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Challenging Perspectives: US and EU Approaches to Climate Change

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Introduction

The differences between the US and EU that have often strained their relations on climate policy, such as the role of mandatory versus voluntary controls on greenhouse gas (“GHG”) emissions, have, to some extent, been put to one side. Instead, in 2006 discussions have focused on a wider range of policy instruments, with particular emphasis on the need for incentives to bring forward new fuel sources, clean energy technologies and ways to adapt to climate change.

The backdrop of concerns in both the EU and the US about energy security and over-reliance on fossil fuel imports from unstable regions of the world has contributed to this rapprochement, as has the growth in carbon finance (and consequent interest by US as well as EU players in this new market). Even so, the international community faces an impending policy vacuum when the first Kyoto commitment period ends in 2012, unless the major international players, including the EU, US and developing countries, can agree on a follow-on programme.

Although 2006 saw no great policy breakthroughs, the political atmosphere seems to have changed. October saw the inaugural meeting of the EU-US High Level Dialogue on Climate Change, Clean Energy and Sustainable Development in Helsinki, at which a package of measures aimed at strengthening bilateral co-operation were agreed upon. This could be a staging post in which both sides recognise their common interest in developing an international climate policy. At the same time, the 2006 election results reinvigorated the climate change policy debate in the US.

We discuss these and other recent developments in more detail below, but we begin this chapter by tracing the major events in the development of climate change policy from the points of view of the US and the EU. We then set out the main instruments by which these policies have been implemented in the two jurisdictions. The topic is broad and fluid; whilst we cannot claim to be comprehensive, our aim is to give an overview of US and EU perspectives on climate change.

Background

In 1988 the Intergovernmental Panel on Climate Change (“IPCC”) was established by the UN Environment Programme and the World Meteorological Association to assess scientific, technological and socio-economic information relevant to understanding climate change. Both the US and EU participate in the IPCC. The IPCC is in the course of publishing its Fourth Assessment Report in stages during 2007, building upon its previous comprehensive study of climate change released in 2001. A Summary for Policy Makers on

the Physical Science Basis of climate change, approved by an IPCC working group on 2 February 2007, observed that “warming of the climate system is unequivocal” with “[e]ven of the last twelve years (1995 -2006) rank[ing] among the 12 warmest years in the instrumental record of global surface temperature (since 1850).” The summary further noted that “[m]ost of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations.”

2006 was the earth’s sixth warmest year on record, and the UK charted its warmest year since records began in 1659. The Great Horn of Africa suffered from extreme rainfall, and rainfall in the Sahara displaced approximately 600,000 people. By contrast, severe drought damaged millions of hectares of crops in Sichuan province, China and led to the new crime of water theft in Australia. Such weather extremes appear to some to bear testimony to the impacts of man-made climate change. To others, these events are not related to such climate change but are evidence of the cyclical pattern of climate variability. Whatever the precise link, if any, to climate change, extreme weather events may heighten awareness and concern, provide an impetus for new policies from the international community, and help foster technological breakthroughs needed to meet the climate change challenge.

Evolution of Climate Change Policies

The US, in many ways, started the ball rolling in relation to climate change policies. Beginning in 1978 and continuing into the 1980s and 1990s, the US Congress enacted several laws giving direction and funding for climate change research and studies.

Of special importance is the Global Climate Protection Act of 1987, which established that US policy should be to increase worldwide understanding of the greenhouse effect, to foster international cooperation with respect to research of the greenhouse effect, to identify technologies and activities to limit mankind’s adverse effect on global climate, and to work toward multilateral agreements. It made the President “responsible for developing and proposing to Congress a coordinated national policy on global climate change” and the Secretary of State responsible for coordinating those aspects of US policy requiring multilateral diplomacy.

Subsequently, the United Nations General Assembly at its 1990 session set up an Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (“INC/FCCC”) with a mandate to draft a convention. The INC/FCCC met in five sessions between February 1991 and May 1992, with the US hosting the first meeting in Chantilly, Virginia. That effort, in turn, eventually led to

the adoption on May 9, 1992 at UN Headquarters in New York of the United Nations Framework Convention on Climate Change (“UNFCCC”), in which the US played a leading role. Enshrined in the UNFCCC is a set of guiding Principles under which all Parties accept that they:

“should protect the climate system ... on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities”;

and that:

“the developed country Parties should take the lead in combating climate change and the adverse effects thereof”.

Specifically, the Parties should:

“take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects ..., tak[e] into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible costs ... [and] take into account different socio-economics contexts, be comprehensive, cover all relevant sources, sinks, and reservoirs of greenhouse gases and adaptation, and comprise all economics sectors.”

The UNFCCC was signed by the European Economic Community (“EEC”), as it was then, in June 1992 at the UN Conference on Environment and Development in Rio de Janeiro. It was ratified by the EEC and its Member States in December 1993, and it entered into force on 21 March 1994, having received the requisite number of signatories.

The US also signed the Treaty at Rio in 1992. Under the US Constitution, an international treaty that is not “self-executing” binds the US only upon ratification by the President after the “advice and consent” of the US Senate, which requires a two-thirds majority vote. In late 1992, the Senate provided the necessary advice and consent with respect to the UNFCCC, but in doing so its Foreign Relations Committee noted that it did not understand the Convention as providing a basis for legally binding targets and timetables. After Senate action, the President ratified the treaty. While the UNFCCC did not require implementing legislation, Congress has appropriated funds for its implementation.

The UNFCCC

The UNFCCC imposes various “commitments” on all the Parties, “taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances.” Governments must gather and share information on GHG emissions, national policies and best practices. They must launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries. The Convention also requires annual inventory estimates of GHG emissions from developed countries.

In essence, the UNFCCC provides the basic architecture within which the world community agreed to work out how best to meet the climate change challenge, as opposed to any specific emission limits. The “ultimate objective” of the Convention and any related legal instruments that may be adopted “[are] to achieve, in accordance with the relevant provisions of the Convention, stabilization of [GHG] concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” Such a level “should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate

change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.” The “supreme body” of the UNFCCC is the Conference of the Parties (“COP”), which “shall keep under regular review the implementation of the Convention and any related legal instruments” that the COP “may adopt, and shall make ... the decisions necessary to promote the effective implementation of the Convention.” Ordinary sessions of the COP “shall be held every year unless otherwise decided,” and to date, there have been 12 COPs.

