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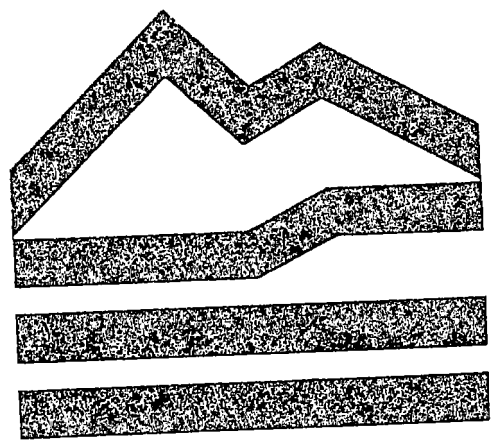
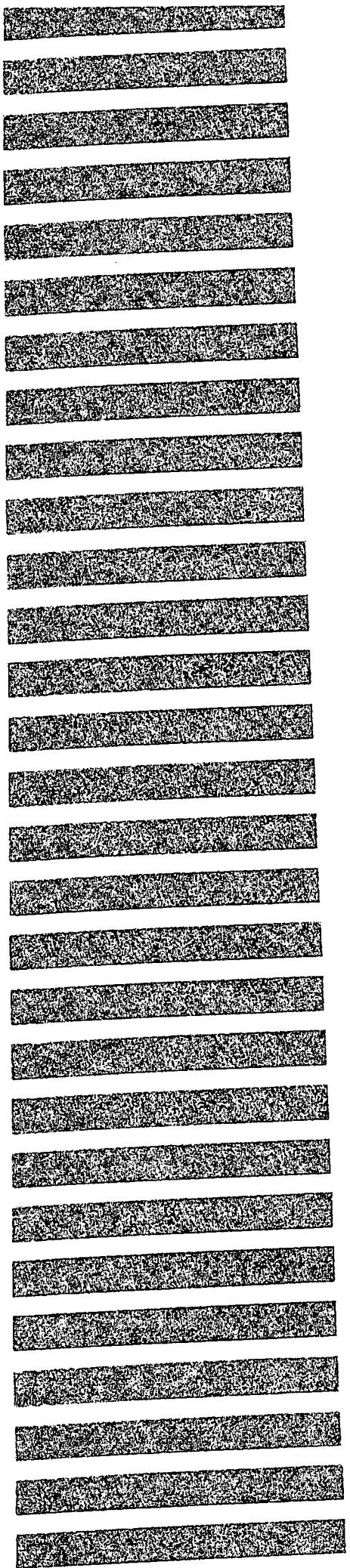
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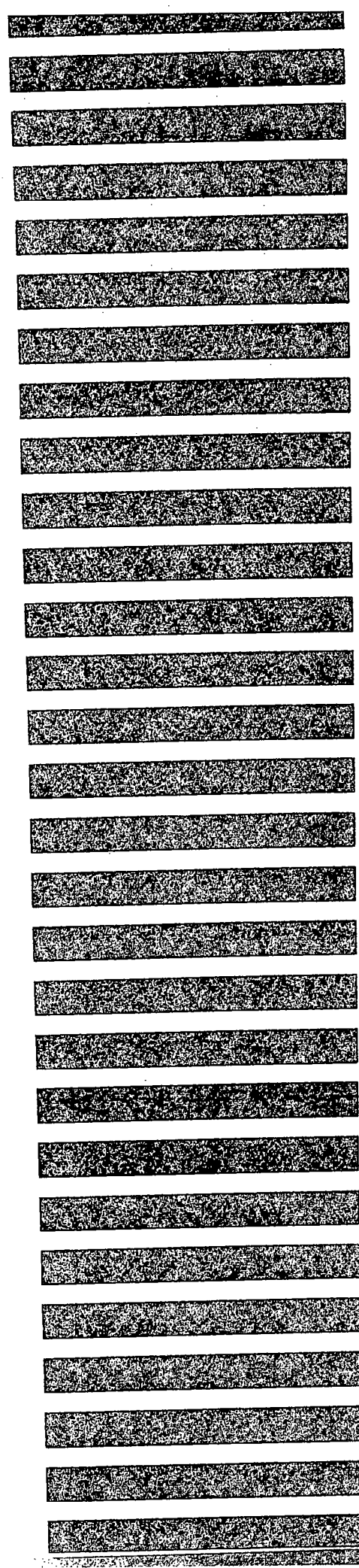


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REFERENCE DOCUMENT

Non-Paper on Principles, Modalities, Rules and Guidelines for an International Emissions Trading Regime

**(in particular for verification, reporting
and accountability)**

Australia, Canada, Iceland, Japan, New Zealand, Norway,
Russian Federation and the United States of America

June 3, 1998

Note: Footnotes in the original are not
included in this version.

1. PURPOSE

1. This paper sets out the preliminary views of Australia, Canada, Iceland, Japan, New Zealand, Norway, Russian Federation and the United States of America on the principles, modalities, rules and guidelines which provide the framework for international emissions trading. It is intended to facilitate on-going discussion on the development of an open international emissions trading system. Participation in the international trading system would be entirely voluntary.

2. The focus of the paper is on key technical design features which are necessary to provide for an effective and efficient trading system. The key objectives of the design features are to keep the system as simple and transparent as possible and minimise the transaction costs of trading while at the same time remaining consistent with the Protocol's environmental objective of achieving at least a 5% overall reduction below 1990 levels of greenhouse gas emissions by 2008-2012 for Annex B Parties.

3. A summary of the international emissions trading system proposed in this paper is contained in Appendix A.

2. INTRODUCTION

4. In December 1997, the Kyoto Protocol established emission targets for Annex B Parties. International trading is established in Article 17 of the Protocol. The Conference of the Parties is authorised to decide on principles, rules, modalities and guidelines, in particular for verification, reporting and accountability.

5. Domestic measures associated with international emissions trading are for individual Parties to determine and, as such, are not addressed in this paper (beyond the need for national recording systems). However, an important consideration in designing an international emissions trading system is not to restrict the right of each Party to put in place the domestic measures it chooses. Issues such as whether and how trading is devolved to legal entities and how revenue from trading might be treated have not been addressed as these are matters for individual Parties to decide.

3. WHAT IS EMISSIONS TRADING?

6. Emissions trading is a market based approach which enables participants to cooperatively minimise the costs of achieving an environmental objective. In the case of the Kyoto Protocol, an environmental objective has been established as the aggregate total of all individual quantified emission limitation and reduction commitments, as set out in Annex B of the Protocol for the first commitment period (2008-2012).

7. Through emissions, a market price for emissions abatement will emerge which reflects the marginal cost of emissions abatement across all market participants. When participants have exhausted the opportunities available for domestic emission reductions, or sink enhancement as per Article 3(3), at a cost below the international market price, they can elect to purchase the requisite 'assigned amounts' from other Parties (or entities). In this way, the environmental benefits are achieved irrespective of where the reductions take place, and at a lower cost than if trading was not available.

8. Since emissions trading is entirely voluntary, each trade will be to the mutual benefit of both participants to the trade. Cooperation between countries in this manner will lower the aggregate cost of emission abatement to below that which would be incurred by countries acting alone. Thus, the incentives provided by trading will facilitate the achievement of the Protocol's environmental objective; and at a lower cost than would be incurred without trading.

4. DESIGN FEATURES

9. In developing a framework for international emissions trading, several simple design features need to be considered to enhance the integrity of the trading system and increase the level of certainty under which it operates. These design features should facilitate the efficient operation of a competitive market which will enhance the achievement of the environmental objective.

