetimes of the chosen carbon sinks can be guaranteed.

<sup>5</sup> Deciduous trees will have an annual cycle associated with leaf formation and shedding but the effects of these will virtually cancel each other out.

## Putting your own house in order?

Using carbon sinks to offset emissions raises an issue over **the extent to which industrialised countries should act to reduce emissions in their own countries**. The Kyoto Protocol requires the mechanisms of trading, JI and CDM to be *additional* to domestic actions taken by Annex 1 countries (the notion of '**supplementarity**'). The EU wishes to see a limit (a 'concrete ceiling') on using the Kyoto Mechanisms as an alternative to taking action at home. There are no established rules or scientific protocols to follow to establish how much, if any, of a country's emission reductions should be met through domestic action rather than through the Kyoto Mechanisms. Indeed, emissions reductions could be achieved anywhere because greenhouse gas emissions or reductions have the same effect on the global atmosphere regardless of where they occur, or from what source.

The EU justifies its position on supplementarity by arguing that current concerns over climate change result from past emissions of greenhouse gases from industrialised countries, so that these countries have a moral duty to reduce their own emissions rather than seeking reductions elsewhere. The EU's view is that developing countries will need to see that industrialised countries have been 'taking their responsibilities seriously' if they are to adopt emissions targets in the future. In addition, it is argued that domestic action is necessary to drive innovation of efficient, low-carbon technologies and their dissemination to developing countries, although export market opportunities can equally stimulate innovation and dissemination<sup>6</sup>.

At the EU Council meeting in June 2000, Ministers agreed to submit to the FCCC negotiating process a complex formula that essentially sets a limit of around 5% of a country's allowed emissions<sup>7</sup>. However, this 5% is intended to be flexible. For instance, Ministers agreed that it could be raised if a country domestically reduces emissions by more than the ceiling. The G77 group of developing countries and China support the idea of a limit (but not the EU's specific proposal - many other countries have submitted their own proposals). The 'Umbrella Group', however, opposes the idea. The Group (and particularly the USA) argues that emission reductions should be undertaken in the most cost-effective manner, regardless of where the reductions are achieved.

<sup>6</sup> See POST report "Cleaning Up? Stimulating innovation in environmental technology", April 2000.

<sup>7</sup> For example, if a country is required under the Kyoto Protocol to emit only 100 tonnes of carbon, then no more than 5 million tonnes can be bought from abroad under international emissions trading, or projects under JI or CDM.

## A prompt start for the CDM

The Kyoto Protocol allows for projects under the CDM to begin on 1 January 2000. However, no projects have yet begun under the scheme, as no rules have yet been set. One difficulty is that countries and companies are not willing to enter into legally binding contract arrangements without a legal structure within which the additional emissions reductions could be established.

Within the negotiations in the run-up to COP6 there has been little dissent over the basic structure of the CDM process. The EU's position is that COP6 needs to establish an interim Executive Board (EB) to manage a CDM project cycle comprising four phases:

- **Validation** – where an independent auditor judges that the criteria for a particular proposed project under CDM have been met.
- **Registration** – the EB gives its formal approval, and the project can commence.
- **Monitoring** – where a company operating a CDM project describes the emissions reductions and monitoring that have been carried out.
- **Verification and Certification** – where an independent body verifies claims, and the EB then issues certified emission reductions (CERs) – see Box 1.

One issue related to validation is **how to define a 'baseline'** of emissions that would anyway have come about in the absence of a CDM (or JI) project. For example, if a UK company wanted to improve the efficiency of an Indian coal-fired power station, it is not yet clear whether it could claim credits for the resulting carbon savings. The project might have gone ahead anyway (with its associated emission reductions) for reasons other than climate protection. It is anticipated that COP6 will agree general principles but that detailed guidelines constructing baselines would come later. The EU has suggested that the COP may invite an international body, such as the IPCC to take on this responsibility.

The most contentious area is over **which projects should be eligible for inclusion in the CDM**. During EU negotiations, most member countries wanted to exclude nuclear power (advancing waste management, safety and proliferation issues to justify this). The UK view was that host countries should decide their own energy needs and contributions to 'sustainable development'.

**BOX 3 OTHER ISSUES FOR COP6**

**Adaptation Levy** - The Protocol says that the costs of CDM projects should include a small levy which will be used to help countries adapt to the effects of climate change. Developing countries argue that this principle should extend to the other Kyoto Mechanisms (JI and Emissions Trading), to avoid creating unfair competition between the mechanisms.

