



Vienna Energy Efficiency and Climate Meetings Bulletin

A Summary Report of the Seminar on Energy Efficiency Projects in CDM and JI and UNIDO Expert Group Meeting on Industrial Energy Efficiency and Energy Management Standards
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SUMMARY OF THE VIENNA ENERGY EFFICIENCY AND CLIMATE MEETINGS: 19-22 MARCH 2007

The Seminar on Industrial Energy Efficiency Projects in the Clean Development Mechanism and Joint Implementation took place at the Vienna International Centre, Vienna, Austria, from 19-20 March 2007. An initiative of the United Nations Industrial Development Organization (UNIDO), in partnership with the Climate Technology Initiative (CTI) and UK Trade and Investment, the seminar provided a forum for business and industry to discuss energy efficiency projects under the Kyoto Protocol's Clean Development Mechanism and barriers to their development and implementation. It also created an opportunity for discussion among countries hosting Clean Development Mechanism and Joint Implementation projects, and countries interested in purchasing emissions reductions to meet emissions reduction targets.

Immediately following the Seminar, UNIDO hosted an Expert Group Meeting on Industrial Energy Efficiency and Energy Management Standards from 21-22 March 2007, also at the Vienna International Centre. This meeting focused on the practical aspects of optimizing the efficiency of electric motor and other industrial energy systems. It also sought to generate discussion on energy management standards as incentives for sustainable industrial energy efficiency and on potential projects to be undertaken by UNIDO's industrial energy efficiency programme.

Over the course of the four days, more than 165 participants, representing governments, industry, international organizations, financial and legal entities, and research institutions attended.

This report includes a brief history of the climate change process, UNIDO and the CTI, and summarizes both the Seminar and the Experts Group Meeting.

A BRIEF HISTORY OF THE CLIMATE CHANGE PROCESS, UNIDO AND THE CTI

THE UNFCCC AND THE KYOTO PROTOCOL:

Climate change is one of the most serious threats to sustainable development, with adverse impacts expected on human health, food security, economic activity, the environment, water and other natural resources, as well as physical infrastructure. The international political response to climate change took shape in 1992 with the adoption of the UN Framework Convention on Climate Change (UNFCCC). The UNFCCC sets out a framework for action aimed at stabilizing atmospheric concentrations of greenhouse gases in order to avoid "dangerous anthropogenic interference" with the climate system. The UNFCCC entered into force in March 1994, and now has 189 parties.

At the third Conference of the Parties (COP 3) in December 1997, delegates met in Kyoto, Japan, and adopted the Kyoto Protocol to the UNFCCC, which commits developed countries and countries with economies in transition (Annex I parties) to achieve quantified emissions reduction targets. These countries agreed to reduce their overall emissions of six greenhouse gases by an average of 5.2% below 1990 levels between 2008 and 2012 (the first commitment period), with specific targets varying from country to country. The Kyoto Protocol entered into force in February 2005 and now has 168 parties.

The Clean Development Mechanism and Joint Implementation: The Kyoto Protocol established three flexible mechanisms to assist the parties in meeting their national targets cost-effectively: an emissions trading system; Joint Implementation (JI); and the Clean Development Mechanism (CDM).

The CDM allows Annex I parties to invest in project activities that reduce emissions in non-Annex I parties, in return for certified emission reductions (CERs). The CERs accrued from the year 2000 onwards can be used by Annex I parties to help meet their emissions targets for the first commitment period. Article 12 of the Kyoto Protocol stresses that such project activities are to assist the developing country host parties in achieving sustainable development.

Under JI, an Annex I party may implement an emission-reducing project or a project that enhances removals by sinks in the territory of another Annex I party and count the resulting emission reduction units (ERUs) towards meeting its own Kyoto target. An Annex I party may also authorize legal entities to participate in JI projects.

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UNIDO: The UN organization responsible for industrial development, UNIDO was established in 1966 and became a specialized agency of the UN in 1985. It has 172 member states. In the climate sector, UNIDO focuses on energy efficiency. Its industrial energy efficiency program is designed to strengthen the link between business practices for the management of energy and energy efficiency, and the core industry values of global competitiveness, cost reduction, increased productivity and environmental compliance. The basic concepts underpinning this program are capacity building for the optimization of industrial energy systems and the use of energy management standards to ensure persistence and sustainability. UNIDO trains local experts in industrial energy efficiency in developing countries and organizes workshops with other organizations, such as the CTI.