10. Parties could trade directly and/or choose to devolve trading responsibility to legal entities. Devolving the ability to trade would be likely to increase the number of trades, thus enhancing competition in the market. Private sector legal entities would have direct knowledge of their abatement opportunities and costs and would likely be better placed to make decisions based on this information than would governments.

11. To enhance the efficiency of the market, the unit of trade should be clearly denominated and freely transferable amongst trading participants. Rules which encourage transparency and information disclosure and provide appropriate incentives for compliance can also aid the efficient operation of the market. Comprehensively specified and certain rules assist in minimising the transaction, administration and compliance costs of trading. In order to be accountable and certain, the rules (including monitoring and enforcement mechanisms) would apply to all participating Parties. Rules should maintain enough flexibility to accommodate changes to the system in the future (e.g. new entrants).

5. WHAT IS THE TRADABLE UNIT?

12. Assigned amount units (AAUs) would be the standardised unit of trade. AAUs would represent a tradable form of an Annex B Party's 'assigned amount'. Parties who wished to trade would issue tradable AAUs from its 'assigned amount'. Parties would be required to identify the AAUs that they issued with a unique serial number which identified the country of origin and the relevant commitment period. This would ensure that each AAU is unique internationally.

13. 'Assigned amounts' can be traded, whether they derive from, for example, Articles 3(7), 3(3), 6 and/or 12. there would be no differentiation of AAUs on the basis of data certainty for gases or sources.

5.1 Specification of AAUs

14. Consistent with Article 3(1), AAUs would be denominated in 'CO₂ equivalent'. Consistent with Article 5(3), Global Warming Potentials (GWPs) would be used as the appropriate conversion factors to convert non-CO₂ gases into CO₂ equivalent terms and would be fixed for a commitment period. For the first commitment period, Parties should use the revised 1996 Guidelines for National Greenhouse Gas Inventories of the IPCC. GWPs used by Parties should be those provided by the IPCC in its Second Assessment Report based on the effects of the greenhouse gases over a 100 year time horizon, taking into account the inherent and complicated uncertainties involved in global warming potential estimates.

15. An AAU would express one metric tonne of CO₂ equivalent emissions. All AAUs would be valid for the commitment period in which they are issued and indefinitely thereafter until used. An AAU could only be used once to offset emissions equal to the CO₂ equivalent value (i.e. AAUs are a consumable commodity).

6. WHO CAN PARTICIPATE IN THE TRADING REGIME?

16. The participants in the international trading regime could be Parties (i.e. governments) and/or legal entities authorised by that Party to trade. Legal entities could include private individuals, companies, societies (which could include environmental and other non-governmental organisations), industry groups and brokers.

17. Devolution of the right to trade to legal entities would be at the discretion of each participating Party. However, responsibility for the Kyoto Protocol commitments would always remain with the Government as Party to the Protocol.

7. CONDITIONS TO TRADE 'ASSIGNED AMOUNTS' INTERNATIONALLY

18. Each Annex B Party will need to meet conditions to ensure the integrity of the systems. These conditions are:

(a) Parties must comply with Articles 5 & 7 of the Kyoto

Protocol.

(b) Parties must establish and maintain a national system for recording their 'assigned amount' and accounting and tracking AAUs held or traded by the Party and/or its legal entities.

19. Compliance with the conditions would be assumed to continue unless a breach of the conditions was established under the Protocol. Failure to maintain compliance with the conditions could result in suspension of the right for the Party and its legal entities to transfer AAUs internationally. However, the Party or its legal entities would not be precluded from acquiring AAUs.

8. HOW MUCH CAN BE TRADED?

20. Article 17 provides that trading is to be supplemental to domestic actions but does not quantify that term or authorise the Conference of the Parties to quantify it.

21. International emissions trading will be more effective in achieving emissions reduction at lowest cost if there are no restrictions on the quantity of AAUs able to be transferred or acquired to contribute to compliance with a Party's assigned amount'. The ability to trade without quantitative restriction would encourage ratification of the Protocol; encourage earlier emission reductions and minimise the overall cost of achieving the collective Annex B environmental objective.

22. Internationally mandated limits on the quantity available to be traded, by substantially reducing the benefits available from trading, would increase the cost of emission reductions; discourage ratification of the Protocol; and ultimately, in the long term, reduce the quantity of reductions that can be achieved, thus delivering less environmental benefit.

9. INSTITUTIONAL REQUIREMENTS

23. Markets play a central role in the efficient exchange of "goods" such as commodities, shares, bonds and financial instruments. Existing international markets have a number of well-established practices for contracting, delivery and settlement. An issue for international emissions trading is whether it is necessary to establish a new official institution to facilitate trades. Given the large number of existing commercial market institutions that handle international transactions (both financial and commodity), there seems no benefit in establishing

a new international forum/institution to cater for trades of AAUs. The only additional function, over and above those required in the absence of trading, is a system to record ownership and transfers of AAUs at the national level. This system is discussed below.

9.1 National Recording System

24. The national recording system of a Party would record AAUs issued by the Party and transfers and acquisitions of AAUs by the Party, including those AAUs devolved to legal entities, and subsequent transactions by those entities. The national recording system would also be required to provide verification of ownership of AAUs. A Party could choose to maintain a list of all legal entities it authorises to trade.

25. By recording every change of legal ownership, the national recording system would protect against the possibility of counterfeit AAUs being generated and questions regarding legal ownership of legitimate AAUs.

26. Each Party would be required to report annually on trading activity to a designated authority approved by the FCCC COP. This report would identify the aggregate quantity of international trades and any changes to the Party's 'assigned amount' pursuant to Articles 3(3), 3(1), 3(11) and 3(12). This would enable the designated authority to produce a syntheses report of each Party's 'assigned amount', including AAU holdings by each Party and transfers to, and acquisitions from, other Parties.

27. The synthesis report would confirm, at an aggregate level, that correct double-entry book keeping between Parties had occurred. In the event of discrepancies in the reports submitted by Parties, the designated authority would request that those Parties investigate and correct such discrepancies.

28. Two or more Parties could voluntarily consolidate their national recording systems into one system, provided that each individual Party's account was reflected. This might simplify tracking of AAU transfers and preparation of synthesis reports as well as reduce the possibility of discrepancies between Parties' reports on trading activity.

9.2 Tracking AAU holdings

29. One way to track AAU trades by the Party and its legal entities would be for the national recording system to operate an account for the Party and accounts for all legal entities authorised to trade.

30. All trades of AAUs would result in a debit and credit to the relevant accounts (i.e. a simple double-entry accounting system). For international trades, the `seller' would request that its national recording system remove the AAUs in question from its account and authorise the national recording system of the `buyer' to credit the buyer's account with those AAUs. For domestic trades (i.e. those that did not cross national borders) only the national recording system in that country would need to be involved.

31. National recording systems would only be required to track the account from which AAUs are to be transferred from (or to) and the quantity of AAUs to be transferred (including the serial numbers for the purpose of verifying ownership). Contractual information beyond the number of AAUs transferred between participants would not have to be divulged. Participant could choose not to divulge price details of individual trades to protect commercially sensitive information.

32. The trading rules should provide appropriate compliance and enforcement mechanisms relevant to the trading system. Other compliance issues could be addressed under Article 18.

33. One enforcement mechanism under the trading rules could be to deny (or restrict) the right of a Party (and its legal entities) to transfer AAUs if they are found to be in breach of the trading rules and/or are no longer in compliance with the conditions for issuing AAUs (e.g. in breach of conditions to trade AAUs internationally).

10. ESTABLISHING COMPLIANCE

34. Each Party will be assessed for compliance at the end of the commitment period. For a Party to be found in compliance with Article 3, its emissions must be no more than its `assigned amount'.

