The Emergence of Two Competing Philosophies on Climate Policy: The Implications for the Application of Technology Solutions

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Abstract

The UN Framework Convention on Climate Change was signed by 154 nations at the Rio Earth Summit. The Framework Convention was centered around its "ultimate objective"- "the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"[1] and carried with it a commitment to limit GHG emissions to 1990 levels by 2000.

After Rio, the scientific evidence concerning climate change became increasingly galvanized and it was also apparent that the majority of the Parties to the Convention would not achieve the stabilization goal. Parties then began the negotiation of an agreement that include binding emission reduction commitments. These negotiations culminated in the signing of the Kyoto Protocol in 1997. Three mechanisms are stipulated under the Kyoto Protocol. These include International Emissions Trading (depicted in Article 17), Joint Implementation (depicted in Article 6) and the Clean Development Mechanism (depicted in Article 12).

The introduction of these Mechanisms was to initiate the development of a global emissions trading system that would spur the application of clean technologies around the world. A number of contentious issues have emerged surrounding how these Mechanisms are to be applied in practice that must be resolved before an emissions trading market can develop, however.

The Kyoto Protocol and its CDM, introduced two new goals to accompany the Framework Convention's ultimate objective. The Protocol's Mechanisms were included for the purpose of allowing emission reductions to be achieved at the least possible cost. The CDM carries with it the requirement that investments made under the CDM contribute to the sustainable development of the host nations. Taken together, the three primary objectives are to achieve maximum reductions at the least possible cost, while contributing to sustainable development.

As the negotiations have progressed, the various Parties and the negotiation blocs they belong to have begun to stake out distinct positions that reflect competing philosophies. The Umbrella Group, made up of non-European industrialized countries, have been united in their belief that the least cost criteria is compatible with the ultimate objective of the Convention because achieving GHG reductions at the least cost allows for the greatest possible reductions to be achieved with a fixed quantity of resources.
The favoured position of the EU is what has become known as the "Environmental Integrity" approach, which seeks to eliminate any mitigation technology that has been

[1] Article 2, UNFCCC, 'Convention on Climate Change'. 1999

deemed to be suspect and prioritizes domestic actions. In international negotiations the EU has sought to place significant restrictions on the use of the Mechanisms by insisting that their use be merely supplemental to domestic actions. The EU has also opposed the inclusion of potentially cost-effective mitigation measures such as those associated with carbon sequestration. The EU has rejected the "least cost equals greatest results" view point by countering the central aspect of the argument, namely that a tonne of carbon is a tonne of carbon, no matter where in the world it is emitted from.

The fundamental differences in these two competing philosophies became increasingly apparent in the negotiations that lead up to CoP6 in The Hague. The EU and the Umbrella Group staked out divergent positions on all of the many unresolved issues and little ground was given up by either side until a failed last ditch effort was made to broker a deal in the final hours of the Conference.

The two competing views have significant implications for the adoption of technologies to reduce GHG emissions. The EU position would see restrictions placed on the eligibility of certain technologies such as nuclear power and possibly large hydroelectric projects. While the two positions are worth considering, the conflict between the EU and the Umbrella Group has left the full potential the application of human ingenuity in the form of emissions and energy saving technologies unrealized because no price has been placed on GHG emissions, which would be the case if the Kyoto Protocol were to enter into force.

Following the failure in The Hague the newly elected Bush administration made the controversial decision to reject the Kyoto Protocol as "fatally flawed" and withdraw from the international negotiation process. The US withdrawal left the Kyoto Protocol on the verge of collapse and forced the international community to take a step back to look at the big picture. While the individual decisions made in the negotiations have important implications, the ratification of the Protocol and the development of a carbon market are now largely seen as paramount.

In Bonn the EU grudgingly extended concessions to the Umbrella Group on a number of important issues. While critics have expressed concerns about the environmental integrity of the new agreement, the increased flexibility that has been incorporated could well facilitate an accelerated achievement of the ultimate objective. The Bonn agreement allows for a reduction in mitigation costs that can be reflected in future emission reduction targets.