The Kyoto Protocol

Adopted under the UNFCCC in December 1997, the Kyoto Protocol sets mandatory emission reduction targets for participating developed nations (known as Annex I Parties). These are to be achieved in the period 2008-2012, the so-called first commitment period. For the period after 2012, the Protocol requires the Parties to begin a process, which as discussed below is currently underway, for considering the Annex I Party commitments to further emission reductions.

Whilst developed countries are subject to mandatory emissions reductions targets under the Protocol, developing countries are not. This is a result of the so-called Berlin Mandate adopted at COP 1 in 1995, which the Protocol’s preamble incorporates by reference. Thus, China and India do not have mandatory emission reduction targets even though they currently are ranked the second and fifth largest global producers of GHGs. China, moreover, is predicted to rise to first by 2015 and may do so as soon as 2010.

The Protocol also introduced three so-called flexible mechanisms by which Annex I countries could meet their obligations. These are known as (1) Joint Implementation (“JI”), under which compliance may be achieved through emissions reduction projects between Annex I parties (Article 6); (2) the Clean Development Mechanism (“CDM”), which allows for emissions reductions projects to be implemented in non-Annex I countries (Article 12); and (3) emissions trading (Article 17), under which credits generated by JI or CDM projects or surplus allowances in countries over-achieving under new Kyoto obligations can be bought and sold on the market. The Kyoto Protocol represents the point at which the EU and US parted ways on how best to combat climate change.

Six months before the Kyoto Protocol was adopted at COP 3 in 1997, the US Senate voted 95-0 for a “Sense of the Senate Resolution” (S. Res. 98), known as the “Byrd-Hagel Resolution,” which said the US should not sign “any protocol to, or other agreement regarding,” the Convention that did not include mandates for “new specific scheduled commitments to limit or reduce” GHG emissions by developing countries “within the same compliance period” as developed countries, or that “would result in serious harm to the economy” of the US. Despite the Senate resolution, then Vice-President Al Gore signed the Kyoto Protocol in New York in 1998. Former President Clinton, however, did not send the treaty to the Senate for its advice and consent to ratification, and Congress subsequently enacted annual funding limits in 1998, 1999 and 2000 barring the US Environmental Protection Agency (“USEPA”) from implementing the Protocol prior to ratification.

President Bush likewise has not sent the Protocol to the Senate and in 2001 said that he would not do so. By way of explanation, he essentially reiterated the Senate’s earlier thinking: “it exempts 80 percent of the world, including major population centers such as China and India, from compliance and would cause serious harm to the US economy”.

Across the Atlantic, the EU adopted the Kyoto Protocol in

December 1997, and by 31 May 2002, the EU and all its Member States had ratified the Protocol. Under the Protocol, participating industrialised countries are required to reduce their emissions of six GHGs: CO₂; nitrous oxide; hydrofluorocarbons (“HFCs”); perfluorocarbons (“PFCs”) and sulphur hexafluoride (“SF₆”). Emissions of these substances must be reduced on average to 5.2 percent below the 1990 levels during the first commitment period from 2008 to 2012.

The Kyoto Protocol was ratified, accepted or approved by countries responsible for 61.6 percent of CO₂ emissions from developed countries, and having passed the threshold of 55 percent, the Protocol entered into force on 16 February 2005. The industrialised absentees from the Protocol’s signatories are Australia and, most notably, the US, which alone accounts for 36.1 percent of the industrialised nations’ CO₂ emissions.

Nairobi Talks - COP 12 and COP/MOP 2 - Post 2012 Scenario

Given the difficulties surrounding the negotiation of the Protocol itself, and the approaching “deadline” of 2012, one major focus of the Parties in 2006 was developing a framework for the post-2012 period.

The First Meeting of the Parties to the Kyoto Protocol (“COP/MOP 1”), which was held in Montreal concurrently with COP 11 under the UNFCCC, initiated the process to consider further “commitments” for Annex I Parties for the period beyond 2012. The Parties to the Kyoto Protocol did not set a specific deadline for completing this process, but called for it to begin “without delay” in an “open-ended ad hoc working group” (“AWG”) that would “complete its work” “as early as possible” and “in time to ensure that there is no gap between the first and second commitment periods”.

Moving in parallel, the Parties to the UNFCCC (including the EU and US) separately agreed at COP 11 to a non-binding “dialogue” to “exchange experiences and analyse strategic approaches for long-term co-operative action to address climate change”. The Parties are to engage in this dialogue “without prejudice to any future negotiations, commitments, process, framework or mandate under the Convention” and without opening “any negotiations leading to new commitments”. Nonetheless, the dialogue is to “support ... enhanced implementation of the Convention”. Four workshops were scheduled with four broad areas of focus: “advancing development goals in a sustainable way, addressing action on adaptation, realizing the full potential of technology, and realizing the full potential of market-based opportunities”.

The first meeting of the AWG was in May 2006, and its second was in November 2006 alongside COP 12 and COP/MOP 2 in Nairobi. The US has attended both meetings as an observer, non-Party.

A major topic at COP 12 and COP/MOP 2 in Nairobi was whether negotiations for a second, post-2012 Kyoto commitment period could be completed soon enough to ensure that the amendment to the Protocol would be both adopted by the COP and ratified by the Parties in time to avoid a “gap between the first and second commitment periods under the Kyoto Protocol.” The Parties also were concerned about “giv[ing] a clear signal to economic actors about the continuity of the international carbon market”. Accordingly, the AWG decided on its “work programme for the completion of its mandate”, which includes an “[a]nalysis of mitigation potentials and ranges of emission reduction objectives of Annex I Parties”, “[a]nalysis of possible means to achieve mitigation objectives”, “[c]onsideration of further commitments by Annex I Parties”, and addressing “legal matters arising from its

mandates”, all with “a view to completing the work of the AWG as early as possible and in time to ensure that there is no gap”.