35. At the end of the commitment period and following finalisation of emission inventories, each Party would be required to submit a report to the designated authority 11. This report would include emissions for the commitment period and aggregate information on the number of acquisitions and transfers of AAUs and any changes to a Party's `assigned amount' pursuant to Articles 3(3), 3(10), 3(11) and 3(12) (i.e. a compilation of annual emission inventories and information on trading activity).

Based on this information, the Party could ascertain whether it had exceeded its 'assigned amount'.

36. The report would also indicate the serial numbers of AAUs used by the Party for the purposes of contributing to compliance. AAUs used by the Party to contribute to compliance would no longer be valid and would be required to be removed from the Party's national recording system (i.e. AAUs are a consumable commodity). At a Party's request, any AAUs not used to offset emissions or the remaining portion of its 'assigned amount' would be banked forward into the next commitment period pursuant to Article 3(13).

37. A Party that had exceeded its 'assigned amount' would be able to come into compliance during a short grace period (e.g. three months). To meet the short fall. After the completion of the grace period, Parties would re-submit a (modified) report. Parties who were non-complying could face non-compliance consequences developed under Article 18.

11. FURTHER WORK

38. Some rules or a process to deal with instances of anti-competitive behaviour may be necessary. Issues regarding allocation of risk need to be further explored.

APPENDIX A

1. International trading is established in Article 17 of the Kyoto Protocol.
2. Parties could elect to participate in the trading system.
3. The tradable unit would be assigned amount units (AAUs) i.e. AAUs are the tradable form of 'assigned amounts'.
4. AAUs would be denominated in CO₂ equivalent. The unit of trade would be one metric tonne. GWPs used to calculate CO₂ equivalent would be fixed for a commitment period.
5. Each Annex B Party could issue serialised AAUs from its 'assigned amount'.
6. Each AAU would have a unique serial number which identified the country of origin and the commitment period in which the AAUs were issued.

7. AAUs would be valid until used to offset emissions for the purposes of contributing to compliance (i.e. once used to offset emissions, AAUs would be removed from the trading system).
8. AAUs acquired by a Party with an 'assigned amount' would be added to the Party's 'assigned amount'. Similarly, AAUs transferred by a Party would be subtracted from its 'assigned amount'.
9. 'Assigned amounts' can be traded, whether they derive from, for example, Articles 3(7), 3(3), 6 and/or 12.
10. Parties could authorise legal entities to acquire and/or transfer AAUs. Issues such as whether and how trading is devolved to legal entities and how revenue from trading might be treated are matters for individual parties to decide.
11. Governments, as parties to the Kyoto Protocol, would remain responsible for compliance with their 'assigned amount'.
12. Each Annex B Party who wanted to trade its AAUs internationally (and/or allow their legal entities to do so) will need to meet the following conditions:
 - (a) Parties must comply with Articles 5 & 7 of the Kyoto Protocol.
 - (b) Parties must establish and maintain a national system for recording their 'assigned amount' and accounting and tracking AAUs held, transferred or acquired by a Party and/or its legal entities.
13. The national recording system of a Party would be required to:
 - (a) record AAUs issued by the Party;
 - (b) record transfers and acquisitions of AAUs by the Party (including those AAUs transferred by the Party to legal entities, and subsequent transactions by those entities);
 - (c) provide verification that a legal entity transferring AAUs was the registered owner of the AAUs in question; and
 - (d) retire AAUs used to offset emissions.
14. Each Party would be required to report annually on trading activity to an authority designated by the COP identifying the quantity of international trades and any changes to its 'assigned

amount' pursuant to Articles 3(3), 3(10), 3(11) and/or 3(12).


15. Each Party will be assessed for compliance at the end of the commitment period. For a Party to be found in compliance with Article 3, its emissions must be no more than its 'assigned amount'. To assess compliance at the end of the commitment period (and following finalisation of emission inventories), each Party would be required to submit a report to the designated authority on emissions for the period and aggregate information on the number of acquisitions and transfers of AAUs and any changes to a Party's 'assigned amount' pursuant to Articles 3(3), 3(10), 3(11) and 3(12) (i.e. a compilation of annual emission inventories and information on trading activity).

16. Parties would inform the designated authority which AAUs (identified by serial number) were used to offset emissions. Such AAUs would no longer be valid for use in a subsequent commitment period.

17. A Party that had exceeded its 'assigned amount' would be able to come into compliance during a short grace period (e.g 3 months). To meet the shortfall, the Party could either acquire AAUs within the grace period and/or utilise other options to meet the shortfall.

18. After the completion of the grace period, Parties would re-submit a modified report. Parties who were non-complying could face non-compliance consequences developed under Article 18.

19. Any AAUs not used to offset emissions or remaining portions of a Party's 'assigned amount' not used could be banked forward into the following commitment period at the request of a Party (including on behalf of legal entities).

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REFERENCE DOCUMENT

Non-Paper on Principles, Modalities, Rules and Guidelines for an International Emissions Trading Regime

Paper No. 2:

**United Kingdom of Great Britain
and Northern Ireland**

**(on behalf of the European Community and its member
States and Czech Republic, Slovakia, Croatia, Latvia,
Switzerland, Slovenia, Poland and Bulgaria)**

June 8, 1998

Purpose

1. This paper sets out the preliminary views of the European Community, Austria, Germany, Finland, Portugal, France, Sweden, Belgium, Spain, Denmark, Greece, Italy, Ireland, The Netherlands, Luxembourg, United Kingdom, Czech Republic, Slovakia, Croatia, Latvia, Switzerland, Slovenia, Poland and Bulgaria on the principles, modalities, rules and guidelines which should provide the framework for international emissions trading. The above Parties believe that trading, CDM and JI should be developed in parallel and the frameworks for them should be consistent with each other. However, this paper refers to international emissions trading. It is intended as a basis for the on-going discussion on the development of an open international emissions trading system.

2. This paper includes some key technical elements that can be already presented as potential rules, modalities and guidelines and others which are also necessary to provide for an effective and efficient trading system but have to be further developed.

Summary of the draft international emissions trading system

Principles

3. Recalling the principles and objectives of the United Nations Framework Convention on Climate Change, and the Kyoto Protocol, the international emissions trading system shall be designed to contribute to the achievement of real, cost-effective and verifiable environmental benefits whilst ensuring that:

(i) trading of "hot air" should not lead to overall reductions being lower than would otherwise be the case;

(ii) trading is supplemental to domestic action for the purposes of meeting commitments under Article 3* (in accordance with Article 17); and

(iii) the emissions trading system is transparent, accessible and verifiable, functions in a non-discriminatory manner, and does not lead to distortions of competition.

4. The above Parties believe that the rules, modalities and guidelines need to be defined before international emissions trading can begin.

Implementation of principles governing the international trading system

Supplementarity:

5. We believe that domestic actions should provide the main means of meeting commitments under Article 3. This is consistent with the ultimate objective of the Convention. In this context a "concrete ceiling" on the use of all the flexible mechanisms has to be defined. In addition, Article 17 states that international emissions trading "... shall be supplemental to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments....". The rules governing the international emissions trading system should reflect this principle.

6. We have not yet come to a firm view on as to how the ceiling should be defined and welcomes discussion with other delegations. The ceiling could be defined in relation to a number of variables, including: the assigned amount, 1990 emission levels, or required efforts by a Party.

Environmental effectiveness:

7. The above Parties believe that international emissions trading should ensure that real emissions reductions are delivered at lower cost, and that the trading of 'hot air' should not lead to overall reductions being lower than would otherwise be the case.

This could require that:

Net transfers by a Party shall not be greater than the amount of emissions reduced by that Party as a result of domestic action.

A Party's compliance with this rule shall be the subject of expert review under Article 8.

