



**FULL REPORT OF THE JOINT UNIDO-MRI FORUM**  
**HELD IN TOKYO, JUNE 24 & 25, 2002**

1. The UNIDO/MRI Forum on the Clean Development Mechanism (CDM) and the Kyoto Protocol: Opportunities for Japan in Asia opened on Monday morning, 24 June. The event was opened by UNIDO director-general Dr. Carlos Magariños who welcomed participants, underlining that the answer to make people far more productive during the industrial revolution a quarter of a millennium ago has changed to the opposite situation today of a nature that is scarce and requires “the capacity to deliver enough where there is too little.”
2. Atsushi Oi, Deputy Director-General for Environmental Affairs, Japanese Ministry of Economy, Trade and Industry, in a congratulatory address, highlighted his country’s decision to ratify the Kyoto Protocol filed with the UN general. Because “attaining a 6-percent of Greenhouse Gas (GHG) emissions reduction is not an easy exercise for Japan,” it requires CDM and transfer of technology to developing nations. Impressed by the level of industry interest, his agency has produced a guidebook. He said, “The move is on internationally to implement CDM.” He looked forward to this forum as a “valuable opportunity to hear the views of the experts with deep experience behind them from Japan and from overseas.”
3. Seiji Morimoto, Deputy Director-General of the Multilateral Cooperation Department, Ministry of Foreign Affairs, in a congratulatory address, noted the great efforts and progress of the international community still has challenges for development. “Based on our own experience of having overcome pollution,” he said that Japan aims for active entry into the Kyoto Protocol. He drew attention to the effort for common rules that include the US; the fact that CDM entities are not limited to governments; and the hope of using Official Development Assistance (ODA) as well as CDM.
4. Mr. Sozaburo Okamatsu, Chairman, Research Institute of Economy, Trade and Industry and Vice-chair, CDM Executive Board, in a special address, highlighted the CDM registry planned to come into place early next year. “This issue looks complex, but we must have precise mechanisms in place,” he said, hoping that participants visit the web site of the CDM executive board and give input. As co-member of the 20-member diverse board, he noted that CDM is based on international equity rule in a highly transparent operation broadcast on the Web. Goals include baseline guidelines, especially because a stage failure in June to decide on small-scale CDM projects.

SESSION ONE: INTRODUCTION SESSION

5. Xuedu Lu discussed the CDM scheme from the point of view of the CDM Executive Board: future perspectives and subjects under discussion. Neil Cohn talked about the current pre-Kyoto markets and the attributes necessary for developing programs to

have environmental integrity so that the fragmented systems can be harmonized as the market matures.

6. Xuedu Lu, CDM Executive Board member, China, provided an overview of the history of climate change issues, introduced key elements of CDM, and outlined CDM actions in China.
7. After the 1990 conclusion by scientists that accumulation of greenhouse gasses in the atmosphere would result in disaster, he said the United Nations initiated negotiation for a framework to protect the environment. In 1992 UNFCCC signed the Rio Earth Summit; in 1994 the United Nations Framework Convention on Climate Change (UNFCCC) entered into force; parties committed themselves to recover their emission reduction in 2000 at the emission level of 1990, a target that has not been met by most Annex I countries. He described the 1997 UNFCCC Kyoto Protocol as the result of a heated two-year negotiation to target developed countries (A1) by an average of 5.2 percent reduction on the basis of the 1990 emission level, noting that the needed actions are domestic and international: within Annex I (limitation under Art 6 and emission trading under Art 17) and Annex I with developing countries (CDM under Art 12). A package of decisions in 2001 called The Marrakech Accords set forth “most of the difficult issues” of the Kyoto Protocol (KP) such as modalities and procedures for afforestation and reforestation (COP-9) and simplified procedures for small scale projects (COP-8).
8. On objectives for CDM, Lu mentioned assisting Non-Annex I Parties achieve sustainable development and allowing AI Parties to use certified emission reductions (CER) to meet their KP commitments. He said CDM allows Annex I countries to invest technology and financial resources in other countries, and thereby get emission reductions. He warned that remaining CDM issues financing, methodology approved by the Executive Board, project design document, small-scale project, project cycle, CDM project activity cycle, and the question of who should do what.
9. Regarding the establishment of policies and institutions for CDM actions in China, Lu of the Department of Rural and Social Development Ministry of Science and Technology of China, said final approval by the central government is awaited of a plan for an inter-ministerial committee as a decision body with a management office for daily work of CDM implementation. He cited current foreign partners CDM study projects: the World Bank, Swiss-Germany-Italy government, Canadian and Netherlands climate change projects, New Energy and Industrial Technology Development Organization (NEDO) and the United Nations Foundation (UNF) CDM study projects. He said, “We can only prepare,” because of barriers to implementation: An institution is not yet in place; many countries including China have not yet designated a national authority; the need for awareness of climate change and CDM to increase; perpetual problems of financing; the need for academic institutions to help entities; the need for sites beyond capital cities.
10. Neil Cohn, the Director of an energy broker Natsource, spoke about CDM’s role in the existing and future international GHG markets. Cohn of the International Emissions Trading Association (IETA), an accredited NGO with the UNFCCC to establish effective systems for global trade in greenhouse gas (GHG) emissions, addressed the problem of the lack of a coherent international policy framework, which would avoid

“systems to be created that are not in unison, and that will be difficult to eventually harmonize.” Striving “to create liquidity,” his organization seeks to promote principles that will develop compatible diverse trading schemes with principles common to any market as well as special attention to the transition period prior to 2008.

11. About the educational value of the pre-compliance market in GHG, he said, “The cost of doing business has prepared the companies for the coming market.” He said low value trades of US\$1 to \$3 take place before any real certainty in US, Canada, Japan, Australia, NZ and Europe with high transaction costs. Cohn referred to a Natsource study showing a low estimate of approximately 70 open transactions.
12. For buyers, he said motives for early trades include risk hedging and a green public image. Sellers, he said, look to take what they’ve put into an asset and create additional environmental projects.
13. About pre-compliance GHG demand, he said trading is already done in Verified Emissions Reductions (VERs) although pricing is difficult because each trade is unique. Describing CDM’s role in pre-Kyoto compliance markets, he said the EU program in place by 2005 would be out of synch with the UK program, while the Danish program does not accept CDM projects at all.
14. About whether CDM can survive the US Kyoto pullout, he said the patchwork of state and local GHG programs will construct US non-Kyoto project demand.
15. About market harmonization prior to 2008 and after, he specified the potential for political solutions with common instruments and market solutions in which the instruments can be exchanged for only the market value in their own system.
16. He predicted that as systems are linked, weaker systems would suffer. Among GHG market challenges, he included price distortions during the three years until a standard liquid carbon market is developed.
17. About the time to commoditization, he said that evidence of GHG trading expansion could be seen in millions of tons of transactions with no press release. “The market is looking to do more purchases for volume,” he said. “Before Marrakech, they were doing mostly options for education.” He said companies are using CDM as the first bankable Kyoto instrument.
18. **DISCUSSION:** In the ensuing discussion, a participant from the Tokyo Stock Exchange asked for assurance of market liquidity. In response, Cohn highlighted the need for clarification of the policy level to allow companies not to fear taking actions and trading prior to final rules being set. He cited the UK system: “We get liquidity as soon as we have certainty.”
19. In response to a question about CDM projects in China, Lu said that energy renewal and energy efficiency improvement projects would be top priority, not sink projects. On the Prototype Carbon Fund (PCF) projects of the World Bank, Lu said that projects have been submitted but not through the government of China that has not decided on whether to accept PCF projects.