CTI: The CTI was established in 1995 at the UNFCCC's COP 1. A multilateral initiative, it operates as an Implementing Agreement under the International Energy Agency (IEA). Its mission is to bring countries together to foster international cooperation to accelerate the development and diffusion of climate-friendly and environmentally sound technologies and practices. The CTI has an ongoing programme of seminars and workshops designed to support the UNFCCC process and to facilitate the diffusion of appropriate technologies and practices, often arranged in partnership with other organizations, such as UNIDO.

For more information on these past events, visit: <http://www.climatetech.net/events> and http://www.iisd.ca/process/climate_atm.htm.

REPORT OF THE SEMINAR: INDUSTRIAL ENERGY EFFICIENCY PROJECTS IN THE CLEAN DEVELOPMENT MECHANISM AND JOINT IMPLEMENTATION

The Seminar on Industrial Energy Efficiency (IEE) Projects in the CDM and JI took place from 19-20 March 2007. Throughout the meeting, participants heard keynote speeches, presentations and panel discussions. On Monday, 19 March, panel sessions were held on: an overview of carbon markets; the status of energy efficiency under the CDM and JI; and lessons learned and barriers to energy efficiency. On Tuesday, 20 March, there were panel sessions on methodologies for electric motor systems and on transforming markets for energy efficiency.

OPENING SESSION

Dmitri Piskounov, Managing Director, UNIDO, said that IEE is a core activity of UNIDO and noted that the seminar represents another step in the dialogue on carbon mechanisms and IEE initiated by UNIDO in 2003. He said that although the benefits of IEE are well known, IEE projects represent only 3% of registered CDM projects. He invited participants to consider the bottlenecks that hinder development of demand side energy efficiency projects and ways to overcome the high transaction costs of these projects.

John Macgregor, Ambassador, UK Trade and Investment, highlighted the increased level of public and governmental concern about climate change, and said energy efficiency CDM and JI projects represent practical avenues to addressing climate change.

Welcoming delegates, Karl Fiala, Director, CTI, highlighted Austria's role in the CTI and noted that the CTI brings together stakeholders for technology transfer and information dissemination.

Gertraud Wollansky, Deputy Head of the Climate Unit, Federal Ministry of Agriculture, Forestry, Environment and Water Management of Austria, underscored that energy efficiency and climate change are being discussed in numerous forums, including the UN Commission on Sustainable Development. She noted that although the CDM and JI provide excellent opportunities for implementing energy efficiency initiatives, there are not currently many energy efficiency projects, and suggested participants focus on identifying opportunities to increase their number.

Peter Jenkins, Special Representative, Renewable Energy and Energy Efficiency Partnership (REEEP), presented on the activities of REEEP and obtaining approval for energy efficiency projects under the CDM and JI. He cited three significant barriers to achieving CDM or JI status for energy efficiency projects: the small number of established methodologies for energy efficiency projects; the few business models that can be used for energy efficiency projects; and difficulties with ensuring adequate legal frameworks, given uncertainties surrounding the enforceability of contractual arrangements for some projects. He noted that REEEP sees industry as the most promising sector for energy efficiency gains.

Marina Ploutakhina, Industrial Development Officer, UNIDO, outlined the seminar agenda and noted that a wide spectrum of CDM and carbon market stakeholders were represented among seminar participants, including developers, buyers, traders, academics and analysts of the carbon industry.

PANEL SESSION 1: OVERVIEW OF CARBON MARKETS

Edwin Aalders, Director, International Emissions Trading Association (IETA), moderated the discussion and introduced panel participants.

Olga Gassan-zade, Managing Director, Point Carbon, discussed the outlook for the carbon trading market. She said the volume of carbon transactions is expected to increase by 50% in 2007, but that much of this growth will occur in the European Union Greenhouse Gas Emission Trading Scheme (EU ETS). She explained that primary CDM projects for 2007 are expected to decrease, while secondary CDM and JI transactions are likely to increase.

Hervé Gueguen, Environmental Product Manager, EDF Trading, provided an overview of his organization and presented the cumulative supply and demand of CERs and ERUs, noting the possibility of CDM and JI projects exceeding demand. He said this is dependent on the number of projects that are successfully implemented and the number of new countries that enter the market. Gueguen explained that as buyers, EDF Trading determines the prices of CERs and ERUs by assessing project risk.