Emissions trading market

8. We believe that there should be an open and transparent emissions trading market subject to the modalities, rules and guidelines as set out below.

Modalities, rules and guidelines

Eligibility

9. Parties with commitments listed in Annex B of the Kyoto Protocol shall be eligible to transfer or acquire parts of assigned amounts if they:

(a) are in compliance with Articles 5 and 7** ;

(b) have adopted and ratified a compliance regime under Article 18;

(c) have a national system for tracking transfers and acquisitions of parts of assigned amount by the Party itself, and by any legal entities it may choose to authorize (consistent with paragraphs 10, 15 and 16 below);

(d) can demonstrate their compliance with the rules of the emissions trading system, as set out in the paragraphs below.

Parties implementation of the requirements of this paragraph shall be the subject of expert review under Article 8.



Unit of transfer/acquisition

10. The tradable unit would be parts of assigned amounts, (as defined under Article 3) which this paper will refer to as PAA units. Transfers and acquisitions of PAA units shall be denominated in metric tons of CO₂ equivalent, calculated using the global warming potentials defined by decisions 2/CP.3 or as subsequently revised in accordance with Article 5.3. One PAA unit would be equal to one metric tonne of CO₂ equivalent emissions.

11. All PAA units shall have a unique serial number that reflects the country of origin and the commitment period for which the assigned amount was first established. PAA units would be valid until used to offset emissions for the purposes of contributing to compliance (i.e. once used to offset emissions, PAA units would be retired from the trading system). PAA units acquired by a Party would be added to the Party's assigned amount unless the PAA units are subsequently invalidated as set-out in paragraph 22 below. Similarly, PAA units transferred by a Party would be subtracted from its assigned amount.

12. A Party whose emissions are in excess of its assigned amount in any commitment period may acquire, but may not transfer, PAAs.

Entitlement to trade

13. All eligible Parties can trade.

14. The Protocol is silent on the subject of whether legal entities can participate in the international trading system under Article 17. However, the participation of legal entities has several economic advantages. If authorized legal entities are permitted to participate in international emissions trading, the Party, and not its authorized legal entities, will remain responsible for compliance with its commitments under the Protocol.

15. If legal entities were permitted to trade internationally, it would be essential to govern the monitoring, verification, accountability and compliance of sub-national legal entities. In addition, the manner in which Parties allocate PAA units to their legal entities should not contravene Article 3.5 of the Convention and, therefore, should avoid arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

Recording and reporting of trades

16. The UNFCCC Secretariat shall make information on the Parties that are eligible to participate in international trade publicly available. Each Party shall maintain a record of names and contact details of authorized legal entities within its jurisdiction that it authorizes to trade, and such information shall be made available both to the UNFCCC Secretariat and to the public.

17. Parties shall track and record information on all transfers of PAA units by authorized legal entities within their jurisdiction. This information should include the amount and serial numbers of the PAA units transferred, and identify the entities and their authorizing Parties between which the transaction has taken place.

18. Parties shall report, at least annually, to the UNFCCC secretariat (or an authority designated by the COP) the amount and serial numbers of the PAA units and the counterparts of all transfers and acquisitions that result in changes to their assigned amounts, including those involving legal entities. Parties shall verify to the UNFCCC Secretariat (or an authority designated by the COP) that a legal entity transferring PAA units was the registered owner of the PAA units in question.

19. The UNFCCC secretariat (or an authority designated by the COP) shall produce, on an annual basis, a tabulation of the adjustments to assigned amounts required under Articles 3.10 and 3.11 for each Party that has carried out transfers or acquisitions of PAA units.

Market mechanisms and information:

20. There are a number of ways in which the emissions trading market could be organized. The following sets out the main options (these provisions could also apply to legal entities):

(a) Auction. Any transfer or acquisitions by a Party shall be carried out through open, competitive bidding accessible to all Parties.

(b) Prior notification. Parties shall notify the UNFCCC of their intention to transfer or acquire PAA units prior to any transfer/acquisition, and the UNFCCC Secretariat shall make such information available to all other eligible Parties. This could be limited to transfers/acquisitions above a specified amount.

(c) Use of available market mechanisms. Transfers and acquisitions by Parties may be carried out directly or through any mechanisms to facilitate transfers such as brokers, exchanges, or auctions.

Sharing of risks on non-compliance under the international emissions trading system:

21. Rules about risk-sharing and legal liability will need to be elaborated, in order, inter alia, to provide compliance incentives and to improve the quality of Parties' monitoring systems. This section sets out the main parameters.

22. A Party which is found to be in non-compliance with its obligations under Article 3 will face compliance procedures under Article 18. If such a Party has transferred PAA units to any other Party, the units transferred should be invalidated in part, or in full, for the purposes of meeting the commitments of the acquiring Parties under the Protocol. Otherwise, Parties could have no incentive not to buy PAA units from Parties they expected to be in eventual non-compliance. Modalities for invalidation of PAA units transferred under these circumstances will need to be further explored. However, if a Party finds itself in non-compliance due to the full or partial invalidation of acquired PAA units, it may be appropriate for that Party to face less stringent penalties than the seller Party.

Compliance with trading rules

23. If a question of compliance by a Party included in Annex B of the rules of the trading system as set out in the paragraphs above is identified, transfers and acquisitions of assigned emission units may continue to be made after the question has been identified, provided that any such units may not be used by a Party to meet its commitments under Article 3 until any issue of compliance is resolved.

Changes (i.e. participants, trading rules etc.):

24. Any rules, modalities and guidelines for emission trading shall be open to review by the Parties and may be modified as appropriate by a COP.

25. Changes in trading principles, modalities, rules, and guidelines shall only take effect in commitment periods subsequent to that of their adoption. Changes in Parties' eligibility to trade or changes pertaining to new entrants that meet the eligibility criteria may occur during the current commitment

period.

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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE
Eighth session
Bonn, 2-12 June 1998
Agenda item 8

SUBSIDIARY BODY FOR IMPLEMENTATION
Eighth session
Bonn, 2-12 June 1998
Agenda item 8

FCCC/SB/1998/CRP.2
12 June 1998

ENGLISH ONLY

MECHANISMS

Draft conclusions by the Chairmen

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) recalled decision 1/CP.3, in particular paragraph 5(b), (c) and (e) on guidance to the secretariat on preparatory work needed for consideration by the fourth session of the Conference of the Parties.
2. The SBSTA and the SBI further recalled paragraph 6 of the same decision concerning the allocation of preparatory work for the first session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.
3. The SBSTA and the SBI took note of documents FCCC/SB/1998/2, FCCC/SB/1998/MISC.1 and Add.1, Add.1/Rev.1, Add.3, Add.3/Rev.1, Add.5 and Add.6, and FCCC/SB/1998/MISC.2.
4. The SBSTA and the SBI further took note of the Suggested Elements for a Work Programme on Mechanisms of the Kyoto Protocol attached hereto.
5. The SBSTA and the SBI invited Parties to submit views on the mechanisms referred to in decision 1/CP.3, paragraph 5(b), (c) and (e).

Suggested Elements for a Work Programme on Mechanisms of the Kyoto Protocol

This list is compiled on the basis of the Proposed Work Programme on Mechanisms of the Kyoto Protocol submitted by the G-77 and China, suggestions by other Parties during the contact group meetings and further proposals submitted by Canada et. al.¹⁾ and United Kingdom of Great Britain and Northern Ireland (on behalf of the European Community and its Member States) on Friday 12 June. This list is not negotiated.