## KEYNOTE SPEECH KYOTO TARGET AND BEYOND

20. Yoichi Kaya, Director-General of the Research Institute of Innovative Technology for the Earth, presented the Japanese view on how to respond to the Kyoto targets and the expected role of CDM. He focused on the difficulty of the Kyoto targets for Japan and on the necessity for a wide global response to GHG and CO<sub>2</sub>, where CDM will be an indispensable tool in responding to global warming. He highlighted that cooperation by developing countries becoming more important after 2010.
21. For Japan to respond to the Kyoto targets, he said the government outlined possible measures. About a framework modified after COP-3, he observed the central measure is in the energy sector, which increased emission by about 10 percent since 1990.
22. He spoke of the need for innovative research and development called for by the government. Public efforts in daily life to adjust heating and encourage family time in a common room are ethically desirable, but Kaya said people would not comply based simply on the government recommendation. About forest absorption to reduce GHG emission, he said that Japan considers costly improvement of existing forests. About energy conservation, Kaya pointed out the need for incentives for vendors to improve insulation where building rules are not mandatory. "Domestic efforts alone would be too expensive for Japan," he said, concluding that CDM can provide incentives for Japan and benefit Asian developing countries.
23. Kaya concluded with a message that the Kyoto target alone has very limited impact to arrest global warming. "The Kyoto Protocol is not meaningless; it is an important first step" that needs to continue for the longer term with the participation of all countries.

## SESSION TWO: PRESENT AND PERSPECTIVES OF THE CDM IN ASIA

24. Five speakers outlined CDM in Asia: the large amount of activity in financing CDM-type projects; PCF projects illustrating how carbon financing can impact attractiveness of projects; the work of Japan Bank for International Cooperation (JBIC) for the Kyoto mechanisms; Mitsubishi Securities' experience in financing energy projects; and recognition of the unilateral approach to CDM financing.
25. Jusen Asuka, Associate professor of Tohoku University, spoke about the KP issues for Japan. An expert on the political and economic aspects of energy and environmental issues particularly in Russia and China discussed whether Japan should present itself as an "eager to buy", and on issues including Russian hot air and carbon credit price, the need for Japan to leverage expertise, and the offer of carbon funds.
26. About Japan's national policy on climate change, he said voluntary agreement allows some companies to fail. The Japanese consensus is no trade until 2005. He characterized the national planning assumptions: "some are realistic, some are very unrealistic."

27. As for the 1.6-reduction called for by the Kyoto mechanism in Japan with a 20-percent increase in emission since 1990, he wondered about the incentives for business cooperation.
28. As for the “Russian factor,” he wondered whether reluctance-to-sell would raise the price of hot air. About debt-carbon swap, he mentioned that negotiations between the US and South American countries could be an issue.
29. About carbon credit price, he gave two examples of negotiating levels: The Dutch price of \$3 to \$5/t-CO<sub>2</sub> and for World Bank including China and developing countries \$6. “We don’t know how the trade will move,” he said, “but we need to have some reference point.”
30. Russia, the US, and Japan have been part of an umbrella group, he said, but Japan positions itself at the start of the new game with other buyers, possibly EU.
31. In Japan, government-financed feasibility studies for cooperation with Russia, China or Southeast Asian countries are up to 40 million yen per case. ODA and CDM are in a difficult relationship. In other Japan-specific projects, such as Green Aid Plan, a substantial amount could be used for CDM. Asian countries have no programs, he said, such as the World Bank PCF formulation or South American countries’ structures as host countries.
32. A strategy for Japan, he suggested, is to “take the portfolio approach” with Russia, EITs and developing countries as buying counterparts. “CDM should have some special assistance,” he said. “Someone has to devise some mechanism.” Although a win-win situation is possible, he said, “The worst case scenario is Japan doing nothing domestically or internationally,” resorting to buying expensive Russia hot air. To avoid non-compliance, he said that the Japanese government should be active.
33. Perhaps Japan should follow with similar measures to the Dutch CERUPT instead of buying hot air, trade it with Russia’s obligations to do countermeasures to the environment.
34. Barriers to Japan’s strategy, he said, include lack of funding, indifference to the program, the need for domestic links to international system, and the unclear energy price. In addition, Japan has to negotiate with EU and Russia. “The current phobia-like feeling must be put aside,” he said. “You have to start with communication at a government level”.
35. Ryuji Matsuhashi of the Institute of Environmental Studies at the Graduate School of Frontier Sciences of the University of Tokyo also proposed a CERUPT for Japan. Partial securitization of CDM and JI, he said, would reduce the risk of internal rate of return (IRR). To compute IRR, he extracted data from feasibility studies of Joint Implementation (JI) and CDM sponsored by NEDO with host countries including China, Russia, Indonesia and Myanmar.
36. He made a Monte Carlo Simulation to evaluate the volatility of IRR with the following assumptions:

- Present price of CER at US\$14.7 per carbon ton
  - Escalation rate of CER price 10%.
  - Escalation rate of main products' price 3%
  - Trade-in price of assets after project termination 10% of initial cost.
  - Annual tax rate to project 30%.
  - IRR by discounted cash flow method.
  - Transaction costs accompanying project certification and approval 10% of initial cost.
  - Expected value and standard deviation in IRR by estimating volatility in CER price
37. He showed the expected values and standard deviations in IRR of the 42 CDM project types with and without CER revenues. Trading companies told him CER is too volatile, which allows only normal market principle trading to be installed in the market. For new institutions, he said, we must think how to install the project with CER revenue to be marketable.
38. Risks in CDM include certification risk, baseline risk, and country risk other than CER risk. "To hedge these risks, diversify projects and countries," he suggested.
39. Matsubishi's group found that, in the Netherlands, governmental organizations buy CER at auctions where CER units must be more than 100,000 tons and that the upper limits of CER price in auction are determined depending on project types.
40. "Desirable conditions of CERUPT in Japan include quantifying the effect of the CERUPT to suppress downside risk," he said.
41. Axel Michaelowa of Hamburg Institute of International Economics, Germany, spoke about the international CDM market, Asia's CDM share and the importance of host country institution building.
42. The expert on policy development and technical aspects of the Kyoto Mechanisms consults on CDM to government authorities. He considered international CDM rules, quantitative aspects of the CDM after COP-7, attractive project types, why Asia lags in the CDM race, recommendations for host country institutions, CDM institutions in host countries, and recommendations for Japanese investors.
43. He looked forward to a high share of CDM if Russia and the Ukraine voluntarily restrict their supply of surplus permits of hot air. He called this crucial because "If they throw everything on the market then the CDM will not play a major role."
44. The prototype carbon fund of the World Bank and government tender Dutch Erupt/ CERUPT, he said, are most likely to reflect the real CDM.
45. About CDM profit, he said modeling predicts that China would get half of the world market; India, Africa, and Latin America a lot; but other Asian countries not much.
46. In the prototype carbon fund, he confessed surprise that Asia is far surpassed by Latin America, which has been building institutions for five years while Asian countries have feared CDM as a road to emission targets. Asian share in CERUPT is more

similar to the model predictions, but with Latin America still leading, “Asia must try to make up the time lag.”

47. Of attractive CDM project types, he said methane reduction is often overlooked despite its low cost greenhouse gas reduction. Renewable energy in good locations, fuel switch from coal to gas, efficiency improvement, and afforestation are also attractive. “It’s clear CERs will never make a project fly on their own,” he said. “It needs to have a firm basis.”
48. The pilot phase of AIJ projects -- CDM without emission credits – showed that projects had a gestation period of two to four years. Asia had been left out for political reasons.
49. About host country CDM institutions, he recommended partition of tasks among national CDM boards and NGOs as in Latin America. “We have bad experience from AIJ when ministries fought with each other,” he warned. Finally, the certification process should try to build capacity for national certifiers.
50. National CDM institutions are being contemplated in China, which Michaelowa said still has to accept the low market prices, and in India where donor capacity building programs have started. Indonesia is the most advanced country in Asia in CDM institutions with a National Strategy Study (NSS) finalized in 2001 and projects in CERUPT and the South South North (SSN), a capacity building project linking countries. Thailand and Vietnam do NSS while Malaysia discusses it, none of those countries having institutions in place. South Korea plans direct sales to the world market.
51. Because pilot projects have often stalled on the host country level, he cautioned project developers, “Make sure integrating your project on the host country process.”
52. Suggesting Japanese incentives, that he felt crucial for success of the CDM, Michaelowa stressed allowing CERs in the domestic trading system or giving exemptions from carbon taxes. Make this link from domestic to international at the outset, he stressed, referring to European problems with tenders for CDM. “The best is a direct incentive.”
53. Continuing to advise, he said to be very careful about the baseline, which so far has no standards. He said that permission of the CDM Executive Board is required for combined validation and certification to reduce costs. Suggesting a new technology for which no baseline rules exist, would be a complicated way,” as a new rule would have to be defined first once you get your CERs, they can not be withdrawn even if the certifier has erred.
54. Mitsutsune Yamaguchi of Keio University spoke about the role of Japan in CDM. The CDM Executive Board has started panels on small-scale projects, baseline and monitoring which will advise COP-8, where operational entities will be designated and CDM projects identified.