Eva Šnajdrová, Policy Advisor, Capital Carbon Markets, outlined various CDM technologies. She highlighted: the success of renewable energy CDM projects; the fact that CERs generated in Africa may attract price premiums in the future; and the large future potential for carbon dioxide capture and

storage CDM projects. She said that when the International Transaction Law for CERs and ERUs is introduced, trading will be standardized and traded volumes will increase.

Heather McGeory, Project Manager, Natsource, explained that Natsource is one of the largest private sector environmental asset managers. She noted that investors have a strong interest in fuel switching, renewable energies and non-carbon dioxide projects, and observed that as investors become more experienced, they become more willing to invest in new locations and to invest for longer terms, including post-2012.

Paul Waide, Senior Policy Analyst, IEA, discussed the global energy outlook and demands for the future. He highlighted that in an alternative policy scenario, energy efficiency will account for two thirds of carbon emission avoidance in 2030, and that it is a measure that makes economic sense. He identified barriers to growth of the energy efficiency sector, including: the isolation of demand from pricing in parts of the energy industry; the lack of commonly used metrics for measuring energy efficiency; and inadequate financing of technical and administrative capacity.

DISCUSSION: Participants focused on speculation surrounding post-2012 prices and Eva Šnajdrová cited the decision of the EU to reduce its emissions by 20% by 2012 as an important signal to industry. On questions from participants from non-Annex I countries regarding the types of CDM and JI projects to focus on, panelists suggested, *inter alia*: developing appropriate institutions and letting the market decide; reviewing approved methodologies and selecting the most appropriate; and taking note of the general interest in increasing the number of energy efficiency projects.

PANEL SESSION 2: STATUS OF ENERGY EFFICIENCY UNDER THE CDM AND JI

Marina Ploutakhina moderated the discussion and introduced panel participants.

Adrian Lema, Research Assistant, UNEP Risø Centre on Energy, Climate and Sustainable Development, outlined the data collated on CDM and JI projects currently in the pipeline. He said that as of 14 March 2007, 1743 projects were in the pipeline and that energy efficiency projects would generate 7.3% of the total CERs until 2012. He explained that 91% of the 194 energy efficiency projects in the CDM pipeline are located in China or India, and that the iron, steel and cement industries account for more than half of all energy efficiency projects.

Sudhir Sharma, Programme Officer, UNFCCC Secretariat, presented on approved supply and demand side energy efficiency methodologies and lessons learned. On the demand side, he outlined two methods for defining reductions, namely, the “black box” approach, involving the ratio of energy output to energy input, and theoretical modeling. He said the key challenges include: differentiating between project related gains and business as usual gains; identifying boundaries to isolate the effects on efficiency of processes under consideration; and how to address efficiency due to load variations.

Daniela Stoycheva, Member, Joint Implementation Supervisory Committee (JISC), explained how the JISC is similar to the CDM EB and said that it expects to receive 125 new Project Design Documents in 2007. She stated that energy efficiency projects comprise 25% of the total number

of JI projects and account for 49% of ERUs generated by JI projects. She also highlighted the capture of fugitive emission gases as an area for future growth.

Gertraud Wollansky discussed small scale (SSC) energy efficiency CDM project activities and explained that as a result of few projects being registered, a call for public input had been launched. She noted barriers to attaining registration of energy efficiency CDM projects, including that: the 15 Gigawatts hour (GWh) limit for SSC projects affects the financial viability of energy efficiency projects given their transaction costs; the emissions reductions are low when compared with other SSC categories; CER generation is too small to attract carbon funds; and payback periods of more than 2.5 years are not attractive to non-Annex I countries. She explained that the SSC limit had been increased to 60 GWh and encouraged participants to consider if this is sufficient.

Marina Shvangiradze, Coordinator, Second National Communication Project of Georgia, discussed Georgia’s experience in energy efficiency CDM projects. She highlighted successes in various projects including projects to: increase the efficiencies of turbines at the Engury Hydro Power Plant; replace and refurbish gas transmission pipelines; and increase pump efficiencies in municipal water supply systems.

DISCUSSION: Participants discussed the lengthy approval time for CDM projects, top-down versus bottom-up approaches to CDM methodology development, and the support offered by the Methodology Panel and the CDM EB to project participants. Sudhir Sharma said the UNFCCC Secretariat will increase communication with project participants and that bottom-up approaches are generally favored for methodology development.