Article 12 - clean development mechanism

Methodological/Technical Work

1. Purpose of cdm projects
2. Complementarity to domestic action
3. Part of Annex I commitments
4. Additionality criteria in funding
5. Criteria for real, measurable and long-term benefits related to climate change
6. Compatibility with sustainable development priorities/strategies
7. Criteria for project eligibility
8. Criteria for certification
9. Criteria for project baseline
10. Definition of the concept of certified emission reductions
11. Acquisition and transfer of certified emission reduction
12. Systems for independent auditing and verification of project activities
13. Format for reporting
14. Identification/ determination of share of proceeds
15. Adaptation
16. Implication of Article 12.10 of the Kyoto Protocol
17. Outcome of methodological work on Articles 3.3 and 3.4 of the Protocol

Suggestions forwarded during the contact group

18. Determination of "part of" and its relationship to complementarity
19. Concept of voluntary participation
20. Categorization of projects
21. Approaches to project identification and development
22. Guidelines related to the inclusion of LUCF activities
23. Additionality criteria
24. Guidelines for certification
25. Analysis of implications of Article 12.10 of the Kyoto Protocol
26. Articles 3.3 and 3.4 of the Protocol

Proposals submitted on Friday 12 June 1998

27. complementarity, by means of a concrete ceiling for the three mechanisms;
28. to ensure that projects provide real measurable and long-term benefits;
29. Additionality of emissions reductions (Article 12.5c);

30. determination of "part of" (Article 12.3b);
31. elaboration of modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities;
32. clarification of project types and categories;
33. defining "share" of proceeds, including:
 - * share to cover administrative expenses;
 - * modalities and level of share "to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation".
34. interpretation of "to assist in arranging funding for certified project activities as necessary";
35. implications of Article 12.10.
36. Project eligibility
 - * Additionality
 - * Project baselines/benchmarks
 - * Criteria for real, measurable, and long-term benefits
37. Certification
38. Auditing, verification and monitoring
39. Sinks
40. Reporting

Institutional Issues

1. Authority and guidance of the COP
2. Executive Board - Constitution, Composition, and Functions
3. Accountability of the Executive Board to the COP/moP
4. Functions/ provision of guidance
5. Procedure
6. Identification and designation of operational entities
7. Monitoring and auditing of operational entities

Suggestions forwarded during contact group

8. Overall institutional framework
9. Technical and operational support for Executive Board
10. Monitoring and verification of project activities
11. Authority and guidance of the COP/MOP
12. Functions/ provision of guidance / supervision
13. Rules of procedure

Proposals submitted on Friday 12 June 1998

14. institutional issues (Executive Board, operational entities, etc).
15. Same as items 1-13

Participation in projects

1. Private and/ or public entities
2. Responsibility of Parties
3. Guidance to be provided by the executive board

Proposals submitted on Friday 12 June 1998

4. criteria for voluntary participation of Parties, public and/or private entities, etc.
5. Same as items 1-3

Process

1. Approval by both Parties
2. Procedure to attain certification of project activities
3. Certification of emission reductions
4. Acquisition and transfer of certified emission reduction .
5. Assistance in arranging funding for projects assistance
6. Rules to guarantee transparency, non-discrimination and to prevent distortion of competition

Suggestions forwarded during contact group

7. Cdm shall assist in arranging funding of certified project activities as necessary (12.6)
8. Certification
9. Reporting, auditing and verification
10. Accessibility
11. Adaptation (project process)
12. Transparency, non-discrimination and prevention of distortion of competition
13. Approval by each Party involved
14. Assistance in arranging funding for adaptation projects

Proposals submitted on Friday 12 June 1998

15. adoption of a framework for operation of the cdm.
16. Voluntary participation
17. Acquisition and transfer of certified emission reductions
18. Assistance in arranging funding for projects
19. Adaptation

Linkage

1. with contribution to compliance with part of commitments under Art. 3 of Annex I Parties
2. with contribution to meet the costs of adaptation
3. with Article 6 projects

4. CERs and ERUs accruing from projects
5. Work related to Article 18 of the Kyoto Protocol

Suggestions forwarded during contact group

6. With Article 17

Proposals submitted on Friday 12 June 1998

7. complementarity, by means of a concrete ceiling for the three mechanisms;
8. compliance (need to adopt and ratify Article 18);
9. Articles 3, 5, 6, 7, 8 and 17.

10. Fungibility with AAUs and ERUs
11. AIJ

Article 6 projects

Methodological/Technical Work

1. Complementarity to domestic action
2. Criteria for Article 6 projects
3. Criteria for project baselines
4. Acquisition and transfer of emission reduction units
5. Compliance with Article 5 and 7 of the Kyoto Protocol
6. Verification
7. Reporting
8. Non-compliance
9. Outcome of methodological work on Article 3.3 and 3.4

Suggestions forwarded during contact group

10. Methodological work associated with Art. 6.1 (b)
11. Guidelines on review of implementation by expert review team (Art. 8.4)
12. Guidelines on eligibility of projects initiated under AIJ for generation of ERU under Art. 6.
13. Additionality criteria
14. Certification and monitoring
15. Guidelines for projects and project baselines
16. Verification and monitoring particularly Article 6.4
17. Non-compliance (Article 18)

Proposals submitted on Friday 12 June 1998

18. complementarity, by means of a concrete ceiling for the three mechanisms;
19. to ensure that projects provide real measurable and long-term benefits;
20. additionality of emissions reductions (determination of project baselines and actual emissions or removals, Article 6.1 b);

21. common methodologies for certification, project monitoring and verification of actual reductions from sources and enhancement of removals by sinks
22. Project eligibility
 - * Additionality
 - * Project baselines
23. Verification and monitoring
24. Sinks
25. Reporting

Proposals submitted on Friday 12 June 1998
(Submissions proposing a new heading under Article 6)

Participation in projects

1. approval of projects;
2. to determine that Parties, and their authorised legal entities can account for, certify, document and verify emissions reductions and removals by sinks from JI projects.
3. Responsibility of Parties
4. Private and/or public entities

Process

1. Approval by Parties of projects
2. Assessment of additionality
3. Compliance with Article 5 and 7
4. Acquisition and transfer of emission reduction units

Suggestions forwarded during contact group

5. Private and/ or public entities
6. Responsibility of Parties
7. Accessibility
8. Transparency, non-discrimination and prevention of distortion of competition

Proposals submitted on Friday 12 June 1998

9. Voluntary participation
10. Acquisition and transfer of ERUs
11. Compliance

Institutional

1. Role of COP/moP, SBSTA and SBI
2. Work on non-compliance
3. Elaboration of guidelines as per Article 6.2

4. Involvement of legal entities operating under the responsibility of a Party
5. Definition of institutional authority

Suggestions forwarded during contact group

6. Involvement of legal entities operating under the responsibility of a Party as referred to in 6.3
7. Reporting
8. Non-compliance

Proposals submitted on Friday 12 June 1998

9. determination of guidelines for accounting, certification, documentation and verification of JI projects;
10. procedures for recording and reporting transfers and acquisitions of emission reduction units.
11. Role of COP/MoP

Linkage

1. With Article 5
2. With Article 7
3. With Article 8
4. With Article 18
5. With Article 12, in particular Article 12.8
6. With Article 17

Proposals submitted on Friday 12 June 1998

7. complementarity, by means of a concrete ceiling for the three mechanisms;
8. compliance (need to adopt and ratify Article 18);
9. Articles 3.3, 3.4, 5, 7, 8, 12, 17 and 18
10. Fungibility with AAUs and CERs
11. AIJ

Activities Implemented Jointly

Activities Implemented Jointly (AIJ) cannot be part of this work programme. AIJ will be governed by COP decisions, namely, 5/CP.1, 8/CP.2 and 10/CP.3. According to decision 5/CP.1, the COP shall take into consideration the need for a comprehensive review of the pilot phase in order to take a conclusive decision on the pilot phase and the progression beyond that, no later than the end of the present decade. The secretariat should prepare an update on information about the pilot phase of AIJ.

