



**HIGHLIGHTS FROM THE EFIEA CLIMATE
POLICY WORKSHOP "FROM KYOTO TO THE
HAGUE - EUROPEAN PERSPECTIVES ON
MAKING THE KYOTO PROTOCOL WORK"
18-19 APRIL, 2000**

The Second European Forum for International Environmental Assessment (EFIEA) Climate Workshop, "From Kyoto to the Hague - European Perspectives on Making the Kyoto Protocol Work", took place 18-19 April 2000 at the Royal Netherlands Academy of Sciences, Amsterdam. Sponsored by the Dutch National Research Programme on Global Air Pollution and Climate Change, this international workshop was attended by 100 participants, including scientists, policy makers, and industry and NGO representatives. The workshop aimed to bring together state-of-the-art scientific information from European research that is relevant for the European Union (EU) and its member states in preparing for the 6th Conference of the Parties to the Framework Convention on Climate Change (COP-6) and to enhance the policy relevance of climate-related research in Europe.

The workshop was divided into four thematic sessions: Kyoto Mechanisms, sinks, implementation issues and European international climate strategies/leadership. Each session was introduced by a keynote paper that was then followed by panel and plenary discussions. The final session of the workshop concluded with an overall summary by the workshop Chair.

A BRIEF HISTORY

The EFIEA is an initiative to improve the current practice of international environmental assessment. The EFIEA was established in 1998 and is chaired by Professor Pier Vellinga of the Institute for Environmental Studies, Amsterdam Free University.

The Amsterdam workshop is the second EFIEA focusing on climate change issues. The first workshop, entitled, "Integrating Climate Policies in the European Environment: Costs and Opportunities" was held 4-6 March 1999 in Milan, Italy. That workshop focused on analyzing the costs and benefits of climate change policies from an integrated assessment perspective, addressing equity criteria in cost assessment and identifying the mutual benefits and opportunities of international climate policies. The workshop found that, *inter alia*, future policy proposals will have to be concrete with regard to costs, definition of flexibility mechanisms, and technology advances. That workshop also found that the institutional development of the Kyoto Protocol requires that more attention be devoted to environmental effectiveness.

REPORT OF THE WORKSHOP

In opening the workshop, Bert Metz (Bureau for Environmental Assessment, National Institute of Public Health and the Environment, the Netherlands) noted that its aim was to bring together state-of-the-art scientific information from European research that is relevant for the EU and its member states in preparing for COP-6 as well as to enhance the policy relevance of climate-related research in Europe. He thanked the Dutch National Research Programme on Global Air Pollution and Climate Change for their sponsorship of the workshop.

SESSION I: KYOTO MECHANISMS

The session was opened by Chair Carlo Carraro (Fondazione Eni Enrico Matteri, Italy).

Keynote Presentation: Farhana Yamin (Foundation for International Environmental Law and Development, UK) warned that the state of negotiations leading to COP-6 looks bleak, particularly regarding the prospect of speedy ratification of the Kyoto Protocol (KP). She suggested that major Parties, including the EU, have a special responsibility to look at the process as a whole and should play a major role in the negotiations. The KP flexibility mechanisms (Kyoto Mechanisms) are a litmus test for acceptability, particularly in the US, she noted.

Yamin deemed Article 4 (joint fulfillment of commitments) as the most critical mechanism of the KP for the EU, but noted that other Parties want equivalent treatment. Because most countries are not part of the regional economic organization, Yamin noted that they are excluded from providing input into joint fulfillment as the details are worked out informally within the EU.

Regarding supplementarity, she noted that economists would argue that total flexibility on use of the Kyoto Mechanisms would yield the best results in term of cost-effectiveness, with ET reducing OECD compliance costs by more than 30% and reducing compliance costs to zero if the Clean Development Mechanism (CDM) is included.

Furthermore, she suggested that domestic action on climate change: demonstrates international leadership; shows the rest of the world that the EU is taking climate change seriously; reduces reliance on "hot air"; creates ancillary benefits such as improvement in air quality; and induces greater technological innovation.

Regarding emissions trading (ET) within the EU, Yamin questioned which legal entities would be eligible to trade: governments alone and/or private entities. On compliance and liability, she questioned who is responsible when an entity has oversold its permits, the buyer or the seller. She proposed a 'traffic light' approach where

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trading is initially allowed to proceed on an issuer liability basis, and where buyer liability is only triggered where compliance problems are identified.