PANEL SESSION 3: LESSONS LEARNED AND BARRIERS TO ENERGY EFFICIENCY IN THE CDM AND JI

Robert Williams, Chief, Energy Efficiency and Climate Change Unit, UNIDO, moderated the discussion and introduced the panel participants.

Aimee McKane, Program Manager, Lawrence Berkley National Laboratory, and Wayne Perry, Technical Director, Kaeser Compressors, discussed the potential and opportunities for industrial system energy efficiency. McKane highlighted that motor and steam driven systems account for more than 50% of final manufacturing systems energy use worldwide. Perry outlined the challenges of increasing industrial system energy efficiency, including that some developing countries are rapidly industrializing, but that new facilities are not more energy efficient. To overcome challenges, McKane suggested, *inter alia*: standardizing practice through energy management standards; making capacity building a part of the CDM tool kit; and developing sample procedures and training on their integration into management systems.

Mike Bess, Director, Camco International, discussed lessons learned and barriers to energy efficiency projects under the CDM and JI, and highlighted that CERs can contribute to energy efficiency being considered as part of core business within industry. He recommended the aggregation and bundling of SSC CDM projects to overcome high transaction costs.

Ayse Frey, Project Manager, TÜV SÜD, discussed barriers to energy efficiency projects under the CDM and JI from the perspective of a certification and inspection agency. She said

barriers include the small number of methodologies available and the fact that they tend to be project specific, along with the challenge of showing additionality. She also suggested that there is an inconsistency between the projects that are accepted by the Methodology Panel and those that receive requests for review, and that the Methodology Panel should increase the clarity and transparency of its decisions.

Michael Haslinger, Principal Consultant, Pöyry Energy, discussed additionality with regards to energy efficiency CDM projects. He stated that commodity prices are crucial in assessing a project's additionality and that where fuel prices increase, CERs would account for less than 10% of the savings experienced in oil and gas energy efficiency projects. He also noted that with high commodity prices, some energy efficiency projects are carried out without being registered as CDM or JI projects, as they are economically viable and therefore unlikely to be considered additional.

Peter Koegler, Consultant, Kommunalkredit Austrian JI/CDM Programme, discussed the Austrian JI and CDM Programme. He outlined that Austria only has one JI energy efficiency project and no CDM energy efficiency projects and said proving additionality is a challenge because of the financial advantages to project owners. Koegler also discussed obstacles for projects in Russia and the Ukraine, noting that both countries have low energy prices and thus little incentive for improving energy efficiency.

Morihiro Kurushima, Program Manager, CTI, discussed projects where Japan has made contributions and investments, and a "win-win" project involving technology transfer to Mexico. He highlighted Japan's high level of energy efficiency and stressed industry's role in sustainable development.

DISCUSSION: Participants noted that a broader definition for projects that included training and skills could increase the benefit of the CDM to developing countries. Some participants questioned the lack of CDM projects in Africa. One participant stressed that the development of CDM projects could be improved by addressing methodology issues and that direct communication between project participants, the CDM EB and the UNFCCC Secretariat would help in the processing of projects.

PANEL SESSION 4: NEW APPROACHES TO THE CDM AND JI

Patrick Matschoss, Economist, German Advisory Council on the Environment, introduced the panelists and said the session would focus on bundling projects and Programme of Activities (PoAs) under the CDM, which is a mechanism to define a series of projects under a single implementing agency that use the same methodology and technology.

Christiana Figueres, Member, CDM EB, discussed programmatic CDM projects, and noted that guidelines for programmatic approaches have been approved by the CDM EB and that the approval of some programmatic CDM projects has commenced. She explained that CDM PoAs allow for greater variation and flexibility in the timing and location of activities to reduce emissions. She also noted some restrictions on CDM PoAs, which may be addressed by the CDM EB, including that PoAs are limited to one technological approach and methodology.

Daisuke Hayashi, Consultant, Perspectives, outlined the methodology for a compact fluorescent lamp (CFL) distribution project under the CDM. He outlined barriers to the take-up of CFL in the residential sector, such as: higher initial costs; lack of information; inadequate regulatory guidance; and a lack of incentives for lighting installers. Hayashi described the methodology and random sampling method used in calculating emission reductions. He stressed the trade-off between sample size and the volume of CERs, and the need to consider optimal sample size to maximize CER volume to reduce transaction costs.