Article 17 - emissions trading between Annex I Parties

Issues for Work Programme

1. Basis of rights and entitlements of Annex I Parties for trading emissions
2. Determination and creation of such rights and entitlements
3. Supplementarity to domestic action for the purpose of meeting quantified emission limitation and reduction commitments under Article 3
4. Conformity with the principle of equity in the Convention
5. Real and verifiable reduction of GHG emissions
6. Elements of principles, modalities, rules and guidelines for any trading in emissions
7. Elaboration of principles, modalities, rules and guidelines, including the funding of adaptation
8. Matters relating to verification, reporting and accountability
9. Whether any commonality with other mechanisms

Suggestions forwarded during contact group

12. Scope of participation of legal entities
13. Accessibility
14. Rights, entitlements and equity
15. Verification
16. Reporting
17. Accountability
18. Adaptation
19. Scope of participation in market mechanisms
20. Definition of relevant principles, modalities, rules and guidelines for verification, reporting and accountability

Proposals submitted on Friday 12 June 1998

21. Risk of transferees on transfers the transferor was not entitled to make under the Protocol.
22. Refusals of Annex I Parties to participate in emissions trading under Article 17.

Proposals submitted on Friday 12 June 1998

(Submissions proposing headings under Article 17)

Methodological/technical Work

1. determination of principles, rules, modalities and guidelines:
 - * in particular for verification, reporting and accountability;
 - * to ensure that emissions trading provides real, cost-effective and verifiable environmental benefits, and that trading of 'hot air' does not lead to emissions reductions being lower than would otherwise be the case;
 - * to define supplementarity, by means of a concrete ceiling for the three mechanisms;

- * to ensure that the emissions trading system is transparent, accessible and verifiable, functions in a non-discriminatory manner, and does not lead to distortions of competition;
- * to establish responsibility in the event of non-compliance.

2. Principles, modalities, rules, and guidelines, for verification, reporting, and accountability
3. Environmental effectiveness and economic efficiency
4. Tradeable assigned amount unit
5. Participation, including Parties and legal entities
6. Eligibility
7. Institutional requirements
8. Recording and reporting
9. Verification and accountability
10. Liability
11. Competitive markets
12. Transparency
13. Compliance

Participation in trading

1. eligibility of Parties;
2. eligibility of other entities under the responsibility and within the jurisdiction of a Party.

Institutional issues

1. determination of principles, rules, modalities and guidelines:
 - * for procedures for recording and reporting transfers and acquisitions of parts of assigned amounts;
 - * for a national system for tracking and recording information on all trades by authorised legal entities.

Linkage

1. complementarity, by means of a concrete ceiling for the three mechanisms;
2. compliance (need to adopt and ratify Article 18);
3. Articles 3, 5, 6, 7, 8, 12 and 18.

4. Fungibility with CERs and ERUs

Additional proposals are contained in documents FCCC/SB/1998/2, FCCC/SB/1998/MISC.1 and Add.1, Add.1 Rev.1, Add.3, Add.3/Rev.1, Add.5 and Add.6, and FCCC/SB/1998/MISC.2.

1) Canada et. al. includes Australia, Canada, Iceland, Japan, New Zealand, Norway, Russian Federation, Ukraine, and United States of America

(10 June; 2 pm)

*Initial list of issues on Mechanisms of the Kyoto Protocol
Group of 77 and China*

The following is an initial list of issues from the Group of 77 & China on "mechanisms". The issues are listed as: (1) General, (2) Article 6 projects, (3) Article 12 - clean development mechanism, (4) Article 17 - emissions trading between developed country Parties. These issues need to be properly addressed to enable progress.

General

1. What are the points of difference and points of similarity among the three mechanisms provided for in the Kyoto Protocol to the Convention.
2. How to ensure that domestic actions by developed countries are their primary means of GHG limitation and reduction, and that the overseas mechanisms remain supplemental to such domestic actions by developed countries for the purpose of meeting their quantified emission limitation and reduction commitments.
3. How can it be ensured that these mechanisms lead to real and verifiable limitation and reduction of GHG emissions by developed countries.
4. How to ensure that the COP or COP/moP will maintain the responsibility for every stage of defining, developing, structuring and institutionalizing the mechanisms.
5. What are the specific roles of the SBSTA and the SBI with regard to these mechanisms.
6. What will be the systems for ensuring independent auditing, verification and accountability of the working of these mechanisms.

Article 6 projects

1. What will be the elements of the guidelines for projects under Article 6, in particular, for ensuring transparency, accountability, reporting and verification.
2. What will be the criteria for deciding the baseline of projects.

3. How can compliance with Articles 5 and 7 of the Protocol be ensured, and how is this related to the work to be accomplished under Article 18.
4. What will be the procedure for transferring or acquiring emission reduction units resulting from projects under Article 6.
5. What will be the system for auditing and verifying projects under Article 6.
6. How will "legal entities", to be involved in these projects, be defined, and how will the responsibility of the Party over "legal entities" for the purpose of the projects be ensured.
7. How will the benefits of a project under Article 6 be equitably shared between the participating Parties.
8. What will be the reporting criteria of a project under Article 6 to the COP/moP.

—> *Article 12 - Clean Development Mechanism*

1. What will be the criteria for ensuring a balance wherein each CDM project attains the objective of assisting developing country Parties in achieving sustainable development in accordance with their national priorities and strategy, and assisting developed country Parties in achieving compliance with their commitments under Article 3.
2. How to ensure that the CDM shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Protocol.
3. How to ensure that the executive board of the CDM shall function under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Protocol.
4. What will be the constitution, character and functions of the executive board of the CDM.
5. How will the emission reductions of a CDM project be certified? What will be the certification procedure, and by whom will this be done.
6. How to define and quantify "part" in "...part of quantified emission limitation and reduction commitments", in Article 12.3 (b) of the Protocol.
7. How to ensure the responsibility and role of governments at each stage of the CDM projects.

8. How will it be ensured that the operational entity of the CDM, as designated by the COP, functions under the authority of the COP, and that its governance is separate from those of existing institutions.
9. How will Article 12.6 of the Protocol be implemented? What will be the criteria and processes for the CDM for arranging due funding.
10. How to ensure the independent auditing and verification of CDM project activities.
11. What will be the criteria for deciding the baseline of projects.
12. When should the benefits of CDM projects accrue to the participating developed country Parties.
13. What will be the action for non-compliance if a CDM project goes against the CDM criteria.
14. How to define: "a share of the proceeds", and how will this share be apportioned for administrative expenses and adaptation.
15. How will the responsibility of a Party be ensured over the private/ public entities authorized by the Party to be involved in CDM projects.
16. How to ensure that CDM projects are equally distributed so as to benefit all developing country parties, in particular the least developed country parties, and that the distribution of projects does not exacerbate existing regional / sub regional imbalances.
17. How will it be ensured that the financing for CDM projects shall be additional to ODA and other international funding, additional to and separate from the financial obligations under GEF and additional to the financial obligation of the Parties as provided in the Convention and the Protocol.
18. How will the additional economic benefits, if any, of a CDM project be shared equitably between the participating Parties.
19. How will the participating Parties report their CDM projects to the COP/mop.
20. What are the implications of Article 12.10 of the Protocol. (200)

Article 17 - Emissions Trading between developed country Parties

1. How will the emission rights and entitlements of developed country Parties be determined and created for trading emissions? Will this be consistent with the principle of equity keeping in view the historical and current responsibility of developed countries to climate change and the ultimate objective of the Convention.
 2. How to ensure that any emissions trading between the developed country Parties shall be supplemental to domestic actions for the purpose of meeting their quantified emission limitation and reduction commitments.
 3. How to ensure that emissions trading between developed country Parties will lead to real and verifiable limitation and reduction of GHG emissions for meeting the objective of the Convention and contributing to the protection of the environment.
 4. What will be the environmental or economic impacts in any area due to emissions trading between developed country Parties.
 5. How to ensure that any emissions trading between developed country Parties fully reflects the principle of equity between developed and developing countries.
 6. How to ensure that emissions trading between developed country Parties shall conform to the principles, modalities, rules and guidelines including any compliance procedure to be defined by the COP.
-

RFF conf. on "Annex I Trade."