With regard to equity, she underscored that the CDM is the only mechanism that includes developing country participation. She concluded that, from an environmental perspective, unrestricted ET can be seen as capital transfer to countries with economies in transition (EITs) without much greening.

Panel Discussion: Sylviane Gastaldo (Ministry of Economics and Finance, France) highlighted the connection between emissions ceilings and market design. She cautioned against market restrictions and suggested that "hot air" (a term used for the emissions levels already achieved by former Soviet Union nations, due to the closure of factories and other large emitting sources since 1990) had been created and would be difficult to cancel it out. Concerning national and regional trading, she noted that if the allocation of carbon credits were to be free, it would mean abandoning auctioning or floor price setting. She proposed an organizational unit to monitor transaction prices and called for coherence between the Mechanisms and compliance.

Mike Wriglesworth (BP-Amoco) noted that current negotiations were economically based and hence were effectively trade negotiations. He said that a concrete ceiling is a major political distraction that could damage markets. He predicted that there would be a free market in carbon trading. Based on his own experience in financing projects in developing countries, he said that additional CDM funding was simply "noise in the system."

Stefan Singer (WWF International) said his organization would try to kill hot air trading and find a more credible system for mitigating climate change. He underscored that if the KP maintained a business-as-usual approach, WWF would call the KP a failure. He encouraged a system of Joint Implementation (JI) that included discounting the value of hot air credits. He noted that there should be a positive list within the CDM so as to exclude nuclear power, sinks and large projects for fossil fuel energy and hydroelectricity.

Adam Rose (Pennsylvania State University) opposed the concept of supplementarity in the Kyoto Mechanisms, highlighting the efficiency of an unrestricted trading system. He noted that no country has said that it would entirely buy its way out of its own mitigation requirements. He believed that lower costs for emission reductions would not stifle technological advance. Regarding Russian hot air, he suggested that this was a serious issue but should not be tied to supplementarity.

Plenary Discussion: Regarding hot air, an industry representative noted that the problem mainly concerned Russia and the Ukraine, but also included Germany and the UK. He suggested that the ultimate goal of the KP is to change the energy sector over a 40-year period and hence the issue of hot air is insignificant in that context. A policy maker noted that the KP is a fragile document and negotiations should not be reopened. Another policy maker noted that the issue of hot air is not as contentious as it may seem when one takes into consideration that permits may be banked under the KP. Several speakers noted that nobody really knows how much hot air could be brought to the market. An NGO representative suggested that if hot air, sinks, large hydro projects and nuclear power were included in the CDM, a large number of jobs would be lost in the EU. Regarding German hot air, one policy maker said the reunification came at a considerable financial cost. An NGO noted that the UK and Germany both factored in their hot air in setting their reduction targets and that any proposal to accept hot air would create a precedent that may have implications for developing countries in the future. Many speakers agreed that hot air was not the most important aspect of the KP.

On the traffic light proposal, a scientist failed to see how such a system would stop a violator with political means. Another participant criticized the long lead times needed to make corrective decisions

regarding violators. An NGO participant found the solution of traffic lights potentially helpful because countries could lose money if they were found to be in violation of their permits.

Another NGO representative called for rigor in defining Mechanism rules, noting that since Rio little had been done to mitigate climate change impacts. A scientist suggested there would be little incentive to do anything if carbon credit prices were too low. Some commentators questioned the presumption that the price of tradable carbon would be low. An industry representative noted that within his company carbon was being traded at around \$10 per metric ton and this price range was still driving technological change. A scientist commented that a low permit price would be a wonderful outcome, as it would allow a freer and more flexible trading system.

Concerning EU coordination, an NGO participant commented that the EU needs to assess the big picture. She encouraged the EU to develop a policy on compliance and to look at the CDM in a more positive way, particularly as it is the only alternative to getting developing countries to commit to emissions reductions. An NGO remarked that a more pragmatic approach is needed to ensure that the KP will soon be ratified. He said that once a country ratifies the KP it can decide whether to use the Mechanisms or not.

Regarding supplementarity, a participant noted that restricting Mechanism use would have the effect of reducing technology transfer to non-Annex I countries.

