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PROPOSAL ON CLEANER OR LESS GREENHOUSE GAS-EMITTING ENERGY

**Report on the UNFCCC workshop on cleaner or less greenhouse gas-emitting energy:
exchange of information and views, Whistler, Canada, 7–8 May 2002**

Report by the secretariat

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I. INTRODUCTION

A. Background, mandate and scope of the note

1. At the resumed sixth session of the Conference of the Parties (COP), held in Bonn, Germany, from 16 to 27 July 2001, Parties considered a proposal by Canada on the potential of clean energy to contribute to global environmental benefits.
2. The COP took note of an offer from the Government of Canada to convene an informal meeting on the above-mentioned issue and invited the Government of Canada to report on the outcome of the meeting to the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its fifteenth session (FCCC/CP/2001/5, part two, II. A).
3. At its fifteenth session, held in Marrakesh, Morocco, from 29 October to 6 November 2001, the SBSTA, having heard a report by a representative from the Government of Canada on the outcome of the informal meeting mentioned above (Calgary, Canada, 2-5 October 2001), requested the secretariat to organize a workshop on the subject of cleaner or less greenhouse gas-emitting energy under the guidance of its Chairman, if possible prior to its sixteenth session, and to prepare a report on the workshop. It accepted an offer from the Government of Canada to host this workshop (FCCC/SBSTA/2001/8, para. 51).
4. The SBSTA invited Parties to provide views on the structure and scope of the workshop by 15 February 2002 and requested the secretariat to compile the views received in a miscellaneous document. Document FCCC/SBSTA/2002/MISC.3, containing nine such views, was prepared and made available by the secretariat on its web site on 6 March 2002.
5. This report provides information on the workshop organized by the secretariat in response to the mandate mentioned above. Since not all Parties that had submitted views on the structure and scope of the workshop were able to participate in it, the report should be read in conjunction with document FCCC/SBSTA/2002/MISC.3.
6. The UNFCCC workshop on cleaner or less greenhouse gas-emitting energy: exchange of information and views, was organized by the secretariat in Whistler, Canada, from 7 to 8 May 2002, with financial support provided by the Government of Canada.
7. Thirty-two representatives from Parties attended the workshop, including 17 from Parties included in Annex I to the Convention and 15 from Parties not included in Annex I to the Convention. In addition, 11 representatives of non-governmental organizations attended the workshop. A copy of the agenda is contained in the annex to this report.
8. The workshop was chaired by Mr. Harald Dovland (Norway), on behalf of the Chairman of the SBSTA, Mr. Halldor Thorgeirsson.
9. A synthesis of the main issues considered by the workshop is provided in section B below. Following consultations with the Chairman of the SBSTA and the Chairman of the workshop, in order to enhance the information available to Parties and observers, the workshop proceedings in chapter II of the report were prepared in a narrative style. They include summaries of presentations by nine invited resource persons, of statements by ten members of a panel convened by the Chairman of the workshop in its session four and of two additional presentations by the representative of Canada and one by the representative of Belgium. This report, the presentations mentioned and other material distributed at the workshop are available on the UNFCCC secretariat web site at the following address:
<http://unfccc.int/sessions/workshop/070502/index.html>.

B. Summary

10. A range of issues related to cleaner or less greenhouse gas-emitting energy was considered during the workshop. Among the key points addressed was the role which a strategy and policies, such as the combination of significant domestic action with the mechanisms under the Kyoto Protocol, could play in bringing about an energy mix resulting in reduced global emissions and in fostering sustainable development; and the potential benefits accruing from international trade in energy which would cause emissions to be lower than in the absence of such trade. In this context, the representative of Canada presented a proposal requesting credits amounting to 350 million tonnes (Mt) of carbon dioxide equivalent (CO₂-e) until 2012, i.e. 70 Mt CO₂-e for each year of the first commitment period, for global environmental benefits achieved as a result of its exports of natural gas and hydroelectricity to the United States of America. In addressing issues related to this proposal, participants pointed to implications regarding the assessment of baselines and accounting principles under the Convention and the Kyoto Protocol, in particular of relevant trades – both in energy and non-energy goods – undertaken by Parties to the Kyoto Protocol with Parties or countries outside the Kyoto Protocol. As a basis for further analysis and consideration of the implications of international trade resulting in lower emissions, data would need to be available on relevant trade flows and related factors. Appropriate mandates and adequate resources would need to be available for conducting further research on these issues. The representative of Canada announced that the proposal by Canada would be brought up at the sixteenth sessions of the subsidiary bodies with a view to its consideration by the eighth session of the COP.