Background

The UN Framework Convention on Climate Change (UNFCCC) was signed by 154 nations at Rio. The Framework Convention was centered around its ultimate objective- "the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"[2] and carried with it a commitment to limit GHG emissions to 1990 levels by 2000. The Framework

[2] Article 2, UNFCCC, 'Convention on Climate Change', 1999

Convention includes the principle of "common but differentiated responsibilities" that recognizes the need for the industrialized countries to lead the way with GHG emission reductions.[3] Scientific study by the Intergovernmental Panel on Climate Change suggests that the total emission reductions required to achieve the ultimate objective could well be in excess of 60% from 1990 levels.[4]

After Rio, the scientific evidence concerning climate change became increasingly galvanized and it became apparent that the majority of the Parties to the Convention would not achieve the stabilization goal. At the first Conference of the Parties, (CoP1) held in Berlin, the Parties agreed to initiate the negotiation of new commitments for the post 2000 period that would involve a strengthening of the emission reduction targets through the adoption of a protocol. This declaration became known as the Berlin Mandate and lead to the development of the Kyoto Protocol at CoP3 in 1997.

The Kyoto Protocol

Following the deliberations at the first two Conferences of Parties the stage was effectively set for the third CoP, which was to be held in Kyoto Japan, in 1997. With GHG emission levels growing in almost all the OECD countries, previous points of political tension, both within and between nations, were intensified. Countries came into the meetings with widely divergent goals and bargaining positions. Bill Clinton's call for "meaningful participation" by developing countries in a speech just prior to the Kyoto round of negotiations contributed to an air of impending conflict, as the Group of 77 and China remained adamant about refusing to agree to new commitments for their member nations.

From the beginning it was apparent that reaching an agreement on a protocol would be difficult. A successful resolution to the negotiations was in doubt until the very end of the Conference. Negotiation between the representatives of the 160 participating nations culminated in a 48-hour non-stop bargaining session that led to the final agreement. The result is what has become known as the Kyoto Protocol.

As a binding agreement the Kyoto Protocol effectively "upped the ante." Article 3 of the Protocol requires that all Annex B countries (referred to as Annex I in the United Nations Framework Convention on Climate Change) reduce their emissions of the six GHGs by their individually assigned amounts. Collectively these total an over all reduction of 5.2% from 1990 levels, which must be made by the commitment period of 2008-2012.

The Kyoto Protocol's Mechanisms

Perhaps the most novel feature of the Kyoto Protocol is the inclusion of a collection mechanisms designed to engage the market place in meeting the emission reduction commitments. Unlike other air pollution issues, the adverse effects of climate change are brought about as a result of the total level of GHG concentrations in the global atmosphere

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[3] Article 3, UNFCCC, 'Convention on Climate Change'. 1999

[4] Houghton, John Global Warming: The Complete Briefing. 2'nd ed. Cambridge University Press 1997 pg. 92

rather than the relative concentrations in a given area. This aspect of the climate change issue provides a unique opportunity to harvest the "low hanging fruit"; that is to maximize the level of emission reductions that can be achieved for a given expenditure of resources.

This approach to climate change mitigation suggests that no one means of meeting the Kyoto requirements is superior to, or more valid than, any other; provided that reductions actually occur and are verifiable. The Kyoto mechanisms include International Emissions Trading (IET), Joint Implementation (JI) and the Clean Development Mechanism (CDM). The first involves trading emissions allowances between Parties with binding emission caps, or Annex I Parties. Joint Implementation allows Annex I Parties to invest in emission reduction projects in other Annex I Parties, and claim credit for the emission reductions achieved as a result. The CDM allows Annex I Parties to invest in those nations whose emissions are not restricted under the Protocol.

The Central Goals of the International Climate Change Process

What was agreed upon at the completion of the Kyoto round of negotiations was a collection of key goals and principles. The ultimate objective of the UNFCCC is augmented by one of the objectives of emissions trading, which is to achieve emission reductions in the most efficient manner and, therefore, at the least cost possible. The inclusion of emissions trading and the Kyoto mechanisms in general were widely supported for this reason. Given the magnitude of emission reductions that will be required to achieve the ultimate objective of the Framework Convention, the use of the mechanisms has been described as nothing short of essential.

The goal of economic efficiency has been elaborated on by the OECD who have stated that the design and implementation of a trading system should be guided by the following set of principles.