Also at Nairobi, further review of the Protocol was initiated under Article 9, with the express acknowledgement that the review will not lead to new commitments. In addition, a Russian proposal for consultations between the Parties on procedures for the approval of voluntary commitments was set in train. The end result is that there are now four potential “tracks” through which international climate change policy is being discussed: the AWG, the dialogue, the Article 9 review, and the procedures for the approval of voluntary commitments.

From the US perspective, these tracks preserve the US emphasis that there is a diversity of approaches to addressing climate change and the “essential role of technology”. For the EU the agreement means that the world’s current largest emitter of GHGs is engaged in a multilateral approach under the Convention for dealing with climate change issues. Failure to achieve this would, it was thought in the EU, have seriously undermined the credibility of the Kyoto Protocol going forward.

US Climate Change Policy

Existing US Programmes on Climate Change

Through 2006, the prevailing US view at the federal level has been that the imposition of regulatory controls on GHG emissions beyond those now in effect, such as vehicle fuel economy standards, is at best premature and, given the potentially significant burden to the US economy, would be an unacceptable cost without a commensurate return. According to a 1998 study by the Energy Information Administration, a division of the US Department of Energy (“USDOE”), the implementation of the emissions limits proposed for the US under the Kyoto Protocol could lead to a 4.21 percent decrease in US gross domestic product (“GDP”). Thus, the preferred approach in the US for implementing the UNFCCC has been to pursue a variety of voluntary domestic and international measures along with bilateral and multilateral international agreements and partnerships.

In 2002, President Bush launched his US Global Climate Change Initiative, which is intended to reduce GHG intensity, or the total GHG emissions per unit of GDP, by 18 percent between 2002 and 2012. From 1990 to 2005, the US estimates that its GHG intensity actually dropped by 25 percent. The average annual rate of decline was 1.9 percent; from 2004 to 2005 it fell by 2.5 percent. Although absolute emissions could increase under this measure (and in fact did rise 0.6 percent from 2004 to 2005), the US argues that its use slows GHG emissions whilst allowing the economic growth needed for cleaner technologies, and whilst preventing countries from taking credit for emissions reductions from economic downturns. In the US view, moreover, accounting for economic development is consistent with the UNFCCC.

In commending this policy, President Bush said: “We need to recognize that economic growth and environmental protection go hand in hand ... and in the coming decades, the world needs to develop and deploy billions of dollars of technologies that generate energy in cleaner ways. And we need strong economic growth to make that possible”.

To date, the Bush Administration’s initiatives have included:

- Public-private partnerships and domestic actions. Fourteen energy intensive industry sectors, including aluminum, iron and steel, mining, automobile manufacturers, chemical manufacturing, magnesium, minerals, railroads, forest

products, cement, semiconductors, oil and gas, lime, and electric utilities, have agreed to meet specific GHG or energy efficiency targets as part of the Climate VISION program. Under the Climate Leaders Program, more than 70 major companies are setting voluntary GHG reduction goals and keeping inventories of their emissions. Still other US domestic initiatives include tax incentives for alternative fuels, incentives for land management practices to sequester carbon, increases in fuel economy for cars and light trucks, tax credits for methane projects, voluntary agreements and requirements to increase the energy efficiency of products and buildings, and agreements to reduce unnecessary engine idling and improve transportation efficiency.

- Advancing science and technology. The Climate Change Science Program (“CCSP”), for example, includes research on aerosols, the future use of which could impact ultimate prediction models, carbon sources and sinks, and methods of observing and modelling climate variation. The Climate Change Technology Program (“CCTP”) supports research and development in energy efficiency, renewable energy, nuclear power and clean use of coal. A central element of CCTP’s strategy is carbon sequestration.
- International Cooperation. The US has (i) negotiated agreements with other countries on research, observation, monitoring, emissions, measurement and sequestration; and (ii) launched initiatives to conserve tropical forests, to combat illegal logging and to recover methane emissions from landfills, coal mines and natural gas and petroleum systems. Since 2001, the US has entered 15 formal bilateral and regional climate change agreements. In 2006, for instance, ministers from Australia, China, India, Japan, Republic of Korea, and the US launched the “Asia-Pacific Partnership”, which is designed to accelerate the development and deployment of cleaner, more efficient technologies to meet national pollution reduction, energy security and climate change concerns in a way that promotes economic development and reduces poverty.
- Clean Development Partnerships. The Clean Energy Initiative is meant “to alleviate poverty and spur economic growth in the developing world by modernizing energy services.” Other programmes promote renewable energy and energy efficiency in the developing world.

The US therefore is pursuing numerous initiatives dealing with GHGs at home and abroad. In all, it claims to have spent \$29 billion on climate activities since 2001.

Whilst the US does not at present have a comprehensive GHG regulatory program, it does impose various requirements that have the effect of reducing GHG emissions. The best example is probably the US Corporate Average Fuel Economy (“CAFE”, pronounced “café”) programme, which since 1975 has required the US Department of Transportation (“USDOT”) to set average fuel economy standards on a miles per gallon basis for new passenger cars and light trucks. The standards are mandatory, and violations may result in penalties. In determining the “maximum feasible average fuel economy”, the USDOT must consider technological feasibility, economic practicality, the effect of other federal motor vehicle standards on fuel economy, and the need of the US economy to conserve energy. Because CO₂ is an unavoidable byproduct of the combustion of gasoline, the amount of gasoline burned is directly related to the amount of CO₂ emitted by a motor vehicle. So while the CAFE standards are stated in terms of miles per gallon, they are enforced in terms of CO₂ grams per mile, which are measured and converted by prescribed USEPA procedures to miles per gallon.

US Reporting of GHG Emissions

Currently, the sole federal requirement to report GHG emissions is set out in a law that was enacted with the Clean Air Act Amendments of 1990. It requires only the US electric power industry to submit annual reports of its CO₂ emissions.

Pursuant to the Energy Policy Act of 1992, the USDOE maintains a voluntary system for reporting emissions of CO₂, methane, nitrous oxide, halogenated substances and other radiatively enhancing gases and for issuing an annual inventory of GHG emissions by six economic sectors. In 2006, the USDOE revised that programme in an effort to enhance its accuracy, reliability, and verifiability.