C. Possible action by the SBSTA

11. The SBSTA may wish to consider the information in this report as an input to its further deliberations on this agenda item.

II. PROCEEDINGS

12. In his opening remarks, the Chairman of the workshop welcomed the participants. He stated that the objective of the workshop was to provide an opportunity to exchange information and views on the subject of cleaner or less greenhouse gas-emitting energy in order to raise awareness on this issue and further the understanding of any implications that it may have for the intergovernmental process in the context of the Convention, the Kyoto Protocol and the Marrakesh Accords. He referred to a note to the workshop participants by the Chairman of the SBSTA which underlined the non-negotiating nature of the workshop, its being held at expert level, and the fact that it was not expected to make recommendations for consideration by the SBSTA.

13. Mr. Tahar Hadj-Sadok, Deputy Executive Secretary of the secretariat, welcomed participants in the workshop on behalf of the Executive Secretary, Ms. Joke Waller-Hunter, and expressed the wish that the workshop would be an opportunity for a fruitful exchange of views on the issue. He called attention to the fact that one designated participant had encountered problems in obtaining a visa to enter Canada. The Government of Canada had expressed its regret for these difficulties and assured that steps would be taken to avoid the recurrence of such complications in the future. Other designated participants had been unable to attend as their travel arrangements could not be completed in time.

14. The workshop was divided into four sessions. Session one analysed the characteristics of international trade in cleaner or less greenhouse gas-emitting energy, the characteristics of the Parties engaged in such trade, and the potential economic and global environmental benefits accruing from it. Topics identified in this session included the role of technological progress in shaping long-term sustainable development scenarios, the implications of international trade in energy for greenhouse gas emissions, and the global environmental benefit that could accrue from international trade in cleaner or less greenhouse gas-emitting energy.

15. Introductory presentations were made by Mr. Leo Schrattenholzer from the International Institute for Applied Systems Analysis (IIASA) and Ms. Martina Bosi from the International Energy Agency (IEA). Mr. Schrattenholzer presented selected results of long-term sustainable development scenarios developed at IIASA. His presentation illustrated how technological progress in three areas – primary energy extraction, energy conservation and end-use efficiency – can impact the sustainability of the “global energy-economy-environment system.”¹ Mr. Schrattenholzer’s main conclusion was that synthetic fuels generated with renewable energy and suitable for utilization in fuel cells, in particular hydrogen, could significantly contribute to a sustainable development scenario.

16. Ms. Bosi presented preliminary insights from an ongoing statistical and trend analysis by the IEA on the implications of international trade in energy for greenhouse gas emissions. One of the key findings of the analysis, which focuses on IEA member countries, was that “international energy trade by IEA countries leads (in 1999) to production-related emissions associated with total IEA energy imports (originating from both IEA and non-IEA countries) greater than the production-related emissions associated with total IEA energy exports (destined to both IEA and non-IEA countries).” Significant variations existed, however, between individual IEA countries: while most such countries were net importers of energy, five of them (Australia, Canada, Denmark, Norway and the United Kingdom of Great Britain and Northern Ireland) were net exporters of energy. For these countries, the “production-related emissions associated with their export of energy are higher than the production-related emissions associated with their import of energy.” The analysis also revealed differences in the relative weight of countries’ net emissions imports (associated with energy trade) compared to their total emissions. It was noted that “preliminary findings of the IEA analysis need to take into consideration that energy is only one of many products traded internationally that have implications for greenhouse gas emissions.”

17. During this first session, a presentation entitled “Global Environmental Benefits” was delivered by the representative of Canada, Ms. Sue Kirby, who drew attention to the rapidly increasing volume of global energy trade, the augmented reliance on import of energy by IEA countries and the reduction in emissions in these countries associated with such energy imports. Fifty percent of the natural gas produced in Canada was exported to the United States, which pointed to the highly integrated nature of the economies of Canada and the United States. The growth in the export of natural gas from Canada was projected to nearly quadruple in the period 1990–2010. She stated that “Canada’s cleaner energy exports create a global environmental benefit” which would “occur when an activity causes global emissions to be lower than they otherwise would be.” The global environmental benefit would be “equal to what global emissions (outside Canada) would be in the absence of Canadian cleaner energy exports, minus emissions in Canada associated with those exports.” In the absence of such energy exports, there would be a “new US energy market equilibrium characterized by higher coal-based electricity generation, higher natural gas production, higher liquid natural gas imports, higher coal consumption, higher oil consumption, and lower consumption of natural gas.”