1. Environmental Effectiveness: the objectives of the Protocol and the United Nations Framework Convention on Climate Change should be realized
2. Economic Efficiency: the objectives should be realized at the minimum possible cost
3. Equity: no Party, Entity or interest group should gain an unfair advantage
4. Political Acceptability: however desirable the rules may be in principle, if they can not be implemented through the Conference of Parties process, they are of little practical use[5]

Article 12 of the Protocol identifies three specific goals for the CDM:

1. To assist non-Annex I countries in achieving sustainable development.
2. To contribute to the attainment of the environmental goals established by the United Nations Framework Convention on Climate Change
3. To assist Annex I countries in complying with their emissions reductions commitments in a cost-effective manner.[6]

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[5] OECD. Key Issues in the Design of Trading Mechanisms Under the Kyoto Protocol: A Scoping Paper. May 1998
[6] Article 12, UNFCCC, 'Kyoto Protocol to the Convention on Climate Change'. 1999

The key goals that have been incorporated in the UNFCCC and the Kyoto Protocol are that concentrations of GHGs should be reduced to the greatest extent possible, this should be achieved in a least cost manner and measures undertaken should contribute to sustainable development. While these tenets have been widely agreed upon, putting them into practice has become an extremely difficult task.

A Global Greenhouse Gas Market

If the Kyoto Protocol enters into force it is expected that the Kyoto mechanisms will be widely used and that an advanced market for carbon will emerge to facilitate the harvesting of the low hanging fruit. Many estimates have placed the value of the annual carbon trade under a Kyoto regime well into the billions of dollars.[7] The core benefit to the GHG free technology sector from climate change mitigation policies is found in the placement of a value on the emissions of carbon. The pricing of carbon emissions can potentially alter investment decisions and shift the playing field in favour of non-emitting technologies. The expectation of the emergence of carbon pricing has lead some firms to engage in emission reductions and trading.

Contentious Issues

Going into the negotiations in Kyoto there was tremendous political pressure to reach an agreement. Green Parties had made electoral gains in a number of EU nations and the Second Assessment Report by the Intergovernmental Panel on Climate Change had served to raise public concern about climate change substantially. Although the Kyoto Protocol deserves to be called a landmark agreement, the publicity surrounding the signing of the Protocol masked the existence of numerous points of contention. In the negotiation process the focus was on coalescing enough points of mutual agreement to achieve what can accurately be described as an agreement in principle. Points of contention were deliberately worded in an ambiguous fashion for the sake of getting a deal completed. The details were gladly left to be worked out at future CoPs. A brief description of some of the primary issues that have been the source of conflict at the international level is provided in Annex I.

The Emergence of Two Competing Views

The Umbrella Group (a collection of non-EU OECD countries including Canada) have been united in their belief that the least cost criteria is compatible with the ultimate objective because achieving GHG reductions at the least cost allows for the greatest possible reductions to be achieved with a fixed quantity of resources. This view was effectively endorsed by the EU when they signed the Kyoto Protocol. The EU position nonetheless, has evolved somewhat over time as unresolved issues have been negotiated at the international level. While some issues, such as the types of baselines that should be used in the establishment of additionality are technical in nature, other issues have become matters of principle.

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[7] http://www.prototypecarbonfund.com/html/PCFQandA.html

At the fourth Conference of Parties, held in 1998, a two-year Plan of Action to reach agreement on the remaining issues was put forward. The plan established a deadline of CoP6 to be held in late 1999 or early 2000, for finalizing the outstanding details of the Kyoto Protocol so that the agreement will be fully operational by the end of the year 2000. By the close of the fifth Conference of Parties very little progress had been made towards the resolution of these issues.

The debate over "hot air" pitted several members of the EU against the Umbrella Group and marked the emergence of the EU stance that has been defined by some as the "environmental integrity" approach. The EU position on the issue is that the soft targets of the nations of the former Soviet Union allow for credits to be produced from nothing and therefore undermine the credibility of the Kyoto Protocol. The Umbrella Group, and the US in particular, have argued that the soft targets were required to engage these nations in the process, which involves the commitment to participate in the negotiation of new emission reduction targets following the first commitment period, and that the growth of these fragile economies should take priority. The EU perceives their position on this issue to be one that favours the ultimate objective of the UNFCCC, while the Umbrella Group position favours the goal of contributing to the sustainable development of these nations.

The debate over hot air has been largely repeated in the debate over supplementarity. While the Protocol explicitly states that the use of the mechanisms should be supplemental to domestic action, the members of the Umbrella Group have resisted the imposition of a firm definition of supplementarity. The EU, on the other hand, has suggested a number of mathematical formulations to define supplementarity. The EU has argued that unfettered access to the mechanisms would allow some nations to effectively buy their way out of undertaking emission reductions at home. The Umbrella Group has countered this argument by stating their case that the achievement of emission reductions at the lowest possible cost is explicitly promoted as a goal of the Kyoto Protocol and is in fact the reasoning behind the inclusion of the mechanisms. Any restriction on the use of the mechanisms would therefore generate unnecessary costs that would translate into lesser emission reductions. The Umbrella Group has relied on the notion that all GHG emissions are equal regardless of their source. While supporters of the Umbrella Group position have criticized the EU position on supplementarity on the grounds that it is in conflict with the ultimate objective of the UNFCCC, the Umbrella Group arguments have focused on the importance of avoiding a strict definition of supplementarity in order to satisfy the goal of achieving reductions at a minimum cost.