Prospects for US Federal Regulation of GHG Emissions

The November 2006 Federal elections saw the Democratic Party win majorities in both the Senate (51-49) and House of Representatives (233-202). For GHG regulation, the immediate result was to re-invigorate Congressional debate, especially since several of the new House and Senate leaders have pledged to make climate change a high priority for the 110th Congress. Whether that results in any major substantive change remains to be seen.

The 110th Congress convened on January 4, 2007, and within two weeks, there were three very different climate bills in the Senate, one of which would cap US CO₂ emissions from nearly all sectors of the US economy at 1990 levels by 2020 and then cut them every decade until an 80 percent reduction is achieved in 2050. At least six major climate measures are expected in the Senate along with “Sense of the Senate” resolutions and exhaustive hearings. One Senator alone intends to introduce a total of five global warming bills. The relatively large number of expected bills indicates that there is no consensus in the Senate on how to regulate GHG emissions, and that alone may hinder efforts to pass a measure by 2008. Sen. Barbara Boxer (D-Calif.), chairwoman of the critical Senate Environment and Public Works Committee, has indicated that her Committee may start with energy efficiency in an effort to build such a consensus and then move “incrementally” from there.

While the Senate has considered various climate approaches in prior Congresses, the House of Representatives has devoted far less attention to the issue, making predictions for the 110th Congress even more difficult. John Dingell (D-Mich.), the new Chairman of the key House Committee on Energy and Commerce, and Congressman Rick Boucher (D-VA), who chairs the relevant Energy Subcommittee, invited former Vice President Al Gore to testify at a Committee hearing on climate and announced that the Committee intended to launch an “in depth” examination of climate change so that it “can develop and, if at all possible, enact a sound and effective public policy that is environmentally and economically responsible.” They intend to pursue a “comprehensive” examination of the causes of climate change, its consequences, state and local initiatives, Federal programs, private sector actions, technologies, the international experience, transportation, and domestic policy options. Speaker of the House Nancy Pelosi (D-Calif.) has set an ambitious goal of July 4 as the date by which climate legislation should be brought to the House floor. She also announced an intention for the House to create a Select Committee on Energy Independence and Climate Change that would be able to hold hearings on climate change and which could pressure the Committee on Energy and Commerce to accelerate their work on the issue.

Despite statements by a number of Representatives and Senators, including several Presidential hopefuls, that Congress soon will legislate on climate, the prospects for the US enacting a climate

change regulatory program in the next two years are uncertain as of the date of writing. The positions of many in the two houses are unclear, and seem likely to turn, not on political party affiliation, but on regional and economic issues as the substantive and procedural details emerge and the legislative process unfolds. While many Democrats and Republicans are expressing concern about global warming and the need to address it domestically, many also represent states that mine coal, produce steel, manufacture cars and trucks or otherwise have particular interests in the matter. Questions undoubtedly will arise as to whether mitigation should be focused upstream or downstream and whether to target one economic sector (like electric utilities or transportation or some entities therein), multiple sectors, or the entire economy. There will be concern about the nature of any requirements, their costs and their impacts on energy diversity, security, consumers and small business. Remembering how the Byrd-Hagel resolution signaled the death knell for the Kyoto Protocol in the US largely over the failure to include commitments for developing countries, Congress also will likely have to wrestle with potential effects on the US trade deficit, manufacturing base, and export of jobs. Also to be considered are the status of commercially viable and effective technologies, not only for the short term but also for the medium and long term, and the impact of adaptation measures.

Whether there are enough votes to end debate and move measures to the floor, pass them, and then move them through a House-Senate Conference, is uncertain. Beyond that, there is no solid indication that the Bush Administration intends to reverse its long-standing opposition to mandatory limits. If legislation could make it through both the House and the Senate without the Administration's support, a veto would be a possibility. In that case, a two-thirds majority vote would be needed in both the House and Senate to pass climate legislation.

Complicating the picture still further is the 2008 presidential election, especially since some of the main proponents of climate change mitigation are expected to seek their parties' nomination. Their opponents may have an incentive to prevent them from claiming credit for a new climate change regulatory program.

Finally, the position of the American public on climate change is unclear. Climate was not a critical issue in the 2006 elections. A 2006 poll did find that Americans consider climate the nation's most important environmental issue, but the environment trailed terrorism, the Iraq war, health care, fuel/oil prices, illegal immigrants, the economy, quality of government leaders, social security, education and family values as a concern.

Apart from climate-specific measures, the 110th Congress is expected to consider a variety of other proposals with implications for GHG emissions. These include measures to increase the CAFE standards, to promote renewable fuels and to expand coal liquefaction. There may be more room for agreement with the Administration on such measures, especially since the President, in his "State of the Union" speech, called for an increase in use of renewable fuels and an increase in CAFE standards by 4 percent each year, starting in 2010 for cars and 2012 for light trucks. Nevertheless, many of these proposals are controversial in their own right.

While Congress considers new programs, proponents of mandatory control are still trying to force the regulation of GHGs under existing US laws, including especially the CAA. For example, USEPA denied a petition in 2003 for a rulemaking under the CAA to limit some GHGs from motor vehicles. In doing so, the Agency concluded that "it cannot and should not regulate GHG emissions from cars," that "the CAA does not authorize regulation to address global climate change" and that CO₂ is not an air pollutant under US environmental law. Environmental organizations and several

states appealed that decision in the court system. On USEPA's side are three industry groups, some labour organizations and several other states. In 2005, the reviewing court held that USEPA properly had denied the petition with the three judges who heard the case issuing three separate opinions. The US Supreme Court agreed to hear an appeal of the case, which was argued in November 2006. Three issues appear to be at play: (1) whether the petitioners have "standing" to bring the lawsuit; (2) if so, whether GHGs are pollutants under the CAA; and (3) if that is so, whether USEPA has discretion not to use its authority to regulate GHGs.

Environmental groups also have cited to climate concerns in proceedings to issue CAA permits to electricity generating plants. Going beyond the CAA, they have asked the US government to take climate change into account in protecting endangered species,

State Regulation of GHGs

The number of individual states in the US seeking to impose their own voluntary and mandatory controls on GHG emissions continues to grow. Meaningful state control could possibly help the US reduce its overall GHG contribution to global emissions, and the state programs could serve as laboratories for any national initiatives.