18. Session two addressed the potential consequences of the entry into force of the Kyoto Protocol and its project-based mechanisms on the uptake of and international trade in cleaner or less greenhouse gas-emitting energy, and the legal, political and other implications of the trade in such energy and in environmentally sound products. Topics discussed in this session included (a) the growth of new industries spurred by greenhouse gas emission reduction policies, (b) how investment in clean energy in developing countries could create a global environmental benefit, (c) changes in energy trade patterns that may result from the entry into force of the Kyoto Protocol, (d) the potential role of renewable energy and energy efficiency in reducing air emissions in North America, and (e) the displacement of greenhouse gas emissions in the United States that would result from the export of hydroelectric energy by Canada.

¹ Citations from speakers are reported in quotation marks.

19. Introductory presentations were made by five speakers: Mr. Michael Grubb from the Imperial College and the Carbon Trust; Mr. Nadir Guerer from the secretariat of the Organization of the Petroleum Exporting Countries; Ms. Meeta Mehra from the Tata Energy Research Institute; Mr. Zachary Patterson from the North American Commission for Environmental Cooperation; and Mr. Ed Wojczynski from Manitoba Hydro.
20. Mr. Grubb argued that the impact of the entry into force of the Kyoto Protocol on the prices of oil and gas would be small and made considerably smaller still by the non-participation of the United States in the Kyoto Protocol. He noted that many countries had already taken steps that could adequately protect the competitiveness of energy-intensive industries operating on an international scale. The potential for technological development and the growth of new industries associated with greenhouse gas emission reduction policies was highlighted. In conclusion, while the development of new industries involved financial expenditures, the scope for technological improvement was such that these expenditures could be considered as “investment with potential benefits to follow for those undertaking leading action to limit greenhouse gas emissions, including through international trade in such technologies.”
21. Mr. Guerer noted that the Third Assessment Report of the Intergovernmental Panel on Climate Change and other studies “universally confirm that oil exporting countries will be affected negatively once the Kyoto Protocol is implemented”, even in the presence of global emissions trading. He remarked that “clean energy includes all types that would result in lower greenhouse gas emissions, for example, conventional oil and gas,” which emit proportionally lower amounts of greenhouse gases “than coal and non-conventional oil (on a full-cycle basis).” The most effective way to achieve a global environmental benefit while meeting the commitments of Annex I Parties in accordance with Articles 4.8 and 4.9 of the UNFCCC and 2.3 and 3.14 of the Kyoto Protocol was “to increase investments in clean energy, including oil, in developing countries.” “In that respect, oil producing countries should be supported through diversification of their economies, increase the global use of advanced fossil fuel technology and gas exports through more investments and technology transfer from the industrialized countries.” The clean development mechanism was mentioned as one of the vehicles for such investments and transfer.
22. Ms. Mehra highlighted the potential conflict between the provisions of multilateral environmental agreements, such as the UNFCCC and the Kyoto Protocol, and the rules and principles of the multilateral trading system established by the World Trade Organization (WTO). She considered it important to prevent the possibility of disputes through the enhanced coordination of policy packages at the international level. She drew attention to the “likely changes in energy trade patterns following the implementation of measures within the Protocol” and to the importance of assessing the “regional distribution of costs and benefits, especially with a view to either prevent undue costs on developing countries or develop mechanisms to compensate them if they happen to incur losses.”
23. Mr. Patterson noted that the electricity sector is already a large contributor to air emissions in North America. Results from a study by the North American Commission for Environmental Cooperation showed that the electricity generating capacity which may be added by 2007 would further increase the contribution of the electricity sector to air emissions. He remarked how electricity from renewable sources and energy efficiency measures “could play an important role in reducing the air emissions of the electricity sector.”
24. Mr. Wojczynski stressed the lower environmental impact of hydroelectric energy generated in Canada compared to other sources of electricity, such as coal, oil and natural gas, particularly when modern plant designs are utilized and societal values appropriately considered. He argued that “Canadian hydropower is the basis of significant net electricity exports to the United States which result in displacement of United States greenhouse gas emissions of 24 million tonnes of carbon dioxide in 2010 compared to 1990.” If there were “no market price signal to recognize the global environmental

benefits, little of Canada's hydropower potential to reduce global greenhouse gas emissions would be realized and there would be a perverse outcome of Kyoto to increase greenhouse gases in relation to Canada-US electricity trade."