One of the most contentious issues has been that of technology eligibility. The EU, with the support of the Alliance of Small Island States and several leading environmental groups have proposed that either a positive list of eligible technologies or a list excluding certain technologies be developed for both the CDM and JI. Clean coal technologies, large scale hydroelectric and nuclear power technologies have been suggested as potentially ineligible technologies. Entering CoP 6 the official position of the EU was that:

> "A clear definition of projects eligible under the CDM is needed in order to achieve its potential in terms of both GHG emissions reductions and sustainable development in non-Annex I countries. In order to allow for a prompt start of the CDM, CoP 6 should

> allow for a positive list 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. A review of this list should take place at CoP/MoP 1, based on experience with the initial positive list."[8]

This view has been supported by a coalition of environmental groups that put forward the following statement prior to CoP 6:

> • CDM projects should be limited to renewable energy systems or highly energy efficient projects that are unequivocally at the top end of efficiency practice in the world.
>
> • Clean coal and nuclear power projects should not be eligible for CDM credits.[9]

Although all three of the primary goals were envisioned as complementary objectives there has not been a meeting of the minds at the international level. The EU has deviated from the "least cost equals greatest results" viewpoint by countering the argument on which this is based, namely that a tonne of carbon is a tonne of carbon no matter where in the world it is emitted from.

As was noted above, the EU priorities have varied considerably on a number of issues. The ultimate objective was the over riding priority for the EU on the issue of hot air, while the ultimate objective was effectively rejected on the issue of technology eligibility. If pressed the EU position is generally stated to be that all three criteria must be satisfied by all CDM projects. However, it is too simple to state that all three goals must be achieved. If a given policy or technology can satisfy one or both of the other two goals but is not deemed to be sustainable than the situation effectively calls for a prioritization.

CoP 6 The Two Competing Views Come to a Head

Despite efforts to work through the highly bracketed negotiation text (denoting areas of disagreement) in preparation for CoP 6 the texts swelled to over 200 bracket filled pages by the time the Conference opened. In the lead up to the Conference the divergent positions of the Umbrella Group and the EU only became more entrenched. The sixth Conference of the Parties ended on November 25, 2000 with no agreement on the proposed rules for implementation of the Kyoto Protocol. Reaching a political compromise on the complex package of inter-related issues had been a questionable proposition from the outset. Almost three years of discussions and negotiations at the level of officials had failed to reconcile the wide range of views and interests put forward by the various Parties and negotiation blocs.

The final days of negotiations involved a series of ministerial meetings on key issues, culminating in an all-night session. In the end the gaps between the EU and Umbrella Group positions were too great to span through compromise. Despite efforts by UK Deputy Prime Minister John Prescott to broker a deal on the most contentious issues, talks broke off between the Umbrella Group and the EU early Saturday morning. The

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[8] Council of the European Union. Community Strategy on Climate Change: Council Conclusions. June 23, 2000. Brussels

[9] http://www.greenpeace.org/~climate/politics/index.html

noted academic professor Michael Grubb assigned blame equally to an inadvertent alliance between "those that wanted too much and those that wanted nothing at all".[10]

Many reports indicated that the EU and the Umbrella Group were tantalizingly close to a deal, at the end of the Conference. Although the Conference ended with in failure there was some hope that the remaining gaps could be filled in a follow up negotiation session. An initial meeting was held in Ottawa, one week after the close of CoP6. Despite hopes for progress, the Ottawa session revealed that both sides were farther apart than had been initially believed. A second session that was to be held in Oslo Norway was cancelled because negotiators felt that there was almost no possibility of reaching a successful compromise.[11] Representatives from the Umbrella Group accused the EU delegation of being exceedingly rigid and uncompromising.[12]

Implications For Clean Technology

Many of the positions held by the Umbrella Group and the EU have potentially significant implications for the producers of GHG free technologies. The Umbrella Group's advocacy for the inclusion of sinks could result in a diversion of investment away from alternative energy and energy efficiency technologies. The inclusion of sinks also has the potential to increase the amount of cheap credits available, thus lowering the price of carbon and limiting the competitive advantage that could be enjoyed by non-GHG emitting technologies in relation to traditional fossil fuels, as well as the cost effectiveness of investments in energy efficiency.