55. Emission trading should be used to ratify the Kyoto Protocol, he said, but the “business-as-usual” case cannot be extended. With the second period, technology transfer will encourage developing countries to curb emissions.
56. 1.6 percent is not realistic as a Kyoto Protocol target for Japan, he said, outlining Japan’s efforts to attain its obligations through NEDO, Japan International Cooperation Agency (JICA) and JBIC. “The Japanese experience is very different from the US is doing in Latin America,” he said. “We cannot be a global standard. It will be extremely difficult to achieve the Kyoto target just based on these projects.”
57. For the Netherlands, “half of emission reductions rely on the Kyoto mechanisms,” he said, while for Japan, 12 percent do. High marginal costs for Japan make doing everything by domestic measures “unrealistic.” In the Netherlands, the government will use fiscal resources, but Japan lacks a government budget source. “We have to clarify who is going to do what,” he said. Companies will not profit by selling CDM internationally and Yamaguchi pointed out that the Japan Business Federation (Keidanren) has a problem because budget allotment is not company-by-company.
58. Asian countries publicize national strategies, he said, but we would like to consider strategies with developing countries more in depth. “Developing countries expect money from Japan but ideas from Europe. It is no good for Japan just to provide money,” he said. According to Yamaguchi, Keio University and Tsinghua University have small- and medium-scale power plant projects in China. Credit periods have been identified, project categories further subdivided by attributes including fuel types, and reductions calculated.
59. “We need to adopt practical strategies, not just calculate on paper,” he acknowledged, adding that realism comes from experts in the field who do the difficult data collection.
60. **DISCUSSION:** In the ensuing discussion, Lu said lack of understanding of CDM was the reason for project reluctance before COP-7, and he defended developing countries’ caution about lower prices.
61. Jyoti Parikh asked for clarification about adaptation tax, more detail about methane projects, and expressed “worry about the CDM bandwagon from which everybody wants to profit.”
62. Michaelowa answered that China has the best strategy: invite industrialized countries’ donors to do institution building. If you are lucky, you get 100 percent of your institution building done by foreign funders.
63. The adaptation tax, he explained, is two percent of the CERs withheld by the CDM executive board to be sold on the market with proceeds used to finance adaptation projects in the most vulnerable countries.
64. He said he had referred to projects in which methane could be easily collected from landfills to burn or produce electricity, or projects to close the leaks to prevent methane venting during natural gas production.

65. In response to a question about public access, Matsuhashi answered that at least until recently the NEDO website had CDM/JI project feasibility studies available for download.
66. In response to a question about government roles, Yamaguchi said that using ODA to develop infrastructure is possible and therefore the government budget can be used in compliance with the Marrakech Accords. He deplored resources wasted by the fragmented approach of JBIC, NEDO and JICA as well as by overlapping forums. He added that creation of funds such as the Japan Fund is not possible without general budget resources. He stated that there is a need for a memorandum of understanding with the host or counterpart countries on a government-to-government level. About risks, he stressed the need to consider burden sharing by the government, which can use trade insurance.
67. In response to a question about the generation of carbon prices, Michaelowa answered that although the prices he showed were for CDM type transactions, a junk bond market in the US and Canada goes from 50 cents to US\$1.50 per ton.
68. Cohn added that companies buy CO2 reductions for voluntary commitments and for Kyoto compliance. He mentioned that many prices that are being quoted are deceptive because the fact is not taken into account that PCF pays for much of the monitoring, verification and other costs. Finally, he noted that prices for government tender in the Netherlands have decreased for the CERUPT as opposed to the ERUPT which did not allow the government the flexibility to negotiate lower prices.

### SESSION THREE: FINANCING FOR ENERGY PROJECTS: CDM AND BEYOND

69. Speaking about the issues and opportunities for the private sector in carbon finance, Vikram Widge of the International Finance Corporation (IFC) said, “Energy is going to grow exponentially with economic growth.” Setting up opportunities for technology transfer and CDM type activity can be leveraged into providing energy for the developing world in a “much cleaner and efficient manner.”
70. Project-based carbon financing allows the private sector to access new sources of funding that do not require payback in monetary terms. “It’s more efficient to improve power plants in developing countries than to try to upgrade what is already an efficient one in a developed country,” he said, adding that although the market is still “quite thin” it will “ramp up” with European trading schemes, anticipation of ratification, and more projects financed by the World Bank and IFC’s carbon facilities.
71. It is currently unclear whether the various trading schemes will ultimately be fungible, but the current activities of the buyers is motivated by various reasons including compliance with regulatory and corporate commitments, demonstrating leadership, influencing policy, hedging risks, and most of all “everybody is trying to use these market-based activities to learn by doing”.
72. He said that it is clear that CDM-related activities will depend on levels of foreign investment flowing to developing countries and while carbon finance (CDM) may make some marginal projects attractive, and provide an attractive boost to the returns for others, it’s not why most projects will be initiated. He outlined how carbon

finance will enhance revenues for the project and can be integrated with project finance to potentially reduce some of the project-related risks that are important to lenders.

73. The IFC specializes in project finance and provides financing on commercial terms for private sector projects in developing countries. IFC has a significant renewable energy portfolio with and without GEF funding. Given its project-based approach and significant experience with relevant projects, IFC recently set up the IFC-Netherlands Carbon Facility (INCaF) – a facility to buy GHG emission reductions from eligible projects in CDM-eligible developing countries for the benefit of the Dutch Government. This facility and similar others under consideration will provide supplemental financing for IFC and non-IFC projects like those currently in the pipeline including hydro and biomass projects in Central and South America, methane capture/-bio-gas and waste-to-energy projects in South and South-East Asia, and an industrial fuel switching projects in South America. Other renewable energy and methane capture projects were also under consideration.
74. Ikuo Nishimura of Tokyo Electric Power Company, Inc. (TEPCO), spoke about PCF in CDM projects. Having worked with the PCF since its launch, he said that although the nature of carbon as a product is unknown, six governments and seventeen companies contribute to the \$180 million fund operated by the World Bank with three objectives: minimize project risks; reduce transaction costs; and enhance the learning experience.
75. Among 23 projects and over 10 carbon credit purchase agreements, PCF's total project cost means how much money will be incurred to reduce the CO<sub>2</sub>. The least cost solution for biomass projects is oil, but a waste disposal problem requires a later project financed by carbon finance. "But in our view," he said of this fallacy in thinking, "carbon finance is not equal to incremental." He defined carbon finance, which is market based, as the finance required to achieve emission reductions compared with the baseline (as business-as-usual activity).
76. He outlined a sample biomass power project in India with carbon finance that allows profit from the first year. In a second example, he outlined a waste-to-energy project in Brazil in which carbon finance increased the revenue sources because although the unit price may be the same, waste management costs will be reduced with carbon finance.
77. About sustainable development, he showed a eucalyptus plantation project in Brazil where improved kiln charcoal production makes the forest viable and reduces methane, soot and tar pollution.
78. An appropriate price for carbon finance requires a market, he said, made possible by capacity building and understanding the variety of projects. Developing countries should have a policy for CDM and how to cooperate between private and public, he added.
79. Naoki Mori of JBIC, Japan's public financial institution responsible for overseas development assistance, spoke about climate change with CDM and JI mechanisms.