On ratification, a scientist remarked that the KP should not become a paper trading regime, since this would undermine timely ratification. A panelist concluded that the US has a bottomless pit of demands to make ratification acceptable to them.

Chair's Wrap-Up: In concluding, Chair Carraro suggested that hot air was not the most crucial issue with regard to the Kyoto Mechanisms and that caps are not necessarily the most effective way of dealing with hot air. He noted that low permit prices were key to getting developing countries on board and suggested that once equity and environmental effectiveness are linked, developing country commitments may follow.

SESSION II : SINKS

In opening the session, panel Chair Leo Meyer (Ministry of the Environment, the Netherlands) highlighted the complexity of carbon sequestration (sinks) activities.

Keynote Presentation: Bernhard Schlamadinger (Joanneum Research, Austria) noted that land use and land use change activities have led to a net emission of 2 gigatons of carbon during the 1980s. He noted that, overall, 15 percent of emissions could be offset by carbon sequestration activities and that this could be carried out by conservation management (conserving existing forests), sequestration management (sequestering additional carbon in forests) and substitution management (growing vegetation for biomass fuels). He underscored some generic issues regarding sinks, including: uncertainty (difficulty in measuring carbon stocks), saturation (limits on vegetation's capacity to absorb CO₂), permanence (protection of the carbon store for large periods of time) and leakage (loss of net sequestration effect due to another activity elsewhere). He referred to the relevant articles of the KP and suggested that quantification of sinks was not a problem if all relevant pools are included. Concerning the differences between JI and CDM projects and the issue of permanence, he noted that with JI the transfer of credits does not alter Annex I emissions quotas, as eventual loss of carbon stocks are not an issue unless the projects are Article 3.3 (afforestation, reforestation and deforestation) or Article 3.4 (additional human induced) activities and the loss is not accounted for. However, he noted that with CDM projects, permanence depends on the project life-time and liability afterwards. Regarding the difference between JI and the CDM in relation to leakage, he suggested that JI leakage would be captured in national inventories of Annex I countries, whereas under the CDM, project-based accounting would have to take leakage into effect.

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In concluding, he noted that unresolved issues include: definition of forests, reforestation, afforestation, deforestation and "human induced"; accounting rules; activities that would be eligible under Article 3.4; the question of whether land use, land use change and forestry would be included in the CDM; unwanted side effects; and the requirements of verification and certification.

Panel Discussion: Sible Schöne (WWF Netherlands) opposed the inclusion of sinks in the CDM. He pointed out that the problem of CO₂ emissions is energy-related and acceptance of sinks by the international community would lead to a dilution of the real issue. He doubted that negotiators in Kyoto were aware of the problems related to sinks. He called the discussion around sinks "a race to the bottom". He proposed inclusion of a category of forest management and protected areas in the KP.

Pedro Moura Costa (EcoSecurities, UK) noted that millions of hectares of land suffer from deforestation, with catastrophic consequences. He noted that sinks may help combat deforestation while providing the opportunity to sequester carbon. While he acknowledged problems with verification, measurement, permanence, and additionality, he asserted that they can be tackled with an adequate governance regime. He said the main problem perhaps lies with leakage.

Klaus Radunsky (Federal Environment Agency, Austria) stressed that Article 3.3 of the KP is very restrictive in its application because of the complexity of sinks. Concerning accounting problems, he noted that one ton of carbon sequestered is not equal to one ton emitted.

Plenary Discussion: Regarding the permanence of carbon sequestration, one scientist remarked that forests should be considered as a long-term issue, which changes the perception of risks associated with sequestering carbon through use of sinks. Another scientist noted that forests are very resilient and can survive diseases and the adverse effects of insects. One scientist noted that beech forests have a large tolerance for temperature difference and may not be affected by increased temperatures and respiration rates. He expressed concern about the possible melting of permafrost and its emissions implications. A policy maker noted that forests in his country are managed on an 85% economic return basis and hence this may affect the permanence of their sequestration activities. A scientist underscored that soil respiration was a major driver in the carbon cycle and soil carbon in boreal forests is already being burnt away at a rapid rate.

An NGO participant noted a clear need in developing countries for biofuels. Several NGOs observed that the focus should remain on sinks alone, rather than shifting attention to biomass and/or biodiversity.