Stefanie Steiner, Researcher, B,S,S., discussed a foundry project in Belgaum, India, designed to increase the energy efficiency of 100 foundries by improving the design of the cupolas, which are used to melt iron. Wolfram Kägi, Chief Executive Officer, B,S,S., described a glass project in Firozabad, India, where numerous efficiency improvements could be made in local glass manufacturing, resulting in savings of up to 100,000 tonnes of carbon dioxide per year. He suggested the Belgaum project could form part of a bundled CDM project, and that ideally the Firozabad project would be programmatic.

Thomas Grammig, Project Manager, GTZ, discussed the issue of centrifugal chillers that use chlorofluorocarbons (CFCs). He explained that a large stock of chillers exists, including over 600 in Africa, that were not addressed under the Montreal Protocol. Grammig said GTZ's approach to phasing out chillers is to bundle them and to pursue CDM registration under technological additionality. He also described the CDM India Accelerated Chiller Replacement Program, implemented by the ICICI Bank, and said that additionality was demonstrated for each owner using a financial model to illustrate fiscal barriers.

Luis Ugarelli, Managing Partner, Market Facilitators, discussed the proposal for a fuel switching project in Peru as a programmatic CDM project. He detailed that retrofitting boilers to be fuelled by natural gas instead of coal or oil is expected to generate between 500,000 and 3 million CERs. He also noted the challenges of being limited to one methodology under programmatic CDM.

Paolo Bertoldi, EC Joint Research Centre, described actions for increasing energy efficiency CDM projects, including financial instruments such as direct subsidies, tax incentives, loans or partial guarantee funds, and carbon financing. He suggested the Green Investment Scheme could encourage energy efficiency projects under JI, and noted the need to develop monitoring and verification protocols to account for energy savings, as well as methodologies for assessing the market penetration of efficient technologies.

DISCUSSION: Participants focused on CFLs, with some highlighting the high transaction costs of CFL substitution in households as opposed to at the point of purchase. Hayashi said the methodology is rigorous and resulted from discussions with the Methodology Panel. He also noted that the optimal sample size for monitoring is 300 households.

PANEL SESSION 5: METHODOLOGIES FOR ELECTRIC MOTOR DRIVEN SYSTEMS

Anne Arquit Niederberger, Director, A+B International, moderated the session and introduced the panelists.

Anibal De Almeida, Professor, Coimbra University, discussed the application of energy efficient motors. He highlighted that improvements in efficiencies in electric motor systems could save up to 1.25 Mega tonnes (Mt) of carbon dioxide per year, with medium and large scale motors comprising the majority. He noted the importance of, *inter alia*: harmonization of electric motor efficiency standards; technology transfer; correct motor sizing; and full analysis of the systems in which electric motors are installed.

Maarten Neelis, Consultant, Ecofys, outlined a methodology developed by Ecofys and funded by the Ministry of Economics, Trade and Industry of Japan for induction motors. He explained that the methodology was not developed for a specific project and had therefore not been submitted to the Methodology Panel. Neelis said the methodology involved determining a representative sample, and monitoring periods and using load-efficiency curves to assess minimum differences between efficiencies. He highlighted that the methodology would suit projects with many small motors functioning in the same way.

Martina Bosi, Methodology Specialist, Carbon Finance Unit, World Bank, discussed the India Accelerated Chiller Replacement Program, where under the PoAs, CFC-based centrifugal chiller systems would be replaced with hydrofluorocarbon (HFC) chillers by offering replacement costs. She noted this program could reduce emissions by up to 2.3 Mt of carbon dioxide by 2012 as a result of energy efficiency gains, and that this excluded the secondary benefits of using HFC-based, instead of CFC-based, chillers. She highlighted the synergies between the Global Environment Facility (GEF), the Multilateral Fund for the Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), and the CDM. After participants inquired about the disposal of the refrigerants, Bosi confirmed that these would not be destroyed under the project, but that CFCs may be recovered. Other participants shared information on Indian companies that recover CFCs commercially.