- 80.** JBIC provides loans to private companies and to the governments of developing countries with special terms for the pollution control and global warming projects which account for 30 percent of the ODA loans. He cited energy saving in Malaysia, renewable energy in the Philippines, mass transit in Thailand, and afforestation in China.
- 81.** For small-scale private sector projects to promote development of renewable energy, he said, "We are there to provide loans" for wind power, small-scaled hydropower, co-generation, photovoltaic and biomass. "Loans are provided through an executing agency," he said. "You might have a local business which used diesel generation and wants to use wind power for their own power and to sell surplus to the grid."
- 82.** Beyond ODA, private sector programs include cogeneration plants in China with money lent through the Chinese government and loans to Japanese companies abroad. JBIC reviews what the CDM policies should be, contributes to PCF to gain a learning experience, shares direct CDM risks and can take valuation risks that cannot be met by the private sector.
- 83.** To develop a financing modality using CER without using ODA directly, he said, "We resort to other means of lending." About capacity building, he said that the Bank wants to partner with the World Bank, JICA and NEDO to provide technical support to host countries to prioritize climate change issues. He also spoke of a need to provide a legal framework for the Kyoto mechanism to determine which organizations in host countries are responsible for the management. Evaluation of projects, he added, is another role for JBIC to play in cooperation with international finance organizations.
- 84.** Junji Hatano, Chairman of the Clean Energy Finance Committee of the Tokyo-Mitsubishi Securities, spoke of different viewpoints of CDM and finance not to be confused:
- When there are CDM projects, we use CDM credits
  - Project finance alone will not be enough; what alternatives are there?

"CDM credits do not finance the project, but rather are in its future," he said. In an example of a 20MW plant with US\$30 million for initial capital expenditure, he showed that a calculation of CER where a coal substitute would double the tonnage over 10 years. In another example, he noted the difference between baseline and the actual methane generated from 30 to 60 percent of capex, profitable enough to be based on business as usual rather than CDM. "Just methane in jungles" is a problem in terms of CDM and urban areas, but "could be attractive" in terms of calculation.

- 85.** "CDM credit for financing increases return on equity (ROE) to implement many projects that would otherwise be rejected," he said. He continued that, in order to increase ROE, ordinary finance of initial investment is needed – JBIC or PCF advanced payment or local banks – because debt finance is indispensable. "Equity should be limited to one-third," he advised on the remaining part by debt finance or leverage. He described "the destiny of the current CDM projects" as needing debt finance now, a situation that may change in the future.

86. Local bank lending and local knowledge in evaluating a CDM project are required, he said, citing discussions of CDM with local banks in Thailand for a project of rice husk based power generation. Rice husks damaged by rain don't burn well, he said. "What will happen to the credit?"
87. Regarding the need for an official flow of money, he said that ODA is acceptable for capacity building, but diversion is banned. Local Thai banks can provide local finance unlike in many African nations. Many CDM projects need GEF and CERs, he concluded.
88. Josef Janssen of the University of St. Gallen in Switzerland, is also managing partner of a private company called ETSG (Emissions Trading Solutions St. Gallen Ltd) specialized in financial and economic issues related to the CDM, Joint Implementation and emissions trading. About financing CDM projects in Asia, Janssen had four messages:
- CDM CERs are not a financing instrument, but a source of income;
  - The unilateral CDM model will probably be more important than the bilateral CDM model, hence don't wait for foreign resources;
  - Retained earnings are an important source for CDM finance;
  - Bankability of climate-relevant projects may be enhanced through CDM.
89. Because CERs are a source of income, he spoke of the need to pay for initial abatements through equity financing or debt financing.
90. Focusing on bilateral CDM models, he said, has dangers: hosts wait for foreign sources; capacity building is unfocussed; and companies are reluctant to invest abroad.
91. Like retained earnings, he said, CER earning may be a source of finance for other CDM projects promoted by the same sponsor.
92. To enhance bankability of projects through CDM, he said, distinguish on-balance sheet finance (normal corporate finance) from off-balance sheet finance (project finance). Off-balance sheet finance, he said, assesses creditworthiness by ratios from cash flow and may have limited recourse to project sponsors.
93. Japan, UK, Germany, USA, France and Canada, he said, are the largest sources of project financing in Asia, the world's biggest project financing market. The challenge, he said, is "to convince banks to consider the CER cash flow". Success in integrating the CER cash flow could tip the balance in terms of financing a previously un-creditworthy project, or require less equity by sponsors, or have lower interest rates, or have a lower loan lifetime.
94. **DISCUSSION:** In the ensuing discussion, delegates asked for clarification about: the relationship between ODA and CDM; additionality; unilateral, bilateral and multilateral schemes.
95. To the controversial ODA ban for the purchase of carbon credit, Ikuo Nishimura of TEPCO suggested "a flexible approach" in poor countries. Environmental additionality, he said, can be verified by economic analysis to identify the least cost option, or by financial analysis to evaluate IRR, which can be a baseline if the

profitability is very high. “But you cannot generalize,” he said, because of “different options in different countries and different regions.” He added that technological additionality was not considered.

96. Mori of JBIC noted the lack of objective criteria of diversion, wondering if Japan increasing aid to Uganda to 8 billion be additional or a diversion.
97. Hatano explained that an additional source of revenue would increase ROE; if ROE is enhanced, undoable projects become doable. “That is an example of additionality.”
98. Responding to a request from a developing country participant, Janssen recommended distinguishing bilateral financing of abatement activities from the international transfer/trade of resulting CERs. “I’m not in favor of the unilateral model,” he said, but don’t wait for foreign investors who leave if economic performance is not good.
99. Responding to a further question about whether a developing country with no commitment would want to finance CDM or CERs, Janssen said if IRR is high enough, they could raise the funds domestically from local banks or returned earnings from the core business and then sell the CERs on the market.
100. Another developing country participant challenged the concept of the CDM market structure, suggesting instead an increase in the volume of tradable carbon to go fully into trading regimes.
101. Correcting a “misconception in the debate,” Janssen explained that there are two basic forms of emission trading: project-based emission trading as JI or CDM; and inventory-based trading also called cap and trade.
102. To the criticism that CDM is grand-fathering-based trading, Janssen answered that a low internal rate of return, for example, would affect foreign as well as local investors. “Local investors will not be prepared to invest. That’s true; but it is also true for foreign investors.”
103. Lu cautioned about the contribution required by developing countries “to use their own money. I don’t think this is fair to them. They will have to undertake all this risk.”
104. Hatano defended the unilateral CDM as giving one additional choice to the host country rather than taking advantage of developing countries.
105. A developed country participant challenged estimates of CER prices as market-driven, saying that the CDM executive board will define the entirely policy-driven commodity.
106. To an objection by a developing country participant claiming that the price for CERs should be set at fixed levels that are profitable for developing countries to proceed with projects, Cohn said production cost is irrelevant to what the market will pay for a CER.

- 107. SUMMARY OF FIRST DAY:** Robert Williams of the UNIDO Secretariat in Vienna, Austria, summarized the first day of proceedings. Lu had spoken of events leading to the Kyoto protocol signing and mechanisms. “The precautionary principle,” Williams explained, “holds that we cannot afford to wait for evidence of climate change but should take action now. International co-operation could reduce GHG emissions at the lowest possible costs.”
- 108.** Magariños had referred to the shifting emphasis from increasing human productivity, which characterized the industrial revolution, to our concern today about depleting resources. Article 12 of the KP introduces CDM and includes text on sustainable development to be discussed today at this forum.
- 109.** An efficient, environmentally-conscious society, Japan faces a difficult task in meeting its KP commitments. “Oi and Morimoto had pointed out that Japan will have CDM as a strategy to control GHG emissions,” Williams recapitulated, “and developing countries can benefit from new technology.” Kaya had spoken of Japan’s options and the difficulty of acceptance among Japanese people, explaining that the government cannot comply at the cost of economic upset. Kaya had reminded the forum participants that the KP remains a first step to continual international co-operation.
- 110.** Okamatsu had illustrated the complexities of developing CDM into an international tool. Key aspects are quantified limitations on GHG emissions that were accepted by developed country parties and the three flexible mechanisms of joint implementation, CDM, and the trading of emission entitlements. Williams said that international research began about these mechanisms along with intense activity among private companies seeking to trade or broker trades in this new commodity of avoided carbon emissions. Sharing his vision of the future, Cohn had discussed the current status of the carbon market.
- 111.** In the second session, Asuka had elaborated Japan’s policy options. Matsushashi had introduced his research about risk reduction associated with CDM investments involving partial securitization and the use of a tender for emission reductions similar to the CERUPT procedure in the Netherlands. Michaelowa had analyzed the Asian region’s level of participation in CDM, presenting conclusions about why the Asian countries have not experienced the level of participation enjoyed by other regions and argued that more rigorous efforts to involve the national institutions are needed to attract CDM investors. Yamaguchi had elaborated on Japan’s strategies to meet the Kyoto Protocol, emphasizing the urgency of the government to give a clear signal to Japanese industry as to their options under the CDM.
- 112.** In the third session, Widge, Nishimura, Mori, Hatano and Janssen had looked into CDM in the context of international commercial financing of energy projects. Their presentations had highlighted the growing number of multilateral and bilateral schemes being set up to finance carbon savings investments. Using real examples, mostly of energy projects, they had illustrated the impact of carbon financing and had emphasized the need for caution in viewing the CDM purely as a financing instrument.
- 113.** The day had concluded with a brief discussion and explanation from panel members on issues including additionality, the important and potentially contentious issue of

the diversion of ODA to the implementation of the CDM, and the need to insure that this does not happen. Differences had been aired about development issues in the concept of the CDM and the simple supply/demand, or free market approach. Representatives of developing countries expressed concern about the so-called unilateral approach to the CDM.