Concerning uncertainty in measuring sequestered carbon, a policy maker noted large gaps in the monitoring of carbon stocks. He highlighted the fact that Canada and Russia are not able to account for full carbon stocks in their forests. A scientist suggested that control plots could be used to measure changes in forested areas affected by different management techniques as a means of determining carbon credits. Another suggested that uncertainty was a red herring and could be resolved by statistics.

On avoiding risks and uncertainty, one participant suggested, *inter alia*: excluding sinks and including biofuel in the CDM; using adaptation funding to protect forest biodiversity; waiting until the next commitment period to allow other international forest-related treaties to develop; gaining experience from Activities Implemented Jointly (AIJ); and encouraging developing countries to take on voluntary commitments in order to be eligible for JI projects. An NGO representative stated that those who want sinks in the CDM include Parties who want to avoid domestic action. She suggested that forest policy should be dealt with by other means and not in the context of climate change.

On the issue of leakage, a policy maker noted that while private firms may want to exploit the potential of leakage, the issue on the national level would be subject to domestic policy considerations. A scientist suggested that if leakage was an issue with a project, then a

discount rate of carbon benefit could be applied to that project. A scientist suggested that leakage could be avoided by increasing the size of the project.

Regarding the issue of saturation, one scientist noted that the capacity of forests to uptake emissions should not be underestimated, as some forests do not reach their saturation point for 300 years.

With regard to additional human induced activities under Article 3.4 of the KP, a scientist suggested that the change from clear-cut forest management to a more sustainable management practice could be included as a sequestration activity. He cautioned against the inclusion of agricultural soil management. Concerning the interest of the US and Canada in including agricultural soils, an NGO suggested that it would be unwise to get a commitment on this issue before the US presidential election.

Chair's Wrap-Up: In concluding, Chair Meyer noted some common ground, including: support for biofuels; no total disagreement with sinks in the CDM; support for adaptation and linkages to other conventions; agreement that the UNFCCC should not be taken on the burden of all the forest-related problems of the world; no support for gross-net accounting; support for limiting the carbon credits where uncertainties are evident; and concurrence on the need for further scientific elaboration of issues.

SESSION III: IMPLEMENTATION ISSUES

Chair Nigel Haigh (IEEP London, UK) introduced the session.

Keynote Presentation: Sebastian Oberthür (Ecologic, Germany) noted that the EU concluded an internal burden sharing agreement (BSA) in 1998. The intent of the BSA is to level the cost of implementation between member states as the incremental cost of GHG abatement varies widely across the EU. Oberthür said there has been no movement to change the internal distribution because several member states have already started to implement the BSA and because such action would distract attention from implementation, thus increasing transaction and opportunity costs, and would also penalize early action.

Oberthür said there are opportunities for re-allocation of the burden through JI and ET.

Regarding implementation of the BSA, he noted some outstanding issues related to joint liability under Article 4.6 of the KP.

On an internal ET scheme, Oberthür noted that the European Commission expects to start this system by the year 2005. He noted that the proposed trading scheme will initially be limited to carbon dioxide and will be limited to a selected group of actors that represent 45 percent of CO₂ emissions within the EU.

On EU enlargement, Oberthür noted the potential for this to increase EU hot air, but noted that new EU member states would be excluded from the original BSA.

He emphasized that the main focus for EU implementation of the KP should be on domestic action, based on, *inter alia*, taxation, incentives for investments and regulation and planning. He noted several ancillary benefits of domestic action, including tax revenues.

On liberalization of the energy markets in Europe, Oberthür underscored the benefits, including a faster switch from coal to gas and new opportunities for combined heat and power projects.

On common and coordinated policies and measures (CCPMs), Oberthür questioned whether these would be carried out at the Community level or the member state level. He noted that EU unanimity was a potential obstacle to CCPMs but this could be resolved by invoking Articles 43-45 of the Amsterdam Treaty, which stipulates that a majority of the member states can take action on matters with the approval of the minority. He noted that action is necessary to integrate climate policy with other policies, such as transportation, housing and agriculture.

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Panel Discussion: In opening the panel discussion, Chair Haigh noted that reference to domestic implementation issues pertains to action both within the European Community and at the EU national level.