California's efforts in particular continue to draw attention, as Governor Schwarzenegger (R) aggressively pushes climate measures. This past year, California enacted AB 32, the California Global Warming Solutions Act. The Act codifies the Governor's emission reduction targets by committing the state to reach 2000 emission levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. Mandatory caps for significant sources will start in 2012. In many ways, the act is like a traditional environmental statute in that it leaves most of the details to the California Air Resources Board ("CARB"). Thus, CARB is to establish by January 1, 2008 a statewide cap for 2020; adopt by January 1, 2009 mandatory reporting rules for significant sources and a plan for achieving reductions; and define by January 1, 2011 the maximum technologically feasible and cost-effective reductions, including market mechanisms such as trading, offsets and credits. CARB will be able to impose criminal or civil penalties for violations. Obviously, many of the details remain to be worked out and may influence or be overtaken by federal measures.

To help meet these targets, Governor Schwarzenegger has ordered a 10 percent reduction in GHG emissions from transportation fuels by 2020. California thus will develop "low carbon fuel standards," which are expected to include market trading. Compliance options also may include increasing sales of E10 or E85 and sales of plug-in or hybrid cars.

With Governor Schwarzenegger's signature on SB 1368, moreover, California set emission limits for energy providers opening new contracts of five years and longer. Under that law, the state's Public Utility Commission thus is requiring new long-term commitments for baseload generation serving California to be with power plants that have emissions no greater than 1,100 pounds of CO₂ per megawatt-hour.

Although other recent individual state initiatives have been more modest, they continue moving forward. Oregon is working on a power plant cap and trade proposal that is expected to be considered by the Legislature in 2007. New Mexico Governor Bill Richardson (D), who is also a Presidential hopeful, signed an executive order in December 2006 that establishes a team of officials to carry out climate change recommendations made by a state task force, including creating a market-based GHG registry and reduction program. Even former Florida Governor Jeb Bush (R) released, as

he left office, a “white paper” recommending, among other things, that the state consider implementing carbon constraints, including a future carbon pricing program for electricity generation.

Likewise, multi-state initiatives are proceeding. On the East Coast, members of the Regional Greenhouse Gas Initiative (“**RGGI**”) have agreed in a memorandum of understanding to limit CO₂ from power plants by 2.5 percent per year beginning in 2015 through a cap-and-trade program. By 2019, such emissions would need to be 10 percent less than the baseline apportioned to each state. Limited emission offsets may be used for compliance, with the number and geographic source tied to price. Since the seven original participants signed the memorandum in 2005, Massachusetts, Rhode Island and Maryland have decided to join. Each participating state is developing its own implementing regulations. The first RGGI State to release its compliance strategy was New York, which issued a “pre-proposal draft” that would call for a 100% auction of emission allowances and allow the State to spend the proceeds on energy efficiency and clean energy technology. Other RGGI members may follow suit.

A group of up to 30 states is working on a “Multi-State Climate Registry” (“**MSCR**”), a “bottom-up” approach to emissions accounting in which entities would report emissions from various individual sources. Its objectives include leveraging state resources to support multiple state and regional policy goals and to implement a policy-neutral repository. Such a registry could provide a common framework for future mandatory regulatory programs.

At a more local level, over 300 US cities and a number of counties have pledged to reduce GHG emissions by 2012 to at least 7 percent below 1990 levels. The bad news is that a January 2007 study of ten such leading cities found that only one was well-positioned to do so. Almost all of the ten studied cities were expecting a significant portion of their reductions to result from actions taken by higher levels of government.

Court challenges are expected to many of the state and local measures, particularly the RGGI rules and the California initiatives. One challenge to California’s earlier legislation to control CO₂ emissions from new motor vehicles has been pending for several years. The court recently halted the proceedings pending a decision in the US Supreme Court case described earlier.

If ultimately successful, the state and local initiatives as a whole could eventually create support for nationwide controls. So as to avoid a nightmare of inconsistencies, and restrictions on commerce, businesses operating across state lines may ask Congress to enact legislation. At the same time, it bears keeping in mind that Congress typically has chosen not to preempt state environmental initiatives, but instead generally allows states to adopt rules more stringent than federal requirements. Indeed, some of the early climate bills introduced in the 110th Congress include that feature.

Civil claims for GHG emissions

Also pending in the US is the question of whether civil liability can be used to impose GHG controls. Eight states, along with New York City and several environmental groups, sued five utilities that allegedly account for 10 percent of overall US emissions on the grounds that their emissions are creating a Federal common law public nuisance. Ruling that the case presented a non-justiciable political question for the Executive Branch and Congress, the court dismissed the case; the petitioners have appealed.

Other recent US liability claims relating to climate change include nuisance lawsuits brought for damages by California against automobile manufacturers and by Hurricane Katrina victims against chemical and oil companies whose GHG emissions allegedly

strengthened the storm.

Non-Governmental Initiatives

In addition to governmental programs, various groups in the US are pushing their own private initiatives with respect to GHGs. One of the best known is the Chicago Climate Exchange, which is a self-regulating exchange intended to gain experience with GHG trading schemes and raise public awareness. Members originally made legally binding commitments to reduce their GHG emissions by four percent below the average of their 1998-2001 baselines prior to 2006. The program has been extended for an additional four years with a reduction target of 6 percent below baseline. In 2006, 10 million metric tons of carbon dioxide were traded on the Exchange with prices between \$3 and \$4.50 for most of the year.

Sustainable investment groups similarly are seeking to raise awareness by pushing for shareholder resolutions and increased disclosure of climate risks in financial reports. Specific targets have included power companies, automakers and real estate firms.

On January 22, 2007, a few US manufacturers, power companies, and environmental groups formed the US Climate Action Partnership (“**USCAP**”) to urge implementation of a mandatory Federal climate emissions trading system. Members include General Electric, Alcoa, Caterpillar, Duke Energy, NRDC, Environmental Defense, Pew Center, BP America, DuPont, Lehman Brothers, and World Resources Institute, among others. The members have indicated a reluctance to endorse or support any specific Federal legislation or to suggest how the important substantive details of such legislation should be crafted. At the same time, one USCAP member has urged California to integrate its plans with Federal activity.