However, the EU and other developed countries oppose this position. They argue that the Protocol does not allow for it, and that emission reduction projects under the CDM are likely to be cheaper than under JI, as they are carried out in developing countries where overheads are lower than in developed countries. Also, the amount of the levy should be small so as to make only a marginal difference to the cost of a CDM project. Thus, the EU argues that the cost of CDM projects is likely to remain much lower than JI projects, so there will be little competition between them.

**'Hot Air'** - Because of significant decline in the industrial output of the countries of the former Soviet Union and Eastern Europe since 1990, their projected emissions of greenhouse gases by 2008-2012 are widely expected to be below their Kyoto targets. Questions arise over whether these countries should be able to sell this 'hot air' in international emissions trading. Some countries (notably the USA) may buy the right to use these surplus allowances to reduce emission reductions at home.

This issue arises only for the first compliance period (2008-2012). Thereafter, targets will need to be revised to take account of this so-called 'hot air'. Indeed, if growth in the former eastern bloc economies improves before 2008, their greenhouse gas emissions may well increase, thereby removing the issue of 'hot air' completely.

**Eligibility for Participation** - The EU wishes to see agreement on the principles under which countries would be eligible to participate in the Kyoto Mechanisms. Essentially there are three preconditions:

- **Ratification** – countries must have ratified the Kyoto Protocol. To date, no major industrialised country has ratified, although the EU has committed itself to do so by 2002. A separate issue is whether the Protocol itself can enter into force without ratification by the USA<sup>8</sup>.
- **Measurement** – there must be an agreed scheme for measurement and verification of emissions within countries party to the Protocol and those participating in CDM and JI projects.
- **Liability and compliance regime** – parties to the Protocol must be bound by a regime that establishes the penalties and incentives for meeting emission reduction targets and fair trading between parties. The EU supports strong, legally binding consequences for non-compliance. Other developed countries are split on this issue, with Russia, Japan and Australia the most vocal in opposition.

**The Scope of Emissions Trading** - Each of the three Kyoto Mechanisms generates some form of certified 'credit' for greenhouse gas emissions (Box 1). A question arises over whether each of these 'currencies' will be exchangeable (or 'fungible' in the language of the Protocol) within the context of meeting the Kyoto Protocol targets, e.g. whether a country would be able to sell credits gained from a JI project at the same exchange rate (i.e. dollars per tonne of carbon) as under emissions trading. A related issue has been raised by India and China over what is actually being traded – i.e. a commodity or an obligation on a government? Stemming from this, they question whether 'legal entities' (i.e. businesses) should be allowed to take part in international emissions trading, rather than national governments alone. Businesses are, however, treated as eligible to participate in any bilateral or multilateral system of trading (e.g. within the EU or OECD).

The issue was resolved in June<sup>9</sup>, when ministers agreed to a 'positive list' – i.e. generic technologies that should be included, without specifically excluding any. This list is of "*safe, environmentally sound eligible projects based on renewable energy sources, energy efficiency improvements and demand side management in the fields of energy and transport.*"

There was a wide range of opinion about the positive list approach at the Subsidiary Bodies meeting in September. The USA questioned the need for any list, while the G77 and China (supported by Canada and Australia) argued that the identification of 'sustainable development' priorities should be left to the host country. On the other hand, African countries and Switzerland said that they would examine the idea further, while other countries argued for sinks (such as land use and forestry projects) to be included in any such positive list.

**MAKING COP6 A SUCCESS**

The previous sections have outlined the key issues to be resolved at COP6. **Box 3** highlights a number of other important issues, although carrying lower priority within the EU.

Ultimately, a question arises about the **outcomes that would make COP6 a success**. The EU's main objective is for it to provide sufficient clarity in the rules to ensure that Parties can ratify the Kyoto Protocol, and hence bring it into force. The key test of this is whether agreement can be reached on:

- **Supplementarity** – the extent of emissions reductions achieved through trading or JI or CDM projects undertaken externally rather than at home
- **CDM** – the technologies that would be eligible under CDM - especially those involving carbon sinks
- **Compliance** – the need for a robust scheme to ensure that Parties comply with the rules
- **Business involvement** – whether businesses will be able to participate in the mechanisms, particularly international emissions trading.

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<sup>8</sup> In theory, though, the Protocol can enter into force without the USA, but this would require ratification by virtually every other industrialised party to the Protocol.

<sup>9</sup> Council of the European Union, Community Strategy on Climate Change – Council conclusions, 23 June 2000, 9707/00.