Dimitri Lalas (National Observatory, Greece) underscored the difficulty of the negotiation process. He cautioned against reopening the BSA and suggested that ET could be a way out. He supported legal measures to ensure a clear delineation of liabilities and noted that CCPMs were key elements for action. He highlighted the dichotomy between the EU policy on lower energy prices and the need to encourage energy conservation, noting that an energy tax may need to be considered. As a counterbalance to burden sharing, he suggested that any ceiling must be as small as possible so as to allow member states the greatest flexibility to use the Kyoto Mechanisms as a means of meeting their commitments. He cautioned against moving forward too quickly without having the US and the rest of the "Umbrella Group" caucus of like-minded nations on board the KP.

Hans-Eike von Scholz (EU Directorate-General on Transport and Energy) noted that there had been little development of ET within the EU. He cautioned against incorporating small and medium-sized industries within such a scheme, as it would overburden the process. He suggested that the EU had left too much decision-making to the environment departments and that broader participation within the EU is required, particularly in view of the need to integrate economic, social and environmental growth.

Nuno Lacasta (Euronatura, Portugal) said that the Kyoto Protocol requires specific legal measures at the Community level. He questioned whether monitoring was enough to safeguard obligations and suggested that enforcement mechanisms were required in relation to entity trading and member states trading. He stated that the injunction mechanism under the EU could be a possible compliance model and called for both seller and buyer liability.

Ewaryst Hille (Polish Foundation for Energy Efficiency) suggested that attention be focused on energy infrastructure where assets are long-lived. He encouraged the liberalization of energy markets, particular in relation to demand side measures, clean energy technology and renewables.

Plenary Discussion: In opening the plenary discussion, Chair Haigh commented that burden sharing was a matter of diplomacy among member states and should not be debated at the workshop. An NGO representative noted that policy makers were not taking action at the municipal level. She underscored that public transport, land use and urban planning were important elements in a GHG mitigation strategy. She noted that there was considerable local community support for energy taxation. Another NGO participant noted that countries with high marginal costs have to do more to meet their obligations. He called for, *inter alia*: liberalization of the energy market; support for green electricity; credits for early action; and monitoring and enforcement mechanisms.

A policy maker noted that any ET scheme in the EU should be consistent with the KP. He underscored the need to address internal markets and competition, emphasizing the importance of supplementarity and the compatibility of trading regimes with policies and measures. Another policy maker emphasized that domestic actions are more important than the Kyoto Mechanisms. An NGO participant remarked that the UNFCCC was an environmental agreement and should be developed as such. She called on the EU to show leadership through domestic action.

A policy maker was surprised that taxation was being discussed before the purpose of such a measure was determined. He asked whether municipal authorities could be considered as legal entities in an ET scheme. Regarding ET and early action, he suggested the need for bank credits.

Another policy maker asked whether an internal EU cap on ET could be justified on economic grounds. Another policy maker questioned whether the EU has asked itself how a ceiling would be implemented. Another emphasized the importance of research and development.

An NGO supported monitoring and registration of emissions trade at the national level but cautioned against overselling. He suggested that only gases that can be properly monitored should be included in a trading scheme and encouraged starting with the major sources. An NGO from eastern Europe opposed inclusion in the bubble. He advocated the integration of climate policies into other domestic environmental regulation. Another NGO supported the shift from coal to gas but drew attention to the social consequences if coal mines were to shut down. He called for action to address more polluting sectors, such as transportation and housing.

A scientist stressed that electricity generation holds the key to implementing the KP. He said that policies should focus on the end-user. He questioned the economics of subsidizing carbon-intensive industries, particularly in the UK and Germany. A scientist supported the notion that the transport sector provides a number of opportunities for emissions reductions.

Panel Response: Dimitri Lalas cautioned against moving too fast without a KP in place. He emphasized the fact that action should be based on addressing the danger to the world's climate. Hans-Eike von Scholz noted that research and development was a key issue. He noted that EU emissions after 2012 may rise sharply and commented that there was no reference to the closure of nuclear power plants. He underscored the need to consider energy supply security and said that use of gas alone is inadequate to address this. Nuno Lacasta emphasized the issue of public awareness. Regarding reporting requirements, he noted that Parties would need to report on domestic emissions reductions requirements. Ewaryst Hille urged a balance between meeting GHG emissions reductions and the development of a sustainable economy.

Chair's Wrap-Up: Chair Haigh concluded that participants generally: opposed renegotiation of the BSA; opposed the inclusion of new members of the EU in a BSA before the KP is ratified; supported the need for more discussion on ET; noted a lack of clarity about what measures can be used at the Community level or the national level; and agreed on the need for transparency.