Ian Lane, Director, Energy Cybernetics, provided insights from the South African experience with energy efficiency projects for motor driven systems outside the CDM. He noted that there are few energy efficiency CDM projects in South Africa and explained that this may be because the national energy regulator's demand side management fund pays US\$45 per tonne of carbon dioxide-equivalent to protect supply side security. He said projects funded under this scheme typically take system approaches and would not qualify for the CDM as they would not demonstrate additionality.

DISCUSSION: Anne Arquit Niederberger observed that there are clear barriers to energy efficiency CDM projects and said top-down guidance is required from the CDM EB on the specific information it requires for demonstrating the barriers to energy efficiency. She cautioned that methodologies appear to be being developed to fit the demands of the Methodology Panel and that a systems approach is not being taken.

REPORTS FROM DISCUSSION GROUPS

On Tuesday afternoon, participants divided into five groups to consider the following topics: PoAs and energy efficiency projects (Group 1); energy efficiency projects and methodology issues (Group 2); combined heat and power (CHP) projects

and the CDM (Group 3); linking chiller demonstration projects under the Montreal and Kyoto Protocols (Group 4); and linking energy efficiency projects to the CDM and JI (Group 5). Late Tuesday afternoon, representatives from each group reported back to all seminar participants.

GROUP 1: Patrick Matschoss outlined three issues the group had identified for PoAs: that allowances are necessary for economic and technical frameworks within which proposed PoAs take place, for example, energy tariffs and grid emission factors; the need for further guidance from the CDM EB as to the restriction of a single technology to PoA projects; and the need for support to obtain assistance for appliance labelling as an energy efficiency programme.

GROUP 2: Sudhir Sharma explained the Computer Model for Feasibility Analysis and Reporting (COMFAR) tool developed by UNIDO, which assesses the feasibility of projects based on cash flows and which can be used in additionality assessments. He also noted the International Standards Organization (ISO) 14064 Standard for greenhouse gas accounting and project monitoring. He said feedback from project participants to the CDM EB is key to improving CDM project mechanisms, and stressed that allowed tolerances for error in energy efficiency measurement and verification should be clarified and operationalized.

GROUP 3: Sytze Dijkstra, Research Executive, World Alliance for Decentralized Energy (WADE), noted that although CHP CDM projects are touted as success stories, they are presently limited geographically to India and Brazil and sectorally limited to sugar projects. He said that CHP has much larger sectoral potential, including in hospitals and schools, and in the area of gas-fired CHP. He outlined barriers identified by the group, including: difficulty in ensuring project financing due to upfront capital costs; the variability of grid access; and the existence of a cultural barrier for industries not familiar with selling electricity. Dijkstra said the group recommended that UNIDO and WADE work together in an industrial context to develop broadly applicable methodologies.

GROUP 4: Stefan Kessler, Senior Project Manager, Infrac, noted the availability of seed funding from the Montreal Protocol's Multilateral Fund and the GEF for chiller demonstration projects. He said the group suggested the establishment of national level carbon funds fed from different CDM projects to carry projects beyond the demonstration stage. He also reported that the group discussed monitoring approaches and highlighted the need for in-built direct incentives, through revenue streams from CERs, to ensure owners operate replacement technologies efficiently. The group concluded that the methodology developed by the World Bank, known as NM0197, will be useful for other chiller projects, and agreed that the destruction of recovered CFCs should not be included as a requirement in methodologies.

GROUP 5: Maarten Neelis said the involvement of energy efficiency experts is key to improving CDM project design. He identified calls for public input and methodologies as issues on which energy efficiency experts can contribute and said the group proposed a CDM energy efficiency expert group. He said that vast amounts of energy efficiency knowledge from a network of energy efficiency experts could be communicated to the CDM world, and highlighted existing protocols and standards of practice that would be beneficial to CDM

activities, such as the International Performance Measurement and Verification Protocol (IPMVP) and energy management standards.

PANEL SESSION 6: TRANSFORMING MARKETS FOR ENERGY EFFICIENCY

Paolo Bertoldi, EC Joint Research Centre, introduced the discussion and the panelists.

Jed Jones, Principal Projects Advisor, Department of Trade and Industry Climate Change Project Office, UK, explained that poor energy efficiency is widespread, on both the supply and demand sides, and said the central question around energy efficiency CDM projects is additionality. He stressed the need to demonstrate additionality and suggested regional, sectoral and technological benchmarks were necessary to do this. He said supply side energy efficiency projects fit well with the CDM and JI, but that demand side projects require lateral thinking, and he questioned if the CDM is the most appropriate vehicle for demand side energy efficiency projects or if a more appropriate alternative could be developed.