The Umbrella Group, however, has strongly advocated a technology neutral approach to climate change mitigation that would allow for the inclusion of all GHG free or GHG reducing technologies. This stance has been of particular importance to the nuclear, large hydro and clean coal industries. On the other hand, the inclusion of these technologies could produce significant amounts of credits and therefore reduce the price of carbon. The EU proposition that small projects using eligible technologies be fast tracked could be a significant advantage for small-scale power generation or energy efficiency projects.

After the failure in The Hague, and indeed prior to it, the Parties and the participants who favoured the implementation of climate change policy could have benefited from taking a step back to look at the bigger picture. To do so it is necessary to look at the issue of climate change mitigation from the long run point of view. All of these design facets have potential implications for various GHG free technologies and are worthy of due consideration. The prioritization of individual decisions within the negotiation process, however, has come at the expense of what are more important considerations over the longer term.

The magnitude of the ultimate objective must be kept in mind. The enormous emission reductions that are required will necessitate the full employment of human

[10] Revkin Andrew C. "Odd Culprits in Colapse of Climate Talks" Nov 29 2000
[11] http://www.gristmagazine.com/grist/heatbeat/thisjustin120700.stm
[12] http://www.carbonmarket.com.

ingenuity. The tremendous potential of existing technologies is not being put to use because the delays in reaching agreement at the international level have left the playing field skewed in favour of fossil fuels. No global emissions trading market has been established and no concrete price for carbon exists. Some trading has taken place as progressive firms have attempted to prepare themselves for impending climate change policies but both the extent of this trading and the price of carbon are miniscule in relation to that which is expected to follow the full ratification of the Kyoto Protocol. As a result no GHG free technology is receiving the economic advantage that should be forthcoming.

While the protracted wrangling have continued, GHG emissions have increased in many Annex I countries. As the deadlines of the first commitment period begin to loom large the amount of emission reductions required and the cost of their achievement increase considerably. The political appetite for pursuing these emission reductions can dwindle as costs increase. The momentum required to continue the drawn out negotiations has necessitated a steady input of political will that can be, and in some notable cases has been, difficult to maintain.

The US Withdrawal from the International Process

Many commentators expressed the feeling that an important opportunity had been missed in The Hague. This feeling appeared to be validated following the election of president Bush and his subsequent decision to withdraw from the Kyoto Protocol. The Bush position drew reaction from virtually every Party to the UNFCCC. The most vehement criticism was reserved for the new US energy plan that was described by the Chair of the Conference of Parties, Jan Pronk, as "utterly disastrous".

Given the difficulties that have been experienced, perhaps the most important achievements of the first commitment period will be the ratification of the Protocol by all Parties and the establishment of an effective emissions trading market, rather than the emission reductions themselves. It is important to keep in mind that the Kyoto targets are a small first step towards the eventual achievement of the ultimate objective. The stubborn adherence to negotiating positions despite the fact that the ensuing deadlock delays the ratification of the Protocol to the extent that it puts the future of the international climate change process in jeopardy and subsequently defers the implementation of domestic climate change policies in many instances, is an exercise in being penny smart but dollar dumb.

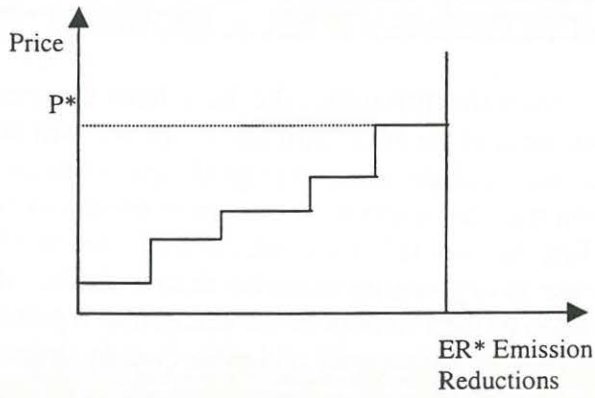
The fourth principal put forward by the OECD that the rules governing the use of the mechanisms must be politically feasible is worth considering. The EU has acted on the assumption that prioritizing what is politically feasible undermines the environmental effectiveness of the Protocol. The notion that there is a trade off between political palatability and environmental effectiveness is a common assumption and one that is generally quite accurate. When one takes the long run view of climate change mitigation policy, however, quite the opposite is true. Critics of the inclusion of sinks and the Umbrella Group position on supplementarity have made the case that if these positions prevail the emission reductions required for the first commitment period would be too

easily achieved. By expanding the tools available to for reducing GHG concentrations and creating conditions that facilitate their application, mitigation costs are reduced. A reduction in mitigation costs increases the probability that the Kyoto Protocol will be ratified by the largest number of Parties, that carbon will subsequently be priced and perhaps most importantly that greater emission reductions will be agreed to in subsequent commitment periods.