SESSION IV: EU INTERNATIONAL CLIMATE STRATEGIES / LEADERSHIP

Chair Pier Vellinga (Amsterdam Free University, the Netherlands) introduced the session.

Keynote Presentation: Joyeeta Gupta (Amsterdam Free University, the Netherlands) proposed that leadership could be defined as: using incentives based on political and economic power (structural leadership), crafting structures and applying diplomatic skill to create 'winning' coalitions (instructional leadership), or using ideas and domestic implementation to influence perceptions of other countries as to what is desirable and possible (directional leadership). On direction leadership, Gupta referred to examples of innovation within the EU, including: a carbon tax, a programme on energy efficiency, developments in renewable energy and voluntary agreements. She suggested that policies and measures were a good model for leadership but suffered from internal difficulties in their implementation. She commented that burden sharing is a good idea but it irritates developing countries.

Regarding the EU's potential for instrumental leadership, she highlighted the need to build coalitions, particular among the group of countries known as the Group of 55—whose emissions constitute 55% of the total for Annex I countries—that would be needed to ratify the KP in order to bring it into force. She suggested that the EU must invest in awareness building and focus on bridging North-South gaps.

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Regarding relations with the developing world, Gupta noted that the EU is perceived as supporting the US and abandoning the South. She suggested that the EU has a big inferiority complex and is considered by some to be hypercritical due to policy inconsistencies associated with hot air within and outside the EU. She proposed that the EU should develop: a long-term vision associated with industrial transformation; a mid-term goal of improving the credibility of its internal policies; and a short-term goal of unconditional ratification of the KP.

Panel Discussion: Igor Bashmakov (Centre for Energy Efficiency, Russia) noted that everything achieved within the EU is hot air. He called for good monitoring systems to evaluate policies and measures. With regard to leadership, he suggested that Europe is showing "lifestyle leadership", with Economies in Transition seeking to emulate that lifestyle and hence consuming more energy. He encouraged the EU to stop talking about hot air, as this label does not take into account GDP losses, and to help Russia deal with a low capacity to absorb potentially large carbon credits. He noted the generally poor quality of joint implementation projects in Russia and said that any consultations with Russia must include regional governments.

David Moorcroft (World Business Council for Sustainable Development) noted that climate change discussions are having a ripple effect in industry, but underscored that many companies do not have climate change on their radar screen. He suggested that leadership best fits individual governments rather than EU as a whole.

Jos Delbeke (Climate Unit, EU Directorate-General on the Environment) underscored the need to strengthen alliances with the Group of 55 but noted that some of these countries are hiding behind the US. While he noted that the EU agrees with the US on most issues associated with compliance under the KP, there are also many issues on which they disagree. He highlighted that an agreement at COP-6 will be taken on a consensus basis, while the real challenge lies in ratification of the KP. He underscored that the EU has historical ties with the G77/China and that diversity within the EU leads to good negotiating positions. He noted that the EU's per capita emissions are half those of the US and commented that the sophistication of debate is higher in the EU than in the US.

Karla Schoeters (Climate Action Network Europe) emphasized that strong domestic action within the EU would demonstrate leadership. She suggested that NGOs have to convince people that the costs of mitigation are lower than the costs of adapting to the impacts of climate change. She encouraged action to assist developing countries with adaptation and mitigation, but cautioned against using ODA in the CDM. She predicted that the EU would lose credibility if it were involved in the transfer of unsustainable technologies, such as nuclear power.

Lasse Ringius (UNEP Collaborating Centre on Energy and Environment, Denmark) recommended that the EU use the Kyoto flexibility Mechanisms as a means of engaging the US.

Plenary Discussion: On leadership and credibility, one NGO underscored the importance of emissions reduction in the EU. He encouraged the EU to take leadership on the difficult issue of sinks and expressed trust in policy-makers to institute safeguards. A policy maker noted that while the EU has shown leadership in developing new technologies, such as low-energy houses and fuel-efficient cars, the US dominates in this area. A scientist encouraged the EU to take leadership on sinks, particularly in relation to developing biofuels as a substitute for fossil fuels in the transport sector.

An NGO highlighted the dominance of Germany and the UK in EU decision-making. A policy maker noted that there was no mention of the Cardiff process, which requires each sector head of the European Council to produce a paper outlining a sustainable development strategy.