25. Session three discussed the role of the domestic implementation of the Kyoto Protocol in promoting cleaner or less greenhouse gas-emitting energy as well as the different methods of producing such energy. Topics identified in this session included the potential reduction in greenhouse gas emissions in the United States resulting from exports of natural gas by Canada; the experience of Denmark in the area of less greenhouse-emitting energy; the policy pursued by the European Union in the renewable energy and energy efficiency sectors; and a proposal by Canada on next steps regarding the issue of cleaner or less greenhouse-emitting energy.

26. Presentations were made by Mr. Rick Hyndman from the Canadian Association of Petroleum Producers and the University of Alberta and Ms. Lene Nielsen from the Danish Energy Authority. Mr. Hyndman highlighted the integrated nature of the Canada-United States natural gas market in which the Canadian natural gas industry operates. He stated that "Canadian exports of natural gas provide a global environmental benefit by displacing higher greenhouse gas-emitting coal and oil use in the US." Given the withdrawal of the United States from the Kyoto Protocol and the unlikeness of the market "to reflect the value of those greenhouse gas benefits in prices or other incentives, Canadian natural gas exports will not receive the value of the global environmental benefit that they deliver."

27. Ms. Nielsen outlined the many activities undertaken by Denmark in the area of less greenhouse gas-emitting energy. These included demand as well as supply side measures, the use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, and other policies and measures coordinated at the regional and international levels. She remarked that an increasing number of elements needed to be taken into account at the domestic policy planning stage, including an increasingly liberalized energy market as well as various commitments assumed at the international level. This pointed to the need for appropriate planning tools for identifying the best mix of policies.

28. Two presentations, by Mr. Geert Palmers, from Belgium, and Ms. Sue Kirby were also made during session three. Mr. Palmers presented a review of the European Union renewable energy policy, showing how this policy had gradually evolved from focusing on research and development, through pursuing demonstration programmes, to implementation. He stated that a "European Union directive adopted in 2001 sets a target whereby 22.1 percent of the Union's gross domestic consumption of electricity in 2010 is to be met from green electricity", while "existing and planned measures on green electricity, biofuels and the heating sectors are expected to lead to reductions in emissions of greenhouse gases of 126 Mt CO₂-e (at a cost of <20 euros/ton/ CO₂-e)." This "represents a significant contribution towards meeting Kyoto targets given the recent estimates by the European Environment Agency that emission reductions necessary to reach the Union's minus 8 percent Kyoto target amount to 336 Mt CO₂-e." He noted that the renewable energy policy pursued by the European Union had already led to substantial cost reductions in the wind energy sector and that such reductions were expected to continue at least until 2030. "Loosing the integrity of the Kyoto Protocol" he stated, "will put at risk the stable investment environment needed to implement energy efficiency and renewable energy." In conclusion, he said that "safeguarding the integrity of the Kyoto Protocol and broadening rapidly the world market for renewable energy technologies are essential elements of the efforts by Parties to implement their climate policy objectives."

29. Ms. Kirby presented the perspective of Canada on next steps regarding the issue of cleaner or less greenhouse gas-emitting energy. After outlining Canada's actions to reduce domestic greenhouse gas emissions, Ms. Kirby stated that ratification of the Kyoto Protocol is a goal of Canada provided that two preconditions are met: first, "a workable plan to meet commitments" and second "full domestic consultations." She further stated that obtaining "credit for cleaner energy exports is a priority issue and

a critical factor in Canada's ratification decision." An estimate of Canada's global environmental benefit resulting from such exports was presented. Participants were informed that, at the sixteenth session of the SBSTA, Canada would present a draft decision for consideration by COP 8, requesting an accommodation for the first commitment period only to provide it with credits equivalent to the global environmental benefit created by its cleaner energy exports. These credits amounted to 350 Mt CO₂-e for the first commitment period, i.e. 70 Mt CO₂-e per year on average.