If the ultimate objective is the reduction of GHG concentrations to a level that does not interfere with the climate system than it is essential that that the Protocol be designed in such a manner that creates the greatest likelihood that this enormous challenge is met and met as quickly as possible. It is widely acknowledged that the emission reductions required under the Protocol are only a first step and that many more national emssion reduction targets will need to be agreed to. The national emission reduction targets that will be agreed to for each commitment period, like those under the Kyoto Protocol, are a political construct that are largely determined by a given national economy's ability to achieve emission reductions at a tolerable cost. The total cost determines the acceptable level of reductions that is revealed in the negotiation process rather than the other way around. The total cost of reductions is determined by the total tonnes of emissions that can be reduced at their various marginal costs, starting with the cheapest and proceeding until the total acceptable cost is reached.

Graphically the total cost function would resemble a stair diagram with price on the vertical axis and emission reductions achieved on the horizontal axis. If the emission reductions achievable at a cost of $1 dollar per tonne included some sinks projects and some small hydro projects than they would be undertaken quite readily. However, there are only a fixed number of sites where small hydro projects are this cost effective and there are only a fixed number of areas where panted trees absorb carbon quickly enough to sequester carbon for $1 per tonne.

Figure 1. Total Cost of Emission Reductions



As a result any measure that would reduce the cost of emission reductions (or the height of the steps) would increase the amount of emission reductions that could be achieved for the same costs. Such cost reducing measures could include the inclusion of a greater number of technologies, the development of new technologies or the avoidance of supplementarity constraints. If more cost effective emission reduction options become available than greater emission reductions can be achieved essentially for free.

If cost savings are incorporated in future commitment periods than the potentially divergent interests of different technologies noted above disappear. While the eligibility of sinks under the CDM, for example, is said to potentially offset the application of other technologies such as small renewables, this erosion of market share is potentially offset, even more than offset by the increase in the scale of the market that results from increased emission reduction targets in the subsequent commitment periods.

From The Hague to Bonn

Following the US withdrawal, the EU was quick to reassert its intentions to stay with the Kyoto Protocol. Canadian Ministers publicly asserted the nation's continued commitment to the Protocol and have actively called on the US to reconsider their decision to withdraw from Kyoto. While the least cost equals the greatest results approach has not been enthusiastically endorsed by the EU, it has resigned itself to the fact that significant flexibility would have to be shown in order to reach an agreement and stave off the destruction of the Kyoto Protocol and the ten years of negotiations that have been invested.

The sixth Conference of Parties resumed in July 2001 in Bonn Germany. There was a feeling, early in the Conference, that the EU resolve to push ahead with the Kyoto Protocol would be tested by the Umbrella Group members' unwillingness to ratify the Protocol in the absence of US participation. In order for the Protocol to enter into force, it must be ratified by 55 countries representing 55% of the global GHG emissions. For the EU, the bottom line was convincing Russia, the Ukraine and either Japan or both Canada and Australia to ratify the Protocol. These Parties, particularly Canada, Japan and Australia were able to use this leverage to win concessions from the EU.

The Bonn Agreement

At the close of the ministerial portion of the conference all 180 members of the United Nation's Framework Convention on Climate Change announced that they had reached a broad political agreement on the "operational rulebook" for the 1997 Kyoto Protocol. The final political deal involved compromises in four key areas:

- Land Use, Land Use Change and Forestry
- Mechanisms
- Compliance
- Financing

Land Use, Land Use Change and Forestry (LULUCF)

Parties have agreed that forest, cropland and grazingland management may be applied in the first commitment period These activities must be shown to be human induced, and to have occurred since 1990. As well, additions and subtractions from the assigned amount of a Party resulting from forest management domestically and from sinks under the Joint Implementation mechanism must not exceed a country specific cap that has been negotiated by the Parties.