303 Delbecq (EU)

EU yesterday agreed on bubble burden sharing
 Bonn disappointment OUTLINE. Prepared to go further on trade. But
 G77 + China brought to halt. Bonn results weaker. Want avoid B.A. disaster

Umbrella group paper helped. EU paper also on trade. well received & supported by
 E. Eu. & Surtz. Pos. reactions from others

- Supplementarity to Council of Min's par. "concrete ceiling on use of flexibility"
- Hot air named precedent if new country claimed hot air.

Maybe no ambitions to make 6 gases visible
 as early as 2008. Perhaps step by step, gas by gas.
 gradually to increase confidence

J. Peisheng U.S. Article 17 says int. trade "supplemental."
 Even if don't agree on rules, trade is allowed.

countries' concerns:

Umbrella COMMITTS	EU	G77
<ul style="list-style-type: none"> - cost mitigation - private sector focus - credibility of system - operatnl. rules 	<ul style="list-style-type: none"> - supplementarity to domestic actions - "hot air" [per se / assigned amts.] - compliance/liability buyer liab 	<ul style="list-style-type: none"> understandg. of process "Rights & entitlements." "Equity" Transfer of obligs to LDCs "Real" reductions.

(10 June; 2 pm)

*Initial list of issues on Mechanisms of the Kyoto Protocol
Group of 77 and China*

The following is an initial list of issues from the Group of 77 & China on "mechanisms". The issues are listed as: (1) General, (2) Article 6 projects, (3) Article 12 - clean development mechanism, (4) Article 17 - emissions trading between developed country Parties. These issues need to be properly addressed to enable progress.

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3. How can it be ensured that these mechanisms lead to real and verifiable limitation and reduction of GHG emissions by developed countries.
4. How to ensure that the COP or COP/moP will maintain the responsibility for every stage of defining, developing, structuring and institutionalizing the mechanisms.
5. What are the specific roles of the SBSTA and the SBI with regard to these mechanisms.
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 4. What will be the environmental or economic impacts in any area due to emissions trading between developed country Parties.
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 6. How to ensure that emissions trading between developed country Parties shall conform to the principles, modalities, rules and guidelines including any compliance procedure to be defined by the COP.
-

Schedule of Events

(NOTE: *Speaker identifications are tentative*):

June 18

At the Governor's House:

8.00-10.00PM: Informal cocktail and buffet dinner

June 19

At Brookings Institution:

7.30-8.15 Breakfast
8.15-8.30 Conference opening and welcome (*Hourcade, Toman*)
8.30-10.00 Session 1 (*Delbeke, Pershing*)
10.00-10.30 Break, coffee
10.30-12.00 Session 2 (*Jones, Tietenberg*)
12.00-1.30 Lunch
1.30-3.00 Session 3 (*Hahn*)
3.00-3.30 Break, refreshments
3.30-5.00 Session 4 (*Hourcade, Toman*)
5.00-5.30 Synthesis of discussions, plans for Saturday continuation

At the Governor's House:

6.30-9.00: Informal cocktail and buffet dinner

June 20

At the Governor's House:

8.30-9.00 Breakfast
9.00-11.30 Continuation of discussions among remaining experts, plenary or breakout groups
(with coffee break in mid-session)
11.30-12.00 Plenary: synthesis of lessons learned, discussion of possible academic initiatives
12.00-1.00 Conference adjournment, lunch

United States, Canada, and other Annex I Nations:

John Drexhage, Canada

Eric Haites, Margaree Consultants Inc. , Canada

Jonathan Pershing, Department of State, USA

Robert Hahn, American Enterprise Institute, USA

Thomas Teitenberg, Colby College, USA

David Wilcox, Department of the Treasury, USA

Ray Squitieri, Department of the Treasury, USA

Abraham Haspel, Department of Energy, USA

Peter Karpoff, Department of Energy, USA

Mark Friedrichs, Department of Energy, USA

Al McGartland, Environmental Protection Agency, USA

Paul Stolpman, Environmental Protection Agency, USA

Mike Shelby, Environmental Protection Agency, USA

David Sandalow, National Security Council, USA

Jeffrey Frankel, Council of Economic Advisors, USA

Toshiro Okada, Ministry of International Trade and Industry, Japan

Toru Miyamoto, Ministry of International Trade and Industry, Japan

Mike Toman, Resources for the Future (RFF), USA

Dick Morgenstern, RFF, USA

Ray Kopp, RFF, USA

Ron Lile, RFF, USA

Suzi Kerr, RFF, USA

Heather Ross, RFF, USA

Phil Haberkern, RFF, USA



Annex I Trading: Understanding Different Views

Participants In the Discussion

Europe :

Jim Skea, Sussex University, United Kingdom

Josef Janssen, Venice University, Italy

Franz Josef Schafhausen, Ministry of the Environment, Germany

Henri Fragman, Cabinet of the Ministry of Environment, France

Michel Mousel, MIES Chairman, France

Jean-Charles Hourcade, Centre International de Recherche sur L'Environnement et le
Developpement (CIRED), France

Thierry Le Pesant, CIRED, France

– Jos Delbeke, DGXI, European Union

Peter Zapfel, DGII, European Union

Tom Jones, Environment Department, OECD

Stefan Schleicher, Council on Climate Change/University of Graz - Economics
Department, Austria

Dennis Tirpak, FCCC



RESOURCES
FOR THE FUTURE

RFF Issue Briefs on Climate Change

Climate issue briefs are short reports produced as part of RFF's Climate Economics and Policy Program to provide topical, timely information and analysis to a broad, nontechnical audience. The preparation of RFF's climate briefs is funded in part by The G. Unger Vetlesen Foundation.

Impacts of Climate Change on Forests

Experts generally agree that increased concentrations of greenhouse gases in the atmosphere will result in changes in the Earth's climate. However, there is much less agreement about how such climate change could affect the world's forests. In their issue brief, RFF's **Roger Sedjo** and Ohio State's **Brent Sohngen** identify potential sources of forest damage from climate change and evaluate the possible socioeconomic consequences. April 1998.

Climate Policy and the Economics of Technical Advance: Drawing on Inventive Activity

As support among policymakers grows for climate change policies that can reduce emissions of greenhouse gases at low cost through the use of advanced technology, RFF's **Raymond Kopp** addresses a number of questions about designing such a policy and assessing its cost-reducing potential. In his issue brief, Kopp discusses the promises and pitfalls of policies that appeal to advanced technology in response to global climate change. January 1998.

The Benefits of Reduced Air Pollutants in the U.S. From Greenhouse Gas Mitigation Policies

A climate change policy to reduce emissions of greenhouse gases may also reap additional, or "ancillary," environmental benefits by reducing emissions of other conventional air pollutants. In their issue brief, RFF's **Dallas Burtraw** and **Michael Toman** investigate how reduced fossil fuel use in the U.S. electric utility industry could also reduce other "criteria" air pollutants by reviewing and evaluating various estimates of ancillary benefits. October 1997.