GUEST SPEECH: CDM: A Win-Win Proposal? -A Latin America Perspective.

114. The Latin American region is enthusiastically promoting CDM in the world, said the chair, with proposals worthy of consideration.
115. H.E. Mr. Richard Moss Ferreira, Minister of Foreign Trade, Industrialization, Fisheries and Competitiveness of the Republic of Ecuador spoke from the perspective of a developing country in Latin America. Having seen the glaciers of the Andes change level, the MBA understands global warming as a problematic multi-national family business concern with revenues less than costs. The cash flow is ok, he said, but losses lead to consuming inherited equity—getting paid on revenue, not profit. The problems are an inaccurate accounting system -- “market imperfections” — and an indifferent culture. The developing world — the production side of the business — - has obsolete technology, poor training, no investment and is disconnected from the information flow.
116. The CDM concept of common yet differentiated responsibilities, he said, helps countries comply with emissions control responsibilities with flexibility and use market mechanisms to allocate capital. Public and private sector expect clear international CDM regulations and national procedures that endorse CDM projects. Developing countries see CDM challenges: managerial, technical, and institutional competence to interact with the international system; the need for project excellence; and the timing to be there when the market becomes active.
117. With 25% of the world’s biodiversity on the north east side of Latin America, the Andean Community of Nations (CAN) has a strategy for regional sustainable development and biodiversity. The Latin American Carbon Fund finances projects, and supports capacity building and institutional development. Each country develops local processes for CDM project certification
118. Wanting to attract Asian investment and development for CDM, CAN is limited by the requirement of seed capital for proposal and projects; dependence on political will of others to supply leading edge technologies; the long, expensive preparation of CDM projects; and high transaction costs.
119. CDM opportunities for CAN include Asian technology in energy and forestry projects; projects for clean energy generation, and promotion of regional sustainable economic development.
120. He suggested a Pacific Rim Carbon Fund similar to the Latin American Carbon Fund to select CDM projects for the Andean Community and Asia for COP-8.

#### SESSION FOUR: COUNTRY PERSPECTIVES AND TECHNOLOGY TRANSFER

121. Five speakers outlined what Asian countries are thinking in terms of CDM difficulties associated with technology transfer which requires what the moderator called "racking our brains."
122. Wangwacharakul spoke about concepts and ideas behind CDM and technology transfer (TT); Thai thinking; the wider perspective of shared roles; and ideas for the new business of environment.
123. KP and the provisions are two different agreements, he said. UNFCCC rules for negotiating TT include technology needs assessment, information technology, enabling environment, capacity building and technology transfer mechanism. CDM requires technological additionality as a basic condition, he said, to attach KP to the mechanism.
124. A1 countries tend to move the mechanism of CDM to free-market oriented approach, he said, which makes additionality difficult to understand. The mechanisms for TT are different under KP and UNFCCC.
125. Wangwacharakul hoped for somebody who can give a flexible, consistent definition to "additionality of TT." Among uncertainties, he wondered whether there could be cross sectoral TT or cross activities or cross categories. Can TT for HIV health projects be used as "additional" for climate change (CDM) projects in Africa, he wondered. CDM asks for something more than business practice, he said, and figuring out "how to do it" is the unsolved issues among stakeholders.
126. Thai CDM priorities are renewable energy, energy system retrofitting, and energy efficiency in the industrial sector, he reported of a study he coordinated. The four entities are the public sectors of host and investing countries; and the private sectors from both countries. This new area of development needs new thought, he said, to accommodate additionality, design and implementation. In many cases the private sector in developed countries didn't know the basic principles of additionality, he reported. "They didn't know that you have to go to the national authority of CDM," but went to the individual to come up with some CDM agreement.
127. The government needs to deliver the commitment, and the private sector has to know that there are certain additional considerations. But about reforestation, Wangwacharakul puzzled, "I cannot see what kind of TT you can have when you plant trees in developing countries."
128. Transparency requires showing the public certain things for full public participation. "I'm not trying to discourage you," he said, "but all these things involve cost to the private sector." He wondered whether the business paradigm could shift from "business counterpart" to "business partnership" where more benefits are mutually shared. Market, society and environmental values must be balanced, he concluded.
129. Balce, Director of the ASEAN Centre for Energy (ACE), said ACE is "tailor-made for the implementation of CDM," and capable of partnering with UNIDO or MRI. He

plans to propose to the energy ministers the implementation of CDM in the 10 politically cohesive countries of the Association of Southeast Asian Nations.

130. Funded by equal contributions from member states, the ACE core funding provides \$500,000 for annual operations, with additional contributions from partners including Japan, which provides technical and financial assistance through the Ministry of Economic Trade and Industry (METI) and the European Union which, beginning this year, provides an 18 million Euro fund for cooperation projects in energy.
131. Chartered as a catalyst for the economic growth and development of the ASEAN region, ACE initiates and facilitates co-operative projects in energy. Specialist energy organizations in the ASEAN include the ASEAN Council on Petroleum (ASCOPE), Heads of the ASEAN Powers and Authorities (HAPUA), the ASEAN Forum on Coal (AFOC), and the ASEAN Energy Business Forum (AEBF). Sub-sector networks include Energy Efficiency and Conservation (EEC-SSN), New and Renewable Source of Energy (NRSE-SSN) and a renewable energy research organization which reports to the ASEAN Ministers of Science and Technology.
132. The ACE business plan through 2004 focuses on areas within the realm of CDM, i.e.: infrastructure to connect the power grids and gas pipelines of the 10 countries by 2020; introduction of clean coal technology; energy efficiency and conservation; new and renewable sources of energy; and regional energy outlook, energy policy and environmental analysis. Institutional linkages include country and international aid organizations.
133. ACE energy efficiency programs include awards for energy efficient buildings and magnetic ballasts, as well as energy audits of buildings, industries, and biomass. Renewable energy programs include promotion of co-generation and local manufacture of small-scale renewable energy systems.
134. He said that a proposal including the use of the EC-ASEAN Energy Facility for the greening of coal-fired power plants might attract UNIDO.
135. ACE can have a role in any of CDM models, he said. He said that ACE can fast-track small-scale CDM projects as agreed in COP-6. In the removal of barriers, he stated, ACE can assist ASEAN member countries to establish CDM strategies and institutions.
136. Jyoti Parikh, leader of the energy environment group of The Indira Gandhi Institute of Development Economics, offered the Indian point of view on CDM and TT. She criticized the progress of TT, a commitment made at the Framework Convention on Climate Change (FCCC) at Rio in 1992 for "development, application and diffusion, including transfer, of technologies, practices and processes."
137. She suggested that developed countries' CDM desire outpaces the "very old" TT desire of developing countries because of poor negotiating skills, asymmetry of power and the lack of unity of purpose in DCs. "We are still grappling" with what TT is and how to implement it, she said. As a member of the CDM committee of her government, she had suggested linking TT with CDM.