On supplementarity and hot air, a scientist proposed that an international fund be created to purchase all hot air and then retire it. He called for total flexibility in the Kyoto Mechanisms in the meantime. This would solve the issues of hot air and supplementarity and could entice the US into ratifying the KP. An NGO representative observed that the EU's traditional role of standing between the US and the G77/CHINA can work against it, as happened in Kyoto. Another NGO expressed hope that the EU would not promote ratification of the KP until all the modalities are settled.

A scientist noted that one major motivation for the US's opposition to the KP, and its advocacy of the Kyoto Mechanisms, was its fear of loss of income. Another scientist forecast that it will take at least four years for the EU to ratify the KP, given the current constitutional requirements. Chair Vellinga supported the non-confrontational approach towards the US, and suggested ways to build confidence, promote the Cardiff process and prepare the US for ratification. On broader alliances, he compared the KP with the WTO. The WTO was conceived and negotiated in the US, but the EU ratified it first.

Panel Response: Jos Delbeke said that the EC Green Paper spells out, *inter alia*: how to combine policies and measures with ET and expressed his support for integrating climate change policies with other sectors. He noted that the public needs to be ready for change. He remarked that hot air itself is not the problem, but the uncertainty it creates is. Dave Moorcroft remarked that government and industry should work together to identify gaps and noted that there are no differences between industry in the US and the EU vis-à-vis the KP. Lasse Ringius agreed that the EU lags behind the US in technology research. Karla Schoeters suggested that the EU needs a clearer strategy on how to combine ET and ceilings. She also supported the Cardiff process, but warned that some sectors have yet to embrace climate change. She reminded the audience that the ratification of the KP should not come at any price. Delbeke agreed that COP-6 is more about environmental credibility than about ratification. He also agreed that ratification will be a tough process, and that it should be accompanied with implementation plans. This would also send a signal to businesses that the KP is taken seriously by the governments, and that opportunities for businesses exist. Moorcroft underscored that climate change must be seen in the context of industrial change and policies should reflect this focus. Igor Bashmakov noted potential for coalition building with countries in eastern Europe and Russia, emphasizing that there are many opportunities for cost-savings and increases in energy efficiency. Joyeeta Gupta stated that the Berlin Mandate and the cuts agreed in Kyoto were all results of the EU's leadership.

Chair's Wrap-Up: Chair Vellinga summarized the discussion by noting the importance of: environmental integrity; market creation and effective policies and measures; and capacity-building and trust.

CONCLUSIONS BY CONFERENCE CHAIR

Conference Chair Bert Metz presented a series of conclusions from the workshop. Regarding the Kyoto Mechanisms he noted that, *inter alia*: hot air comes at a cost; there is great potential for the Kyoto Mechanisms even excluding sinks; there are good reasons for domestic action; JI/CDM can enhance technology transfer; Kyoto Mechanisms will lower compliance costs; ceilings on the Mechanisms are not an effective way to deal with hot air; there are many alternatives to ceilings, including a minimum price for Mechanism credits; technology innovation remains a crucial issue; a strong compliance regime is essential; involvement of business entities will create cost-effectiveness; and the CDM creates 'green' sustainable development.

Concerning sinks, Chair Betz concluded, *inter alia*, that: sink potential is very big; there are practical ways to handle uncertainties; leakage can be significant; biomass fuel deserves attention; the permanence of carbon stock is not guaranteed; accounting is complex; and adaptation measures may be an alternative to sinks in the CDM.

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On implementation, Chair Betz noted that, *inter alia*: reopening discussion on burden sharing is not an option; EU enlargement is not relevant to implementing existing KP obligations; internal ET is complex and needs more discussion; and domestic action needs to be addressed at all levels of government.

Regarding EU leadership, Chair Betz, highlighted that there are many weaknesses. The EU cannot make the US cooperate, but the EU has a long-term vision and it can integrate climate change policy with other issues. He recommended that the EU: focus on the Group of 55; build a relationship with Russia, the Ukraine and Japan; and work to maintain the environmental credibility of the KP.