Mechanisms

Nuclear

The Parties have agreed that host countries have responsibility for the determination of which projects are consistent with their own sustainable development priorities, but that that Annex I Parties are to "refrain from using emission credits generated by nuclear facilities to meet its commitments".[13]

LULUCF and the CDM

In what has been described as a significant concession by the EU, carbon sequestration is permitted under the CDM. Aforestation and reforestation projects will be eligible to generate Certified Emission Reductions (CERs) under the CDM, for the first commitment period. However, Annex I Parties will be limited to their use of such activities within the CDM to 1% of their base-year emissions in each year of the commitment period.

Supplementarity

No binding limit has been placed on Parties' access to the flexibility mechanisms. However, the agreement does state that the use of mechanisms shall be supplemental to domestic action, which should constitute a "significant element" of efforts made by each Annex I Party.[14]

Fast-Track for Small Projects

Parties have asked the Executive Board to develop, and recommend at CoP8, simplified processes to facilitate early action on small-scale renewable energy projects under the CDM. At this time, such small-scale projects involve:

- Renewable energy projects up to 15 megawatts;
- Energy efficiency improvements up to the equivalent of 15 gigawatt-hours per year; or
- Other project activities that reduce emissions and directly emit less than 15 kilotonnes of CO_2 equivalent.

Technology Transfer

The Parties have also agreed to establish an expert group on technology transfer. The group will be made up of 20 experts, including three from Asia, Latin America and Africa, one from AOSIS, seven from Annex I Parties and three from international organizations. However, the agreement does not elaborate on the mandate of this group, however.

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[13] Decision 5 PC 6 on the Implementation of the Buenos Aires Plan of Action July 26
[14] Decision 5 PC 6 on the Implementation of the Buenos Aires Plan of Action July 26

Conclusions

The Bonn agreement contains a number of plusses and minuses for the clean technology sector over the short run. The agreement allows for carbon sinks to make up a significant portion of the emission reductions required for the first commitment period. The Bonn agreement provides for the development of a fast track process for small-scale renewable energy and energy efficiency projects. The development of an expert group to promote technology transfer also bodes well for clean technology exporters. The exclusion of nuclear power eliminates a significant GHG free electricity generation option from being a creditable technology under both the CDM and JI. Nuclear power can still, however, generate tradable Assigned Amount Units (AAUs) within Annex I Parties.

Over the longer run, the Bonn agreement moves Annex I Parties closer to the ratification of the Protocol, which in turn hastens the approach of policies that price carbon. Although nuclear power can only receive economic benefit in Annex I countries the ratification and entry into force of the Protocol will also create movement towards the point where non-Annex I countries can be expected to begin taking on emissions caps and becoming annex I Parties.

In order to reach an agreement in Bonn the EU was forced to make concessions to the Umbrella Group on number of important issues. Many of these concessions, including those associated with carbon sinks and supplementarity add to the cost effectiveness of emission reductions. The individual pros and cons for the technology sector contained in the agreement are outweighed by the larger implications of the agreement. The agreement is one that most of the Annex I Parties have described as something that can lead to ratification. In the short time since the Bonn agreement was reached several Parties have announced their intentions to move forward with the ratification of the Protocol. As such, the agreement paves the way for the development and implementation of additional climate change mitigation policies and the development of a carbon market. While the agreement has been criticized as being watered down, the increased flexibility that has been added to the agreement will allow emission reductions to be achieved at a cost that is conducive to the negotiation of more aggressive emission reduction targets in the next commitment period. The achievement of the emission reductions required under the Kyoto Protocol may be a small first step but the size of this step is less relevant than the achievement of an assurance that further steps will follow.

Unfortunately the big picture that the longer-term perspective provides was not sufficiently grasped until the US withdrawal from the process. The absence of the US creates a number of important questions for the achievement of the ultimate objective and the policy setting that private sector entities will be working in. Attempts to draw the US back into the Kyoto process could lead to greater flexibility being incorporated into the Kyoto agreement.

Annex: Contentious Issues

Additionality

The provisions governing the CDM and JI clearly state that emission reductions generated by projects must be additional to reductions that would otherwise occur in the absence of the project activity. Determining additionality requires accurate project baselines. These baselines represent a hypothetical reference case, or "business-as-usual" projection of the estimated level of GHG emissions that would have been emitted in the absence of the CDM or JI project. Negotiators are faced with a host of difficult issues in determining how to establish project baselines, as well as guidelines for monitoring and verifying reductions upon completion of projects.