138. About the importance of TT, she said that the large gap between small CDM projects and the global GHG savings needed requires replicability and continuity of the CDM process beyond the CDM project itself.
139. Criteria for CDM projects in India, she said, includes relevance for sustainable development which is for the host country to judge; promotion of technology transfer; capacity building; project based baseline; and additionality over ODA and GEF funding. AIJ pilot projects sanctioned by India include direct reduced iron with Japan, biomass gasification with Netherlands, tamarind forest with USA, waste energy recovery with Japan, and hybrid renewables with Australia.
140. Apart from CDM, “supplier driven” technologies are brought to India and left without support, she claimed, citing other people’s observations in 1987, 1991 and 1995. Technology transfer is “not a piece of hardware,” she said, but teaches the developing country to know what, which, how and why. “This is capacity building during technology transfer,” she defined.
141. She gave an example of the barriers to technology diffusion in the manufacture of compact fluorescent lamps (CFL), which are more efficient than the incandescent lamp. High price and plant under utilization were barriers to benefits. Assessment of needs led to “reasonable problems” not with the technology, she reported, but the market.
142. She gave a second example of overcoming barriers to technology diffusion in solar PV cells for which regular servicing and procuring distilled water for batteries was difficult until a fall in prices and post installation infrastructure.
143. Morihiro Kurushima, Director General of the policy-planning department of NEDO, spoke about its “very practical” projects. Japan takes pride in the world-class energy conservation, he agreed with previous speakers, but “these are just hardware technologies.” Japan is not very advanced about how to use those technologies, he said, citing “unnecessary leisure vehicles.”
144. CDM can standardize and diffuse technologies as common goods of the world, he said. NEDO staff of 1,000 and development funds of about \$US 2 billion, he explained, model energy conservation hardware and TT with a one billion yen per project annual budget in developing countries. He said that about 40 projects every year are related to CDM or JI and Japanese industries and companies are paid to identify future potential CDM or JI software-related projects
145. A multilateral initiative of 23 IEA/OECD countries and the European Commission, the Climate Technology Initiative (CTI) presents training courses for groups of people and seminars for connecting industry and governments.
146. He identified the principles of CDM as host countries’ social and economic development, technology industrial owners’ business incentives, and global environmental technology sharing.
147. Kurushima said that NEDO could organize and bridge the actions of government organizations, academic researchers, financial circles, and industry. NEDO must link

its activities to CDM in order to be “a pioneer for Japan.” It must participate in forums and multilateral efforts like CTI to form the platform for CDM of “mutual trust of the countries.” It must cooperate with financial institutions, and is willing to provide a database compiled through its many activities in many countries for clean coal projects and other renewable projects. Also, databases for project coordinators and consultants, he said, could be developed.

- 148.** He gave examples of projects started by NEDO in 1997 in Mexico and Thailand, which may be linked to CDM by TT. Funded from 1.5 billion yen by JBIC to a Mexican bank that specializes in public works, Mitsubishi Electric Corporation replaced outdated trolley busses in Mexico City with 200 state-of-the-art vehicles. In Bangkok with Thai auto association, police and a science/technology ministry, he said, Japan Auto Manufacturers’ Association controlled traffic congestion by traffic signals. He envisioned a “world technology bank for the environment.”
- 149.** Williams of UNIDO spoke about his organization’s work in CDM climate-related methodologies as well as in more conventional industrial energy efficiency and the accelerated introduction of renewable energy systems in developing country clients.
- 150.** Since COP-1 in 1995 UNIDO has focused on TT and capacity building, the early priorities for developing countries. With the advent of KP, he said, UNIDO prepares client countries to benefit from CDM by evaluating projects like industrial cogeneration for their ability to generate carbon credits.
- 151.** UNIDO introduces technology capacity building to business communities and finances their participation at climate events. In Southeast Asian and African countries, UNIDO reviews national communications required by the climate convention. Working with local experts, UNIDO documented what the regions need to participate in CDM. “Bringing opportunities to the attention of investors,” he said, helps the EB establish guidelines.
- 152.** Methodologies for the capacity to set up CDM projects in Brazil and South Africa, he said, are summarized on the web site. UNIDO feasibility analysis software calculates costs and benefits for CDM project investment with and without the monetary value of carbon credits.
- 153.** UNIDO has 15 years of energy project involvement in the Asia Pacific region supported by GEF, the UN Foundation, and the US Department of Energy. Although GEF capacity-building initiatives cannot themselves be turned into CDM projects, he pointed out, training to national experts is valuable and technologies could be CDM investments. For example, in a methane recovery project in India well-defined technology acts on high global warming potential. And in China, 21 million TVE (town and village enterprises) employ more than 128 million workers which could attract CDM investment for carbon credits. Also in China, UNIDO trains engineers to identify opportunities to improve motor systems such as in factories, transferring knowledge to the host country. Also in China, UNIDO finds potential high for cogeneration. A coordinated response is needed, Williams said, because heat and power involve numerous governmental agencies.

- 154. DISCUSSION:** In the ensuing discussion, delegates asked about NEDO projects, forestry, additionality, and private and public sector roles. Also, speakers aired differences about the market.
- 155.** Responding to a question about recent NEDO studies and implementation, Kurushima reported nearly 200 feasibility studies from 1997 in Asia, Russia, East Europe, Africa, Latin America and the Caribbean. Because CDM implementation had not been finalized and Japan needed to improve its financing system for better communication to be linked with CDM, he explained, only two of 200 feasibility studies are implemented.
- 156.** Responding to a question about indigenous technology, Wangwacharakul explained the convention goal was not to copy, but to learn.
- 157.** About following the protocol, Wangwacharakul advised don't try to sneak out of that. You cannot just say to the business sector, "This is a new business for you," he said. "It is a new business, but with strings attached."
- 158.** Defending his vision of the market, Cohn said to Wangwacharakul, "It's unfortunate that you feel that the business community and the environmental community are at odds." Cohn expressed his belief that the business community understands trading can only work if it has environmental integrity. In addition, developing countries are always able to deny any CDM project that does not fit their definition of "sustainable development." As an example of successful cooperation, he highlighted the US acid rain program.
- 159.** Wangwacharakul explained that bringing in the private sector was crucial but difficult. "I have never seen the successful use of economic instruments on the global environmental externalities," he added.
- 160.** Parikh stressed that for sustained interest, it is necessary to share fairly the gains arising out of CDM with developing countries. That is, the difference between what it would cost to save carbon in the developed countries and what it will cost through CDM needs to be equitably apportioned. The price of carbon could not just be on cost basis, which leaves no incentive. This additional margin is of fundamental importance for the CDM process to continue with vigor.
- 161.** Parikh reported on her survey of industries in India to identify barriers in implementing energy efficiency. In the case of Energy Efficient Motors (EEM), Variable Speed Drives (VSD), Vapour Absorption Refrigeration System (VARs) and Compact Fluorescent Lamps (CFL), the top barriers was price whereas for electronic ballasts (Eb), it was reliability and price, and for industrial co-generation – it was high initial investment and problem about paralleling with grid.

#### SESSION FIVE: VIEWS FROM THE PRIVATE SECTOR

- 162.** In this session, the Japanese and overseas private sector discussed views. Presentations included plans to implement CDM in Indonesia, wind farm projects in NZ expanding to the Asia Pacific region, an enthusiastic utility company trying to

utilize the Kyoto mechanism in Japan, the uncertainty of Japanese companies towards CDM and simulations of construction of a portfolio.

163. Mark Trexler spoke about how private sector companies should be thinking about participating in the CDM. About the future of climate policy, he noted the importance of Japan's ratification, the likelihood of entry into force of the KP, and that the US would soon "go back into the system." In the business of climate change, he predicted, "Some companies will do well, and other companies will have a lot more problems." The market demand for reductions in the future will change.
164. The mitigation market is crucial, but experience is limited and markets not easy to build where the commodity has not been defined. "Probably many of the transactions that have been done will not count," he said of what Michaelowa called "junk in the market." He added, "This uncertainty about the market creates opportunities."
165. About the cost of GHG credits, he showed an upward price curve affected by how the EB will define additionality. Anticipating prices requires technical and political factors; technologies will eventually cap the cost of GHG credits.
166. Each company needs to consider when and how to enter the market. "It's amazing how many projects are looking for buyers," he said, adding the caution that you cannot always trust the market to deliver. A high quality-low cost portfolio is best for CDM, he advised. A company should choose the best countries and technologies, he said, noting that methane technologies top his company's list.
167. Technologies vary regarding benefit in the CO<sub>2</sub> market, he said, noting the current difficulty of wind technology. Forestry is a sector well liked but not understood because of unresolved accounting for carbon credits.
168. Companies also need to choose, he said, among financial instruments of AAUs, CERs or VERs; project strategies of equity or credits; options strategies of quality, price or term; and technology strategies of R&D or investment.
169. Don't look at every project, he advised, otherwise you may end up in the wrong sector in the wrong country. Acting early before all rules are clear, before prices rise dramatically, and before technology opportunities are fully valued, he said, is one approach but not for everyone.
170. Examples of companies' preparations, he said, include the development of pilot scale portfolios, commercial scale portfolios, making technology picks, investing in funds, and looking for partners to share the risk and expertise.
171. DiNicola of the CDM launch team for UNOCAL spoke about his company's activities in Indonesia subcontracting to the state-run oil company Pertamina and selling power to the state run electricity company PLN.
172. He described his company as a US-based multi-national US\$8 billion per year market cap company with operations in the US, Thailand, and Indonesia doing mostly oil and gas and the third largest geothermal power generator in the world.