EU Climate Change Policy

The European Climate Change Programme (“**ECCP**”)

In June 2000 the EU established the ECCP with the aim of identifying the most environmentally-friendly and cost-effective ways to enable the EU to meet its targets under the Kyoto Protocol. To meet its Kyoto targets, the EU 15 must achieve an 8 percent reduction in GHG emissions from 1990 levels by 2008-2012. Some estimates put the cost of complying with the Kyoto Protocol at around 0.06 percent GDP or 3.7 billion Euros. The principal initiatives set out in the ECCP are summarised below.

Mechanisms for monitoring emissions

EU Decision 280/2004/EC establishes mechanisms designed to monitor GHG emissions in the Member States. Its purpose is to ensure that information reported by the Community to the UNFCCC Secretariat is complete, accurate and comparable. The Member States and the Community must devise, publish and implement national and Community programmes for reducing their anthropogenic emissions and enhancing removals by sinks of all GHGs controlled by the UNFCCC and the Kyoto Protocol.

National programmes should include information on the effect of national measures on emissions and removals of GHGs and national projections for CO₂ and other GHG emissions for 2005, 2010, 2015 and 2020. The Member States must issue reports to the European Commission by 15 January each year. These reports should include final data on emissions of carbon monoxide, CO₂, methane, nitrous oxide, HCFCs, PFCs, sulphur hexafluoride, sulphur dioxide,

nitrogen monoxide and volatile organic compounds during the year preceding the last two years. By 31 December 2005, Member States must establish national inventory systems for estimating GHG emissions on their territory.

These mechanisms will enable the Commission to make an annual evaluation of the progress made throughout the Community towards achieving the commitments made under the UNFCCC and the Kyoto Protocol.

EU Energy Policy Proposal

On 10 January 2007, the European Commission published its proposals for a new energy policy for Europe.

This represents the EU's attempt to align its energy and climate policies. Characterised as setting the pace for a "new global industrial revolution", it purports to start the process of delivering a low carbon economy for Europe.

The Commission proposes to seek agreement at the international level on a 30 percent reduction in GHG emissions by all developed nations by 2020. Regardless of whether this agreement at international level is achieved, the Commission proposes a binding target of reduction of GHG emissions within the EU by 20 percent below 1990 levels by 2020.

The proposals will be considered at the EU Summit in March 2007.

Competitive energy market

One of the central aims of the Commission's proposals for a new EU energy policy is the liberation of the EU energy market.

The creation of an internal energy market is considered to be a necessary condition not only to competitive energy prices, but also to releasing the huge investments needed to boost energy efficiency and renewables.

The Commission has identified the need to unbundle the ownership and/or operation of generation and sales from network companies and more effective regulations as the objectives of this policy, although the options for achieving this are highly controversial.

EU Implementation of Kyoto

As mentioned above, the Kyoto Protocol envisages three market-based flexible mechanisms for reducing CO₂ and other GHG emissions: emissions trading, JI and the CDM. These mechanisms are implemented in Directive 2003/87/EC (the "**Emissions Trading Directive**") and Directive 2004/101/EC (the "**Linking Directive**").

The European Emissions Trading Scheme ("**EUETS**") applies to energy-intensive companies across the EU's 25 Member States. These include approximately 12,000 steel factories, power plants, oil refineries, paper mills and glass and cement installations across Europe accounting for 40 percent of the EU's total CO₂ emissions.

The EUETS is a mandatory scheme which establishes a cap on emissions of CO₂ from the subject sectors. The scheme began operating on 1 January 2005 and is the world's largest market in GHG allowances. It will operate in two phases, the first from 2005 to 2007 and the second from 2008 to 2012. The EU scheme works on a cap-and-trade basis. In other words, a limit (or cap) is placed on the amount of emissions which can be released from regulated sources. Allowances, which permit a fixed amount of a pollutant to be emitted, are issued to polluters. These allowances can be traded on the open market. At the end of each compliance period, each producer of emissions must own allowances which account for all of the emissions it generated for that period.

Each Member State sets a cap on CO₂ emissions for each installation covered by the scheme. This is done via National Allocation Plans ("**NAPs**"). Each installation will then be allocated allowances for the particular commitment period in question. At the end of each year, each installation must present an audited emissions inventory to its government and will surrender allowances equivalent to its emissions for that year.

In effect, each installation has three options: it can meet the cap, reduce emissions below the cap and sell or bank its excess allowances, or let its emissions remain above the cap and purchase extra allowances on the market to account for the difference. Excess allowances can be sold on the market to another company, or they can be banked and used or sold in future years.

A number of exemptions to the EUETS are allowed, e.g., certain sectors are currently altogether excluded, notably aviation, a major GHG contributor. Member States can also apply to exclude individual plants and, in exceptional cases (e.g., very low winter temperatures) additional emissions allowances can be issued by national authorities.

The purpose of the Linking Directive is to link the EUETS with the Kyoto project mechanisms: JI and CDM. It allows operators in the EUETS to meet their targets by using credits gained from JI and CDM projects abroad, in place of emissions cuts in the EU. Through CDM, developed (Annex I) countries can acquire "certified emissions reductions" ("**CERs**") by investing in GHG mitigation projects in developing countries. These CERs can then be off-set against emissions reduction targets in the Annex I country. There are three critical elements to CDM projects: they must result in a net reduction of GHG emissions in the developing country; they must contribute to sustainable development and they must comply with the CDM rules (outlined in the Linking Directive).

JI, on the other hand, allows Annex I countries to meet their Kyoto targets by investing in projects which reduce emissions in other developed countries. In practice, this is likely to result in JI projects being developed in the accession EU countries and former Soviet Union countries (so-called "economies in transition") and paid for by western European countries. The sponsoring governments receive "emission reduction units" ("**ERUs**") that can be off-set against their targets. The recipient states receive foreign investment and advanced technology, but will not receive ERUs.

The Linking Directive has been met with some resistance from Non-Governmental Organisations ("**NGOs**") who are concerned it will undermine the EUETS by diverting investment outside the EU. NGOs have called for the capping of credits from Kyoto project mechanisms and limiting the use of credits gained to application in sustainable energy projects that actively contribute to sustainable development in the host country. However, the Directive in its current form does not cap such credits.