30. In session four, participants in a panel convened by the Chairman of the workshop addressed questions concerning the promotion of cleaner or less greenhouse-emitting energy and further work that might be conducted in this area. Topics identified in this session were (a) how to promote the use of cleaner energy in developing countries, including through barrier removal and the transfer of technology on affordable and concessional terms, and the role of the SBSTA in advancing these issues, (b) how the issue of cleaner energy might fit into the framework of the Kyoto Protocol, (c) how clean energy might be properly defined, (d) whether the export of goods other than energy may also lead to global environmental benefits, (e) international and domestic scenarios for optimizing the uptake of cleaner or less greenhouse gas-emitting energy, (f) modalities and procedures for further work by the SBSTA, (g) the impact of the proposal by Canada on the entry into force and implementation of the Kyoto Protocol as well as for the development of an international market for greenhouse gas emission reductions, (h) and the role of the mechanisms under Articles 6 and 12 of the Kyoto Protocol in facilitating the achievement of commitments by Parties.

31. The panel consisted of six representatives from Parties, namely Mr. Abdulmuhsen Bin Abdullah Al-Sunaid, Saudi Arabia; Ms. Evelyn Bravo Diaz, Venezuela; Mr. Terry Carrington, United Kingdom; Ms. Sue Kirby; Mr. Andrej Kranjc, Slovenia; and Mr. Hongwei Yang, People's Republic of China; and two representatives of non-governmental organizations, Mr. David Hawkins from the Natural Resources Defence Council/Climate Centre and Mr. Andrei Marcu from the International Emissions Trading Association (IETA). Mr. Michael Grubb and Mr. Nadir Guerer also took part in the panel.

32. The members of the panel were asked to address the following two questions:

(a) What do you consider to be the key issue when addressing/promoting cleaner or less-greenhouse gas-emitting energy?

(b) On which issues should further work be conducted (topics, time frame and context)?

33. In response to these questions, Mr. Al-Sunaid stated that promoting cleaner energy is a domestic issue for developed countries and that the issue of receiving credits for trade in cleaner or less greenhouse gas-emitting energy is not provided for under the Kyoto Protocol or the UNFCCC. Key issues for developing countries in promoting cleaner energy are the availability of adequate financial resources, the transfer of state-of-the-art clean energy technologies on affordable and concessional terms, and the removal of barriers to exports from developing countries to the countries included in Annex I. He remarked that addressing such issues effectively would contribute to the sustainable development of developing countries, improve their economic growth and result in the availability of capital to promote cleaner and more efficient energy and technologies. The advancement of the issues mentioned above, especially barrier removal, should be a permanent agenda item in all future sessions of the subsidiary bodies.

34. Ms. Bravo Diaz stated that any discussion on the issues addressed by the workshop should not be confined to trade in cleaner energy but include its production, transport and use as well. The latter questions were directly related to the implementation of the UNFCCC and the Kyoto Protocol through domestic policies and measures, while the former was only tangentially linked to such implementation. She drew attention to the potential conflict between the issue of trade in cleaner or less greenhouse gas-

emitting energy and provisions emanating from the WTO and other international economic integration agreements. A central issue to be addressed was the development by and transfer of cleaner, more environmentally friendly technologies to developing countries, in particular advanced technologies for the use of fossil fuels, which would continue to play an important role in the global energy balance in the future. The SBSTA should organize workshops and other activities to remove barriers to the development and transfer of cleaner technologies thereby promoting their accessibility to developing countries. Addressing these issues was part of the commitments made but and not yet realized by the Parties included in Annex I.

35. Mr. Carrington stated that the key question was how the issue of cleaner energy would fit into the framework of the Kyoto Protocol and the Marrakesh Accords and how it related to the current and historic greenhouse gas emissions trends of a Party as well as its domestic programmes to meet commitments. He noted that the proposal by Canada would go against the agreed methodologies for calculating emissions, which exclude the recognition of emission avoidance in non-Parties. When considering the issue of cleaner or less greenhouse gas-emitting energy, the following factors should be taken into account: (a) the lower price of carbon resulting from the withdrawal of a Party from the Kyoto Protocol, (b) the fact that this issue would apply not just to one Party but to other Parties as well, and (c) the role of the mechanisms under Articles 6 and 12 of the Kyoto Protocol in helping Parties to achieve their commitments. As regards time frames, the discussion on the issues raised in the workshop would need to take place in the context of the discussion concerning the establishment of commitments for the period subsequent to 2008-2012, while further work in the shorter term would relate to the mechanisms under the Kyoto Protocol. According to Mr. Carrington, the quantification of the global environmental benefit was a complex undertaking which would require the establishment of credible counterfactual scenarios. Appropriate consideration would need to be given to the export of other goods, in addition to energy, which would result in lower emissions. He suggested that technical discussions be held at future sessions of the SBSTA.