173. The high investment and ongoing expense of new commodity carbon credits, as he has also explained to his company management, can result in revenue that reduces operating expenses. “We can retain credits,” he added, “for use in a regulatory market that has not yet emerged.”
174. Complying with emission reduction requirements in KP party countries, he said, is more costly than doing business in the US. Downstream US companies may face product boycott in Europe, he warned. “The US is having less and less of an input on UNFCCC regulations,” he said. Most important for our business unit in Indonesia, he said, US companies can participate in CDM projects in developing countries.
175. New geothermal projects in the well-endowed Indonesia could be packaged as CDM, he said, but price per kilowatt-hour and obtaining financing are so difficult every other independent power producer in Indonesia has gone into arbitration.
176. With CERs to close the gap of what PLN cannot pay, he said, geothermal sustainable development could include expenditures for construction and operation of the project, tax revenue, employment, lower electricity prices, and exports of fuel that would have been used locally.
177. He gave examples of geothermal projects underway in Indonesia with calculated CER potentials. For oil and gas production, he spoke of an implemented methane project with 2.5 mm ton emission reduction.
178. In Indonesia, he said, you see the government trying to understand CDM and taking a lot of small steps to institutionalize CDM leaving the question of what their evaluation basis will be. Our priority is to sell emission reduction credits, he said, and risks include a slow project assessment by the CDM EB.
179. The World Economic Forum chose one of his company’s projects as an example which helped establish the pathway for CDM in Indonesia, although it was small and not a CDM activity. A local Indonesian NGO wants to help his company process a CDM project, he said, looking forward to the development of a CDM manual. USAID financed an NGO associated with his company to do a case study as well as a capacity building conference and a project fair. His company reports to the US DOE voluntary reporting program on geothermal projects and is a delegate from Indonesia in COP/SBSTA meetings. His company is also a finalist in the Dutch CERUPT for two geothermal projects.
180. John Kessels spoke about the World Energy Council (WEC) cross-border projects programme and a proposed study on CDM.
181. He spoke about a study into the possible establishment of a new wind farm in NZ with the research funded by a Japan, New Zealand and Australia consortium. Like Japan, he said, NZ was in the process of developing climate change policies with the Government examining the possibility of using projects, a carbon charge or emission trading as an option to meet KP commitments. The incumbent NZ government, if re-elected July 27 [rapporteur note: the incumbent was re-elected], intends to ratify the KP when Parliament reconvenes in 2002 and has a strategy to increase renewable

energy and a policy to encourage companies to invest in technologies that would otherwise not be viable.

182. The government prefers emission trading to JI, he reported, because of perceived lower transaction costs. NZ has over 100 million tons of CO<sub>2</sub> sequestration credit.
183. He said JI requires both countries to sign a memorandum of understanding and in the case of the wind farm study the baseline depends on future developments in the electricity sector, and additionality that may be affected by future policy changes. IET, he said by comparison, requires NZ to ratify the KP, allocate AAUs to a project, and the use of an appropriate baseline creating a win/win situation.
184. About the CDM and the cross borders program, he talked about a program to examine the viability of CDM using the fast track for small projects. A potential 15MW wind farm in the Philippines, he said, had been identified as a case study.
185. He concluded that he believes the cross border research program first study was a successful and a second study is considering a fast track CDM study of a wind farm project in Philippines with the WEC Philippines committee joining the research program.
186. He described future aims as demonstrating Kyoto flexible mechanisms and developing mutual recognition between countries of carbon credits.
187. Yuzuru Nonaka of Electric Power Development Company, Ltd, a company in Japan trying to use the CDM, spoke of the significance of CDM to the private sector.
188. By macro analysis with a model called DNE21, he showed that the global target could be achieved if there is world involvement, which implies that “We have to have emissions trading.” The KP sets rules for emissions trading in A1 countries by giving all regions a cap that can be traded, which along with augmentations, he explained, is the foundation of the KP. Trading is a better way of achieving KP than each country on its own.
189. The CO<sub>2</sub> marginal abatement cost, he explained, is the cost of achieving the KP target, which is the theoretical CO<sub>2</sub> price. Developing countries do not have a cap now so instead we can see the CDM, he said. About the influence of hot air (a surplus emission right due to the reduction from 1990 level) and the withdrawal of the US for the time being from the KP, he warned of danger of monopoly because the supply of hot air would exceed demand and a market couldn’t be established.
190. CDM is “an indispensable element,” he said, to stabilize the emissions trading market especially in Japan. He showed two ways for companies to participate in CER use: CER can be generated by CDM as a source of revenue adding to project value when the investor buys CER; or the buyer who may not be an investor can buy CER. He showed the project value increase with the CER price. If you wanted to get an IRR of 15%, \$8 would be a good enough CER price, he suggested. “Cumbersome” preparation for CDM, he said, reduces the IRR. Also uncertainties in CER acquisition discount the value of the CERs. “You need a certain project threshold size,” he said.

191. Because Japan's March 2002 outline for global warming states the Kyoto mechanisms will be used as the last resort and the industrial sector is stable, there are no buyers of credit in Japan, he explained. In 2004 and 2007, he said, a review of domestic measures may result in the introduction of emission trading, but uncertainty makes buyers hesitate to join CDM. Uncertainty in future market price makes CDM too risky now for any major investor. "The private sector cannot be expected to make a significant investment," he said.
192. CDM procedures must be simplified and standardized by the EB, he concluded, and host countries must ratify KP and establish guidelines and manuals especially for the definition of additionality. Demand must be created, and an early accountable global agreement for the second commitment period reached to make the market price predictable.
193. Kuniyuki Nishimura, Research Director of the Global Warming Research Department of the Mitsubishi Research Institute, Inc. (MRI), spoke about the significance of CDM to the Japanese private sector from a different perspective than the previous speaker. About MRI's climate-related activities, he said forecast of the "carbon-constrained world" started four years ago with a carbon offset initiative and with Japan Emissions Management Simulation (JEMS). MRI also consults with private companies about corporate climate policy. The carbon offset initiative evaluates emission reduction projects for risks, such as the counter party bankrupting or not ratifying the KP.
194. JEMS is a simulation of how to construct a portfolio for the reduction of emission. Last year, 33 companies from electricity, gas, oil refining, manufacturing, forestry, trade, and finance sectors participated in a simulation supported by JBIC and others. About reduction options available, he highlighted reduction of production, in-house measures, emissions trading, and JI/CDM. "The reduction of production may have a negative impact on the profitability," he said, "making it a costly selection." He concluded that emission trading should be proactively used, with measures other than least-cost. "Japan's new guidelines say that companies would not need to take actions until 2004," he said, "but a company's management should prepare a strategy for the future."

#### PANEL DISCUSSION: CDM IN ASIA

195. On Tuesday afternoon, 25 April, Williams chaired a panel of discussants, inviting their responses to survey questions. Following a general discussion on the issues raised by these experts, the session concluded with the seven brief summaries on CDM in Asia.
196. **PANEL SURVEY:** Asking the panel of seven for interpretation of the major outcomes of the COP-7 in Marrakech, Williams noted the media had reported establishment of the "rulebook" for the Kyoto mechanisms.
197. Balce spoke of opportunities offered by CDM for the ASEAN region. All of the ASEAN Countries except Brunei Darussalam have signed the UNFCCC and the KP. They are non-Annex 1 countries with no emission reduction requirements. He noted that CDM-eligible programs are already implemented in the ASEAN countries and there are future benefits through voluntary GHG emission avoidance.