The 8 percent reduction target which applies to the original 15 EU Member States does not apply to the 10 accession states which joined the EU in May 2004. Under the Kyoto Protocol, each of the new Member States has its own target of between 8 percent and 6 percent below a given base year (1990 or earlier). Cyprus and Malta have no targets. Almost all of the new Member States have seen their GHG emissions decline substantially in recent years due to the closure of energy-intensive industries following the collapse of the former Soviet bloc. Consequently, most are on course to meet or surpass their reductions targets.

The first trading period under the EUETS ends in 2007. Member States are currently negotiating with the European Commission on their NAP's for Phase II of the EUETS.

Although the EUETS is accepted as a highly innovative policy

instrument, its success has been mixed to date. Supporters of the EUETS argue that Phase I was always intended as a learning by doing phase and the real test of its effectiveness in curbing CO₂ emissions will only be seen over the period 2008-2012.

Some of the criticisms are as follows:

- while the EUETS has established a price for “carbon”, carbon prices have not yet resulted in a significant degree of fuel switching or changes in investment patterns towards clean technologies;
- the free allocation of allowances to power generators has led to windfall profits and higher energy prices as the “costs” were passed through to customers;
- the short-term (to 2012) nature of the EUETS may have created a financial incentive for power generators to delay investment in new plants and keep old plants running longer; and
- the market appears to be some way long on allowances which has led to accusations that Member States were too generous in their allocations and this has led to volatility in the market.

The Commission has plans to improve and expand the EUETS. Most importantly, it has announced that aviation will be included in the EUETS. As at the time of writing this it is proposed that this will be done in two stages: from the start of 2011 emissions from all domestic and international flights between EU airports will be covered. One year later, it is intended to cover emissions from all international flights into the EU. Citing applicable international agreements, the US has indicated it opposes the EU proposal as it could apply to US airlines.

Other changes to the EU which are being considered from 2013 are:

- widening coverage to include GHGs other than CO₂, e.g., nitrous oxide and methane;
- increasing the number of sectors to be covered, including, possibly, petrochemicals;
- the possible recognition of carbon capture and storage (“CCS”) in the scheme; this could have a huge impact as it could be taken up by power generators, which are the main emitters covered by the EUETS;
- linking the other regional or national schemes, including with the US state schemes; and
- removing the power to determine allocations from Member State level to EU level.

Energy efficiency

The EU’s 2006 Energy Efficiency Action Plan sets out a number of measures aimed at improving energy efficiency so as to enable Member States to achieve a 13 percent reduction in energy use by 2020 compared to today’s energy use. This would result in savings of €100 billion and of 780 million tonnes of CO₂ per year. Some of the key measures proposed in the Plan include the increase of fuel efficient vehicles and wider use of public transport. It would also be necessary to improve the energy efficiency of existing and new buildings in line with the Energy Performance of Buildings Directive (2002/91/EC). The Plan envisages an international agreement with OECD and key developing countries to restrict the use of energy-inefficient products and agree common approaches on saving energy. According to the International Energy Agency (“IEA”), improved energy efficiency could reduce current global CO₂ emissions by 20 percent.

Renewable energy target

In accordance with the Renewables Directive (Directive on the

Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market (2001/77/EC)), Member States should achieve a target of 12 percent of gross energy consumption sourced from renewable technology by 2010. However, current estimates indicate that the share of renewables will only be around 10 percent by 2010. In order for all Member States to make serious progress in this area and shift niche renewables production into the mainstream, the EU Commission proposed in its 2007 Energy Policy for Europe to build on existing mechanisms, such as the Renewables Directive. Member States face a challenge in that there is an immediate need for large scale renewable energy projects whilst costs are still very high.

In its 2006 Renewable Energy Roadmap, the European Commission proposes to increase the level of renewable energy in the EU’s overall energy mix from currently less than 7 percent to 20 percent by 2020. It is envisaged that Member States would submit National Action Plans to the Commission in which they set out how the binding targets will be met. Policies will need to take account of different national circumstances, such as the nature of each Member State’s energy mix. The Commission plans a new renewables legislative package this year. It is estimated that the annual cost of achieving the 20 percent target would be around €18 billion. This, however, assumes oil prices \$48/barrel by 2020. If in the future oil prices rise, the cost of achieving the renewables target would fall.

The development of the biofuels sector on an EU-wide level will be given particular impetus through new legislative measures in order to reduce dependency on oil. The Renewable Energy Roadmap and the Commission’s 2006 Biofuels Progress Report propose binding minimum targets of 10 percent for the use of sustainable biofuels of vehicle fuel by 2020. The other two renewable energy sectors that will be legislated on are electricity (e.g., wind, photovoltaic, wave and tide) and heating & cooling (e.g. geothermal heat pumps). Some Member States have already made progress in these areas: Denmark sources around 20 percent of its electricity from wind power whilst Germany is the world leader for bio-diesel, with a 6 percent share of the diesel market.

European Strategic Energy Technology Plan

The European Commission will present a European Strategic Energy Technology Plan in 2007 which will set out how the EU can achieve cheaper clean energy and how to ensure that European industry will gain global leadership in the growing low carbon technology sector. The EU’s long-term goal envisages that by 2020 cost-effective technologies will have to be in existence to make the 20 percent renewable target a reality. This would include the roll-out of large off-shore wind projects and second generation biofuels. By 2030, power will increasingly need to be sourced from low carbon emission fossil fuel power plants with CCS and other low carbon technologies. As set out above, inclusion of CCS in the EUETS would provide an incentive to its implementation. By 2050, the process of converting European energy production to a clean system with low CO₂ emissions should be completed.

In order to achieve these long-term goals, annual spending on energy research over the next 7 years will increase by 50 percent. Priorities will include the development of biofuels, off-shore wind projects and photovoltaic technology that become fully competitive alternatives to fossil fuels. The benefits of fuel cells and hydrogen technologies will need to be further exploited, in particular for use in the transport sector.