36. Ms. Kirby called attention to the global environmental benefits that are created by cleaner or less greenhouse gas-emitting energy; to the need, over the long term, to achieve the objective of the UNFCCC for Parties to make the transition to a less greenhouse gas-emitting global economy; and, to the optimization of the uptake of cleaner or less greenhouse gas-emitting energy required to facilitate such transition. She noted how the optimal uptake of cleaner or less greenhouse gas-emitting energy depended not only on domestic reduction strategies but also on international trade and that such trade was due to increase over the next years as the global economy becomes more integrated. The key issue to be addressed was the optimization of the uptake of cleaner or less greenhouse gas-emitting energy from all sources in the first and future commitment periods. She remarked how, as in any discussion involving a counterfactual case, not just one, but many scenarios would be possible and that the scenario presented by Canada was reasonable and underpinned by conservative assumptions. The sixteenth session of the SBSTA should hold a detailed discussion on this scenario as well as on the displacement factor that would result from it. Other elements to be discussed should include the scale and verifiability of global environmental benefits created by cleaner energy exports; the characteristics of the Parties involved in such exports; and the consistency with the Bonn Agreements and the Marrakesh Accords of provisions concerning both the monitoring, reporting and review of greenhouse gas emissions and the issuance of assigned amount related to global environmental benefits.

37. Mr. Kranjc noted that the prevailing opinion of the participants in the workshop was to avoid the re-opening of negotiations on the Kyoto Protocol. Future discussions would benefit from additional explanations by Canada on its proposal and would need to address the balance between granting incentives for exports in cleaner energy and preventing any related increase in emissions. Key issues to be addressed would be (a) reaching an agreement that exporting cleaner or less greenhouse gas-emitting energy to a non-Party really translates into a global environmental benefit, (b) how to avoid a potentially

overwhelming amount of requests for credits for the export of cleaner goods from other countries in addition to Canada, and (c) how to ensure that crediting a Party for performing a global environmental benefit does not translate into a growth of emissions for another country. As far as future work was concerned, he advocated coming to an agreement regarding a process of negotiation, to begin at the sixteenth session of the SBSTA or the eighth session of the COP, similar to the one that had taken place on the issue of the impact of single projects on emissions in the commitment period.

38. In Mr. Yang's opinion, key issues to consider were modalities for strengthening the transfer of technologies from developed countries to developing countries and the enhancement of access by the latter to cleaner energy. He argued that promoting the use of cleaner energy was an issue of concern to all Parties rather than just one and that further work should focus on how to promote the use of cleaner or less greenhouse gas-emitting energy through actions taken domestically that can help a Party to fulfil its commitments. All methodological issues concerning cleaner energy should not go beyond the framework of the Kyoto Protocol.

39. Mr. Hawkins stressed that a key issue to bear in mind in considering the proposal by Canada was its impact on the evolution of commitments by Parties under the UNFCCC. From this viewpoint, the proposal by Canada was not helpful for at least two reasons: first, it did not promote the use of innovative technologies since both gas and hydro are not innovative technologies; and, second, it was likely to signal to the international community that climate change is not an issue in need of serious attention. The likely impact of granting annual credits amounting to 70 Mt CO₂-e would be to reduce Canada's mitigation actions by 70 Mt CO₂-e. Another negative effect of the proposal put forward by Canada was its tendency to make Canada less concerned about the need to re-engage the United States in the Kyoto Protocol.

40. Mr. Marcu highlighted the role of markets in providing accurate signals for the price of carbon which would be essential in determining the optimal uptake of cleaner or less greenhouse gas-emitting energy, both for domestic use and for export. He conveyed the concern of members of IETA that multiple fragmented greenhouse gas markets and regimes could emerge as the result of a lack of coordination in the international policy approach to the challenge of climate change. Key issues to be addressed included the impact that any decision on the matters discussed at the workshop might have on the price of carbon as well as on the development of a truly global market for greenhouse gas emission reductions acceptable to the largest possible number of governments and companies. These matters deserved further analysis, and substantive discussions would need to take place at the sixteenth session of the SBSTA and the eighth session of the COP. Non-governmental organizations such as that represented by Mr. Marcu, could offer valid contributions to these analyses and discussions.