Supplementarity

The question of supplementarity relates to all three of the Kyoto mechanisms. The Kyoto Protocol requires that use of the Kyoto mechanisms be "supplemental to domestic actions"[15], but does not provide further guidance on how this principle should be met.

Compliance

For any agreement to be credible a compliance regime must be put in place that ensures that the requirements of the agreement will be achieved. With Emission Trading, transfers of Assigned Amounts Units (AAUs) by Parties that are not supported by verifiable reductions could lead Parties into non-compliance with their international emission reduction obligations. The sale of a portion of a Party's AAUs would necessarily reduce that Party's assigned amount by the amount of the credit sold but the potential exists that actual emissions would not decrease by a comparable amount in reality. The compliance regime has implications for both economic efficiency and the credibility of results.

Technology Eligibility

In the negotiation of the Kyoto Protocol it has been suggested that certain technologies, such as nuclear power, large hydroelectric and clean coal technologies should be excluded from being eligible to generate Certified Emission Reductions (CERs) under the CDM or Emission Reduction Units (ERUs) und JI.

Hot Air

The Kyoto Protocol set Russia's and the Ukraine's emission limits at 100% of their 1990 levels. Because the base year of 1990 preceded the break-up of the former Soviet Union, and the considerable economic decline that followed, the emission target that was negotiated at Kyoto appears to be easily achieved by these countries. Projections indicate that both Russia and the Ukraine will continue to be under their 1990 cap levels of

[15] Article 12, UNFCCC, 'Convention on Climate Change', 1999

emissions in 2010 and beyond. As a result of these "soft" targets these countries could have a considerable block of credits for sale, even without actively pursuing GHG reductions.

Fungibility

Fungibility is defined, as the degree to which emission units issued or acquired under each mechanism will be interchangeable. Complete fungibility would imply that emission units derived from each of the three mechanisms would be freely interchangeable regardless of the country, entity or project from which they originated, regardless of the identity of the buyers and sellers involved in a transaction. It is argued that fungibilty would augment the commercial viability of each of the mechanisms by facilitating the realization of cost effective emission reductions.

The Role of Sinks

Forests, soils and other vegetative cover play an important role in the overall carbon cycle. As such, both the Framework Convention and the Kyoto Protocol recognize that carbon dioxide concentrations in the atmosphere can be influenced by both reducing emission *sources a*nd enhancing carbon sinks. Enhancing carbon sinks can help prevent CO_2 concentrations from increasing in the atmosphere, and can also provide benefits to biodiversity, soil productivity and water quality. Two contentious issues have emerged within the sinks debate. The first is whether or not sinks should be included under the CDM (the Kyoto Protocol does not explicitly allow for the generation of credits from sinks). The second is the extent to which sinks can be used to generate credits within Annex I countries.

References

Baumert Kevin, Kete Nancy. Designing the Clean Development Mechanism: Operational and Institutional Issues, Oganisation for Economic Co-operation and Development 26-May-2000

Council of the European Union. Community Strategy on Climate Change: Council Conclusions. June 23, 2000. Brussels

Dotto, L. (1999), Storm Warning: Gambling with the climate of our planet. Toronto: Doubleday.

Houghton, J. (1997), Global Warming: The Complete Briefing, Second Edition (Cambridge: Cambridge University Press, 1997).

Organization for Economic Co-operation and Development. Key Issues in the Design of New Mechanisms Under the Kyoto Protocol: A Scoping Paper, 18-May-1998.

Pembina Institute. Negotiating the CDM, a North South Perspective: Recommendations on the Draft Negotiation Text for CoP 6. July 1999.

Revkin Andrew C. Odd Culprits in Collapse of Climate Talks, Nov 29 2000

Subsidiary Body for scientific and Technical Advice. Mechanisms Pursuant to Articles 6, 12 and 17 of the Kyoto Protocol: Consolidated Text on Principles, Modalities, Rules and Guidelines, Article 6 of the Kyoto Protocol. October 2 2000.

The World Commission on Environment and Development. Our Common Future. Oxford University Press 1987

Wilkinson, Cathy, Cairns, Stephanie. Negotiating the Climate: Canada and the International Politics of Global Warming The David Suzuki Foundation. October 2000. Vancouver Canada.

United Nations Framework Convention on Climate Change. (1992), Convention on Climate Change, New York.

United Nations Framework Convention on Climate Change. (1997), Kyoto Protocol, Kyoto Japan.

United Nations Framework Convention on Climate Change. (July 26, 2001), Decision 5 PC 6 on the Implementation of the Buenos Aires Plan of Action, Bonn Germany.