- 198.** Cohn saw significance for the market and the viability of CDM. A unilateral model, he said, allows developing countries to move forward prior to having absolute support from an Annex B government or a company overseas. The investment additionality clause was dropped. KP parties can now let their legal entities trade. Russia gets additional tonnage from forestry reductions. The fungibility of CERs, AAUs, and ERUs [emission reduction unit] will “make the market more simple and easy to trade,” he said.
- 199.** Most encouraging, DiNicola said, was commitment to CDM based on private transactions with limited government involvement. On the operational side, he praised the EB which “sorts out procedures.”
- 200.** As regards JI and CDM, Janssen said, now “people know which steps to go through.” But undecided issues important to the private sector remain, he said, such as when the credit period starts and what to do about emissions in different years above and below the baseline.
- 201.** Lu said that CDM co-operation could be done now. CDM, he said, is a channel for AI countries to meet their obligation in a cost-effective way. An example of motivation, he said, may be the five-fold expense of mitigation cost to reduce carbon in Japan compared to Thailand. Dissenting from some other speakers, he said price would be adjusted heavily by government policy.
- 202.** Wondering whether CDM would become economically reasonable, Nonaka said the cost must be reduced and the procedure streamlined with manuals and guidelines to minimize uncertainties. The baseline issue and the additionality issue must be resolved, he said, without making them “any tighter than necessary.”
- 203.** Wangwacharakul noted that the two groups of the body are not under the same agreement but related by CDM involving TT. He advised, “read the Marrakech Accords. Go to CDM and try to understand it.” Get “first hand information” about ODA and TT, he said, from the executive board and your national representatives. He suggested looking at the 200 projects studied by UNIDO to decide whether there could be a low risk, certain “good CDM.”
- 204.** Posing the second topic to the panel, moderator Williams asked private sector panelists about the private sector obstacles, participation, contributions, and partnerships.
- 205.** The major obstacle to participation is lack of clarity on the rules, said DiNicola, at the UN level and at the developing country level. Less skepticism about CDM emissions trading on the part of developing countries would facilitate involvement. About capacity, he highlighted market evidence that buyers of emission reductions want to work with the private sector. Public/private partnership can create a better product, he said, citing his company’s work with state-run corporations.
- 206.** About obstacles to private participation, Nonaka said that a transparent framework with the US in it should be part of the future. About facilitating private participation, he commented that the Kyoto mechanism should be a leveraging factor. He also

advised that, in order to have private sector capacity in place, we should let the market go with private/public partnership to minimize government involvement. Host and implementing country agreements drafted at the government level and capacity building are a prerequisite, he said, to detailed rule making. Further he articulated that the public sector must initially offer some kind of safety valve mechanism.

207. **DISCUSSION:** Williams opened the discussion about private sector involvement in the CDM to the forum participants.
208. To a question about how companies implement CDM, Cohn said American, European and Canadian companies welcome CDM as a proxy for value of compliance in Kyoto markets. "When a well developed and supported CDM project is offered on the market, we can close those transactions," the broker said.
209. Janssen highlighted the lack of incentives to buy CERs in Europe, expressing the need to open markets in the UK and later in the EU.
210. To a question of market impact from Russia, Williams noted the lack of panel experts on the Russian federation and called on Lu who has had cause to listen to the interventions made by Russia.
211. Lu said that Russia would impact CDM price because of surplus AAUs, but Russia may ask for a high price for its AAU.
212. Cohn spoke of the potential for Russia to become a buyer in later compliance periods, stating that Russia may bank "hot air" or "fair air" for later compliance periods which could buoy the price instead of becoming a massive seller that deflates prices.
213. To answer a question about China becoming a member of WTO and the CDM becoming more difficult, Lu said that his country will surely follow the regulations of WTO and of CDM and that it will not be for China or the Chinese government to tighten or to make CDM more difficult. "All those regulations and procedures trying to make it real and measurable are credible," he added.
214. Wangwacharakul said WTO and the Climate Convention should not be linked. Written by lawyers and enacted by politicians, the Convention must nonetheless be understood technically. The Convention address social issues. There is a need of paradigm shift toward different social values, more global environmental ethic. "We are transferring environmental to others either by market, by subsidy, or by assistance," he said, "We have to look at the public welfare of others," he said.
215. To a request for comment about the claim of Lu that CER may not depend only on market mechanism but will be adjusted by government policies, Cohn reiterated his point of view that CDM eventually will come down to market pricing albeit affected by externalities such as political changes, technology advances and Russian hot air.
216. Nonaka said that the Kyoto Mechanism's objective is to achieve emission reduction in a most efficient manner and therefore a market must be created for CDM.

217. Lu expressed doubt that the US and Chinese economies were different markets. The CDM co-operation will depend on negotiation between participants, he said, for an appropriate price that both can accept
218. To a request for the market mechanism view of other panelists, DiNicola said his company would not enter the market to sell emission reductions if the price were too low, but somebody else might do a project for a dollar.
219. Balce said most oil and gas companies and the power utilities in the ASEAN countries are in the process of privatization. But the governments still have to play a major role in development over a long period. However, we can not talk about CDM in terms of local market economy. I believe CDM is a global market mechanism and will have to be viewed globally, he said.
220. Wangwacharakul said that by bringing in the private sector, it implies the market mechanism is used. The Marrakech Accords does not specifically indicate the use of market mechanism.
221. To a question concerning the shift of production away from developed countries, Nonaka said that intense production shift would result from Japan inefficiently addressing the target within Japan with tough measures. Not a project by project commitment, but overall emission must be observed as a target including the US.
222. Lu spoke of China's open door to all investment, and said that a shift of industrial production from other countries to China, which would involve direct investment projects or joint venture is warm welcome. He added that China is not in a position to consider emission reduction commitment before reaching the middle development level.
223. **SUMMARY STATEMENTS:** The moderator requested the panel members to give summary statements about CDM.
224. Janssen agreed with Lu of China, Nonaka of Japan, and Wangwacharakul of Thailand that CDM is a regulated market in which minimal regulation allows market integrity. Japanese companies could invest in Asia and sell CERs to the UK or to Europe looking forward to a fully integrated market in the near future.
225. Nonaka said the next thing is how to operate the CDM with economic rationality.
226. Wangwacharakul said that good environmental investment increases the quality of life of developing countries so they can contribute more to climate change. At the same time, developed countries need to change, he said. "That's the principle of the protocol and convention." The governments of developed countries could not transfer all responsibility to the private sector to "run around the world to do it yourselves," he said, "the governments should assist and support, so the private sector can efficiently comply with the conditions of the agreements".
227. DiNicola said a lot can be learned about the complexities of CDM by doing a small transaction, recommending opportunities in Indonesia where Japan is the number one investor.

228. Lu said demand is the driving force of CDM and academic institutions and international organizations can help the business sectors understand and implement CDM.
229. Balce said the challenge is how you apply the global market mechanism of CDM from one country to another because countries have different experiences. In South East Asia, he added, the best way to implement CDM is a close partnership between the public and the private sector.
230. Cohn hoped for further agreement to create incentives for sustainable development and environmental benefit. A host government has veto power, he noted, to stop a project if it doesn't approve of the sustainable development it brings, and should therefore be able to "move forward with an open mind."

#### CLOSING REMARKS

231. Participants heard the closing statement on Tuesday evening. Yorimasa Takeda, Executive Director of MRI, congratulated on the constructive dialogue on the viability of CDM. He said that although CDM as a mechanism may be unclear and the market lack transparency, the UNIDO/MRI Forum had heard participants "confirm what CDM is about" from their respective viewpoints.
232. Lauding the ratification of the Kyoto Protocol by the Japanese parliament, he emphasized the need for Japan to continue to cooperate with developing countries.
233. Observing the desire of MRI "to continue with UNIDO to delve into this issue," he expressed his gratitude to the United Nations University as a venue and closed the forum at 6:10 PM.