Sustainable fossil fuel technologies

Half of the EU's electricity is supplied through the use of coal and gas. As coal produces substantially higher CO₂ emissions than gas, the development of cleaner coal generation will be necessary. This is particularly important in view of the EIA's projection that internationally twice more electricity will be produced from coal by 2030. CCS will also play a role in reducing energy-related CO₂ emissions.

By 2015, the EU aims to operate up to 12 large-scale demonstrations of sustainable fossil fuels technologies for commercial power generation. As regards CCS, the EU intends for all new coal-fired plants to be fitted with CCS technology by 2020, with existing plants subsequently installing CCS.

Nuclear energy

The use of nuclear power has been one of the ways in which Member States have been able to reduce their CO₂ emissions. Whilst each Member State chooses the extent to which they rely on nuclear energy, any decrease in its use that may occur in the future will need to be accompanied by the phasing-in of other low-carbon energy sources. Future EU policy will seek to develop the most advanced framework for nuclear security and safety which will also focus on nuclear waste management and decommissioning.

EU external relations

It is projected that by 2030 EU Member States will consume less than 10 percent of the world's energy. The EU, in its efforts to secure energy supplies and curb the negative effects of climate change, will therefore seek the cooperation of its international partners. An effective EU external energy policy is under development and will pursue, amongst other priorities, a number of international agreements, including the above-mentioned energy efficiency agreement and the post-2012 climate regime.

Fluorinated gases

In 2003, the European Commission proposed a Regulation (COM (2003) 492) intended to reduce the EU's emissions of fluorinated gases, namely HFCs; PFCs and SF₆. Without regulation, emissions of these gases are forecast to increase to around 98 million tonnes of CO₂ equivalent by 2010. The Commission's initial proposal would have been an "internal market" measure, meaning that controls would have to be implemented identically across the EU. However, the policies planned and implemented in some individual Member States go further than the proposed Regulation. Accordingly, the proposed Regulation will now apply only to stationary applications and mobile air-conditioning units will be regulated by a Directive. This proposed Directive will be an "environmental legal measure" rather than an internal market measure. Environmental legal measures need not be implemented identically across Member States. Therefore, individual Member States will have the option to implement legislation which goes further than the Directive's minimum requirements if they so wish.

GHGs and waste

Landfill, which remains a highly popular means of disposing of waste in the EU, is a significant contributor to GHG emissions. In the UK, for example, 100 million tonnes of waste are landfilled each year. One tonne of biodegradable waste is estimated to

produce between 200m³ and 400m³ of gas as it decomposes. Landfill gas is typically 50 percent methane, a potent GHG with 21 times the global warming potential of CO₂.

Because of the potential harm that is associated with landfill operations, special restrictions are placed on landfills under EU law. Under the Waste Framework Directive 75/442/EEC, methods of waste disposal must be prioritised in terms of their environmental impact and the method with the smallest impact is to be preferred. Member States must prohibit the uncontrolled discarding, discharge and disposal of waste and promote the prevention, recycling and conversion of wastes with a view to their reuse. Landfilling usually falls at the bottom of the waste disposal hierarchy.

The Landfill Directive 99/31/EC is intended, by way of stringent operational and technical requirements, to reduce air and other emissions from landfill sites in line with the Waste Framework Directive. Article 4 requires that all landfill waste be classified as hazardous, non-hazardous or inert and all hazardous waste must go to sites classified for hazardous waste landfill. Waste going to landfills must be pre-treated. The Landfill Directive imposes limits on the amount of biodegradable municipal waste which can be landfilled, with the aim of reducing the quantity of gaseous emissions from landfill sites. The limits imposed on the UK are: the reduction to 75 percent of the total amount by 2010; a reduction to 50 percent of the total amount by 2013 and to 35 percent by 2020.

Individual Member States have also implemented measures, in line with the objectives of the Landfill Directive, to reduce landfill bi-products. The UK, for example, has placed a "landfill tax" on landfill operations which aims to encourage the increased collection of methane generating waste for energy recovery and environmental control. The standard rate of the tax in 2004 was £15 per tonne of waste. The rate has been significantly increased by £1 per tonne of waste each year since 1999 and was due to have increased by £3 in 2005-6. Landfilling has traditionally been considered one of the cheapest ways to dispose of waste. The medium-term plan is to raise the landfill tax to £35 per tonne, thus limiting the number of companies who elect to landfill their waste because of the financial rather than environmental cost.

PPC

EU Directive 96/61/EC on Integrated Pollution Prevention and Control (the "IPPC Directive") regulates certain "installations" in the energy, metal processing, mineral and chemical industries as set out in Annex I of the Directive. Its purpose is to achieve integrated pollution prevention and control within these industries and it lays down measures designed to reduce or prevent emissions, including emissions of GHGs. Though not specifically introduced to address climate change, it aims to prevent or mitigate all forms of pollution and encourage energy efficiency. Under Article 4, new installations may not operate without a permit, which must be granted by the relevant Member State in accordance with the Directive. Member States should impose conditions on the permits to ensure that a high level of protection for the environment is achieved (Article 9). This includes specifying suitable emissions release monitoring requirements and placing limits as on the quantities of emissions released.

Conclusion

As we have discussed above, EU and US views on how to tackle global climate change have been characterised by widely divergent opinions on the importance of technology, the economic costs, the role of developing countries and the nature and importance of

binding multilateral reductions targets with or without trading mechanisms.

However, with the coming into force of the Kyoto Protocol, and the acceptance by the Kyoto Parties that medium to longer-term targets are likely to be more difficult to achieve than the first commitment period Kyoto targets, the opportunity to move the climate change agenda forward has arisen. Important to this effort is the fulfilment of the AWG work programme and the Parties reaching agreement early enough to ensure that there will be no gap between commitment periods.

The agreement by the US to engage in a multilateral dialogue over

the two-year period of 2006-07 is regarded in the EU as key to achieving a new consensus on how to tackle climate change. It remains to be seen whether that dialogue enables the EU and US to achieve more concrete proposals for bridging the climate divide in 2007 and beyond.

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We would like to thank Michael Hutchinson for his contribution to this chapter. Michael is a consultant to the Environment Group and has extensive experience of greenhouse gas issues in the UK and EU. Other areas of expertise include contaminated land, waste, electricity generation and environmental impact assessment.



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