41. Mr. Grubb stated that pursuing the implementation and further development of key Kyoto Protocol provisions would lead to the optimal uptake of cleaner or less greenhouse gas-emitting energy. This would include implementing appropriate domestic policies and measures to meet a Party's quantified emission limitation and reduction commitments as well as taking advantage of the opportunities offered by the mechanisms under Articles 6 and 12 of the Kyoto Protocol. The impact of energy trade on emissions was linked to the production and transport of energy in exporting countries and the emission savings associated with its consumption in importing countries. He remarked that the issues raised by the representative of Canada arise when the importing country is not a Party to the Protocol and the exporting country is a Party included in its Annex B. In considering modalities to address such cases, it would be useful to (a) avoid fundamental changes in the methodologies agreed by Parties to estimate emissions of greenhouse gases and prepare national inventories under the Protocol, (b) define clearly the system boundaries in order to prevent spillovers, (c) avoid creating possible perverse incentives that would cause non-Parties to remain such, and (d) devise modalities that would apply to all Parties rather than just one.

42. Mr. Guerer called attention to the need for a balanced and comprehensive definition of clean energy. Among the different promising technology options existing today, those related to fossil fuels, such as gasification, could be further developed and implemented in ways that could help all Parties to achieve the objective of the UNFCCC. As regards natural gas, this source of energy has the fastest growth rate of all sources composing the global energy mix. He noted that considerable financial assistance would be required of the Parties included in Annex II in order to help gas-producing countries to further develop this resource. This would result not only in a global environmental benefit but would also help these countries in diversifying their economies. The clean development mechanism would have a role to play in mobilizing assistance and promoting transfer of technology.

43. In his closing remarks, the Chairman of the workshop emphasized the wide range of views expressed by the designated participants, the speakers who addressed the workshop and the members of the panel. The workshop had been successful in enhancing the information available to Parties and other UNFCCC stakeholders on the issue of cleaner or less greenhouse gas-emitting energy. He confirmed that a report on the workshop was to be made available at the sixteenth session of the SBSTA and pointed out the need for this report to be factual and descriptive in format. He thanked the Government of Canada for its financial support and hospitality and then declared the workshop closed.

Annex**AGENDA****Day 1: Tuesday, 7 May 2002**

Welcome by the Chairman of the workshop and the Deputy Executive Secretary of the UNFCCC secretariat

SESSION 1

Exchange of information and views on the characteristics of cleaner or less greenhouse gas-emitting international energy trade; the characteristics of Parties that trade in cleaner or less greenhouse gas-emitting energy; and the potential economic and global environmental benefits accruing from international trade in cleaner or less greenhouse gas-emitting energy.

1. Introductory presentations

- Mr. Leo Schrattenholzer, International Institute for Applied Systems Analysis
- Ms. Martina Bosi, International Energy Agency

2. Exchange of information and views

SESSION 2

Exchange of information and views on the potential consequences of the entry into force of the Kyoto Protocol and its project-based mechanisms on the uptake of cleaner or less greenhouse gas-emitting energy, as well as on international trade in cleaner or less greenhouse gas-emitting energy; and the potential legal, political and other implications of international trade in cleaner or less greenhouse gas-emitting energy and in environmentally sound products.

1. Introductory presentations

- Mr. Michael Grubb, Imperial College and the Carbon Trust
- Mr. Nadir Guerer, Organization of the Petroleum Exporting Countries – Secretariat
- Ms. Meeta Mehra, Tata Energy Research Institute
- Mr. Zachary Patterson, North-American Commission for Environmental Cooperation
- Mr. Ed Wojczynski, Manitoba Hydro

2. Exchange of information and views

Day 2: Wednesday, 8 May 2002**SESSION 3**

Exchange of information and views on the promotion of cleaner or less greenhouse gas-emitting energy in the context of domestic implementation of the Kyoto Protocol through, inter alia, the implementation of policies and measures, including experiences to

promote the uptake of cleaner energy; and the actual and potential future role of different methods to produce cleaner energy.

1. Introductory presentations

- Mr. Rick Hyndman, Canadian Association of Petroleum Producers and University of Alberta
- Ms. Lene Nielsen, Danish Energy Authority

2. Exchange of information and views

SESSION 4

Panel discussion aimed at, inter alia, identifying key issues from the previous sessions and providing inputs for the preparation of a report to the SBSTA.

1. Panel discussion moderated by the Chairman of the workshop

2. Exchange of views

3. Summary and closure by the Chairman of the workshop