THINGS TO LOOK FOR BEFORE COP-6:

CONFERENCE ON INNOVATIVE POLICY SOLUTIONS TO GLOBAL CLIMATE CHANGE: This Conference will be held from 25-26 April 2000, in Washington, DC, and is being co-hosted by the Pew Center on Global Climate Change and the Royal Institute of International Affairs. For more information, contact: Michelle Pilliod; tel: +1-202-544-7900; fax: +1-202-544-7922; e-mail: pilliodmp@aol.com; Internet: http://www.pewclimate.org/forms/innov_conf.html

11TH GLOBAL WARMING INTERNATIONAL CONFERENCE AND EXPO: This meeting, entitled "Kyoto Compliance Review - Year 2000 Conference," will be held from 25-28 April 2000, in Boston. It is being sponsored by the Global Warming International Programme Committee and the Global Warming International Center. For more information, contact: Sinyan Shen; tel: +1-630-910-1551; fax: +1-630-910-1561; e-mail: syshen@megsinet.net; Internet: <http://global-warming.net/gw11.html>

SECOND CTI/INDUSTRY SEMINAR FOR EASTERN EUROPE ON CLIMATE FRIENDLY TECHNOLOGY AND THE INTERNATIONAL ENERGY AGENCY FINANCE FORUM: This seminar will be held from 11-12 May 2000, in Warsaw, Poland, in cooperation with the Baltic Chain Initiative and the Polish Ministry of the Environment. For more information, contact: Michael Rucker; tel: +33-1-4057-6522; fax: +33-1-4057-6759; e-mail: rucker@iea.org; Internet: <http://www.climatetech.net/conferences/warsaw/>

MILLENNIUM INTERNATIONAL MEDIA CONFERENCE ON THE ENVIRONMENT: This conference will be held from 5-9 June 2000, in Suva, Fiji in conjunction with the 12th Asia Pacific and 3rd Commonwealth Congress of Environmental Journalists. It is organized by the Asia Pacific Forum of Environmental Journalists, the Commonwealth Environmental Journalists Association and Pina Pacific

Forum on Environmental Journalists. For more information, contact: Nina Ratulele; tel: +679-303-623; fax: +679-303-943; e-mail: pina@is.com.fj

12TH SESSION OF THE FCCC SUBSIDIARY BODIES: SB-12 will be held from 12-16 June 2000, in Bonn, Germany. It will be preceded by one week of informal meetings, including workshops. For more information, contact: the FCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.de; Internet: <http://www.unfccc.de/sessions/sessions.html>

INTERNATIONAL ENERGY WORKSHOP: This workshop will be held from 20-22 June 2000, in Stanford, California. For more information, contact: International Institute for Applied Systems Analysis; tel: +43-2236-8070; fax: +43-2236-71313; e-mail: info@iiasa.ac.at; Internet: <http://www.iiasa.ac.at/Research/ECS/june99/fc2000.html>

WORKSHOP ON RENEWABLE ENERGY FOR THE DEVELOPING WORLD: This workshop will be held from 26-30 June 2000, in Carbondale, Colorado, USA, and is being organized by Solar Energy International. For more information, contact Solar Energy International; Internet: <http://www.solarenergy.org/solarck.html>

WORLD RENEWABLE ENERGY CONGRESS VI: This event, entitled "Renewable Energy 2000," will be held from 1-7 July 2000, in Brighton, Sussex, UK. It is organized by the World Renewable Energy Network. The event features presentations on renewable energy technologies from industry experts around the world. For more information, contact: A Sayigh; tel: +44-1189-611365; fax: +44-1189-611364; e-mail: asayigh@netcomuk.co.uk

FIFTH INTERNATIONAL CONFERENCE ON GREENHOUSE GAS CONTROL TECHNOLOGIES: This conference will be held from 12-16 August 2000, in Cairns, Australia. For more information, contact: Colin Paulson; tel: +61-2-9490-8790; fax: +61-2-9490-8819/8909; e-mail: cpaulson@det.csiro.au; Internet: <http://www.ieagreen.org.uk/ghgt5.htm>

13TH SESSION OF THE FCCC SUBSIDIARY BODIES: SB-13 will be held from 11-15 September 2000. It will be preceded by one week of informal meetings, including workshops. For more information, contact the FCCC Secretariat.

SIXTH CONFERENCE OF THE PARTIES TO THE FCCC: COP-6 will be held from 13-24 November 2000, in The Hague, the Netherlands. For more information, contact the FCCC Secretariat.