Designing Markets for International Greenhouse Gas Control

As policymakers increasingly consider emissions trading as a policy option in the U.S. and abroad for combating climate change, Duke University's **Jonathan Wiener** suggests that such a market-based approach to reducing global emissions of greenhouse gases offers great promise for lowering costs, enhancing the spread of cleaner technologies, and broadening participation in an international climate treaty. But emissions trading also faces important economic and political challenges, he says. October 1997.

- more -

1616 P Street, NW
Washington, DC 20036
Tel 202-328-5000
Fax 202-939-3460

All RFF climate issue briefs can be downloaded on the internet at http://www.rff.org/issue_briefs/index.htm.

To order issue briefs in hard-copy, call (202) 328-5000.

The Economics of Technology Diffusion: Implications for Greenhouse Gas Mitigation in Developing Countries

A wide variety of policy options – including eliminating energy subsidies, improving information, and investing in energy infrastructure – are likely to speed the diffusion of climate-friendly technologies (CFTs) in developing countries, according to RFF's **Allen Blackman**. In his issue brief, he reviews the current state of knowledge on the diffusion of new technologies; describes the various policy options that are available to influence the speed of CFT diffusion in developing countries; and offers his own prescriptions for successful technology-based climate change policy. October 1997.

Impacts of Climate Change on Agriculture

While global warming may make the achievement of sustainable agricultural production more difficult, especially in developing countries, a bigger threat may come from more immediate concerns, such as lags in the spending on agricultural research needed for development of new technology, according to RFF's **Pierre Crosson**. In his issue brief, Crosson reviews the various estimates of climate change impacts on agriculture from the 1996 report by the Intergovernmental Panel on Climate Change (IPCC); looks at possible impacts to agriculture in the United States; and discusses related policy issues as they relate to global agricultural development. June 1997.

Water Resources and Climate Change

While climate change may have a wide range of adverse impacts on global water resources, a bigger threat to the future availability and use of water may come from other factors, such as population growth, technology, and economic, social and political conditions, according to RFF's **Kenneth Frederick**. In his issue brief, Frederick reviews the most recent scientific assessment by the Intergovernmental Panel on Climate Change (IPCC); outlines the possible impacts of climate change on water supplies and demands, including its implications for regional uncertainties, sea levels, and carbon dioxide effects. He concludes by discussing possible socioeconomic impacts and related implications for public policy. June 1997.

Revenue Recycling and the Costs of Reducing Carbon Emissions

Climate change policies that seek to reduce emissions of greenhouse gases are likely to aggravate distortions in the economy created by the tax system. However, most of this added cost can be offset if the policy raises revenue for the government and the revenues are then used to cut other taxes, according to RFF's **Ian Parry**. In his issue brief, Parry discusses the "double dividend" hypothesis -- that carbon taxes can reduce carbon emissions and reduce the overall costs of the tax system at the same time. He further explains why he thinks the hypothesis is invalid. June 1997.

Climate Change Risks and Policies: An Overview

In his issue brief, RFF's **Michael Toman** discusses a "decision framework" -- a way of organizing and evaluating information. He outlines key policy lessons and touches on the "U.S. Draft Protocol Framework." Issued by the Clinton Administration in January 1997, the draft protocol embraces a number of policy ideas that, if implemented, could significantly enhance the cost-effectiveness with which any emissions reduction targets are achieved. March 1997.



RESOURCES
FOR THE FUTURE

Recent Articles from RFF's Weathervane

Listed below are feature articles on issues related to climate change that were written by Resources for the Future (RFF) researchers and staff for *Weathervane*, RFF's internet forum dedicated to the discussion and debate of global climate policy. *Weathervane's* URL is <http://www.weathervane.rff.org>.

Estimating the Costs of Kyoto: How Plausible Are the Clinton Administration's Figures?

In light of Dr. Janet Yellen's recent testimony before Congress, RFF's **Raymond Kopp** and **J.W. Anderson** argue that the White House's cost estimates have a respectable analytical base. But they say turning them into economic reality will require satisfactory answers to many outstanding questions, many of which are political. March 12, 1998.

Cheap Emission Reductions: Use 'em or Lose 'em

RFF's **Raymond J. Kopp**, **Richard Morgenstern**, **William Pizer**, and **Michael Toman** argue that early emission banking offers an efficient and straightforward mechanism to encourage immediate domestic reductions in developed countries in order to meet the requirements under the Kyoto Protocol. February 23, 1998

A Post-Kyoto 'Crash Course' in Climate Change Policy

A revised and expanded version of **J.W. Anderson's** report on climate change policy includes a review of the scientific evidence on global warming and an outline of the political history of climate change. It now contains a description of the key issues both resolved and unresolved at the December 1997 UN climate meeting in Kyoto, Japan. This is a recommended "must read" for anyone who needs to get caught up to speed on climate change policy -- where it's been, where it is now, and where it's heading. January 16, 1998.

The Kyoto Protocol: The Realities of Implementation

RFF's **Raymond Kopp**, **Richard Morgenstern** and **Michael Toman** examine the costs and benefits of the Kyoto Protocol while emphasizing the importance of using incentive-based policies to achieve reduced emissions of greenhouse gases in the U.S. January 15, 1998.

The Kyoto Protocol: Unresolved Issues

The climate change agreement reached in Kyoto signals a new level of international attention to limiting "greenhouse gas" emissions. However, according to RFF's **Raymond Kopp**, **Richard Morgenstern** and **Michael Toman**, many important issues remain to be resolved before the U.S. Senate would ratify the agreement. January 8, 1998.

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1616 P Street, NW
Washington, DC 20036
Tel 202-328-5000
Fax 202-939-3460

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An Analysis of Clinton's Proposal for Reducing Greenhouse Gas Emissions

In light of President Clinton's announcement of targets and timetables for the U.S. to reduce its emissions of greenhouse gases, RFF's **Raymond Kopp** and **William Pizer** review the key elements and outline several issues raised by the proposal. October 22, 1997.

The Role of Science in Climate Change Policy

RFF Journalist-in-Residence **J.W. Anderson** reviews the recent range of scientific claims about climate change and discusses how scientists and policymakers diverge in their perceptions of risk and uncertainty. September 9, 1997.

The History of Climate Change as a Political Issue

RFF Journalist-in-Residence **J.W. Anderson** traces the political hot-button origins of climate change back to the International Geophysical Year 1957-58 when scientists showed for the first time that CO2 levels in the atmosphere were rising steadily. Anderson further tracks through the 1970s and 1980s to present day to detail the key events and meetings that have explored the implications of global warming. August 12, 1997.

How Tough Will It Be For the U.S. To Meet a Climate Target By 2010?

In the final part of a three-part series on energy data, RFF's **Raymond Kopp** considers hypothetical policies and examines the different ways in which the U.S. could meet a 2010 stabilization goal. He looks specifically at each of the energy consuming sectors (households, commercial establishments, industrial facilities, transportation and electricity generation) and at a range of possible responses to the policy. September 2, 1997.

Targets and Timetables: Getting Out the Carbon

In the second of a three-part series on energy data, RFF's **Raymond Kopp** explains one set of targets and timetables that has received considerable attention -- a policy that would bind industrialized nations to stabilize their within-country emissions of greenhouse gases, most notably carbon dioxide (CO2), to the level of their own country's 1990 emissions by the year 2010. He discusses what such a policy would mean for U.S. CO2 emissions and energy consumption, and looks at what the U.S. would have to do to abide by such an agreement. August 12, 1997.

How to Interpret Energy Data and Understand Its Role in Policy

In the first part of a three-part series on energy data, RFF's **Raymond Kopp** explains that global climate policy is really global energy policy and strives to foster a better understanding of how climate policy necessitates an understanding of the world's dependence on and use of energy. July 15, 1997.