Marianne Moscoso-Osterkorn, International Director, REEEP, discussed barriers to improving energy efficiency, highlighting lack of institutional support for energy efficiency measures and subsidies for fossil fuels. She stressed the need to increase support for improving energy efficiency from the financial sector, and suggested that perceptions of energy efficiency activities might need improving. She suggested the CDM's present structure is not appropriate for typical energy efficiency projects, citing examples of top-down methodologies for industry and building energy efficiency, which have been created but are not being used.

Vladimir Litvak, Regional Team Leader, Energy and Environment, UNDP, discussed UNDP's efforts to transform markets for energy efficiency, involvement in CDM projects and its activities as an implementing agency for GEF. He highlighted CDM activities that contribute to UNDP's wider development goals to address climate change and increase sustainable development, such as its activities in capacity building in developing countries, establishing designated national authorities, and developing CDM strategies, pipelines and new projects.

Aimee McKane discussed building a market for IEE services and the importance of identifying where business and public policy intersect. She highlighted the benefits of public private partnerships and stressed that the public and private benefits of potential projects need to be identified up front.

Oliver Walters, Vice President, VA TECH Finance, discussed the financing of CDM and JI projects. He presented a case study of the Hydro Electric Power Plant Tsankov Kamak in Bulgaria, which involved the financing of an 80 Megawatt (MW) hydro power plant. He highlighted the success of the intersectoral synergies required to implement this project. He also noted the benefits to Austria, which secured its first JI deal, and to Bulgaria, which reduced carbon dioxide emissions equivalent to the fossil fuel required to generate 200 GWh per year.

DISCUSSION: Participants stressed that energy efficiency projects must be made more attractive to financial institutions. Noting that commercial institutions respond to changes in the market and can not be expected to lead the market, one participant said the energy efficiency sector must present

proposals to attract investment. Another participant noted the increased support for energy efficiency and carbon market projects from merchant and investment banks. Some participants said that public and institutional perceptions act as a barrier to energy efficiency projects and proposed the alternative term "energy optimization" and approaching energy efficiency projects from an energy security perspective to increase appeal.

CONCLUDING SESSION

Marina Ploutakhina reminded participants that the objective of the seminar had been to draw attention to energy efficiency CDM and JI projects, which are underrepresented in both processes, and to highlight the potential of demand side IEE projects to significantly reduce carbon dioxide emissions. She said seminar discussions had highlighted that: CDM methodologies pose a significant challenge for energy efficiency projects; guidance is needed from the Methodology Panel; and methodologies should balance rigor with pragmatism. Ploutakhina underscored the need to foster greater cooperation between the energy efficiency community and the CDM community and said the seminar had helped to bridge this gap by providing a forum for the exchange of ideas and knowledge. She thanked the conference participants and co-organizers and closed the meeting at 6:08 pm.

REPORT OF THE MEETING: UNIDO EXPERT GROUP MEETING ON INDUSTRIAL ENERGY EFFICIENCY AND ENERGY MANAGEMENT STANDARDS

The UNIDO Expert Group Meeting (EGM) on IEE and Energy Management Standards took place from 21-22 March 2007. Throughout the meeting, participants heard keynote speeches, presentations and panel discussions. Panel sessions on industrial system energy efficiency, industrial energy management, industrial energy standards, and IEE in developing countries took place on Wednesday, 21 March. On Thursday, 22 March, there were panel sessions on industrial energy frameworks, international organization for standardization, and project funding and next steps.

OPENING SESSION

Robert Williams, Chief, Energy Efficiency and Climate Change Unit, UNIDO, welcomed participants to the EGM, noting that some had also attended the Seminar on IEE Projects in the CDM and JI.

In her keynote address, Naruemol Suthawaree, Director, Bureau of Entrepreneur and Enterprise Development, Ministry of Industry of Thailand, explained the emphasis Thailand is placing on securing energy supply and noted the crucial role of energy efficiency in this. She discussed measures implemented in industry and small and medium enterprises. She also noted the government's support for companies, especially small and medium enterprises, involved in developing energy efficiency technology. Suthawaree said large savings in energy use could be made by implementing measures in the transport and industrial sectors, and reminded participants of the link between climate change, energy use and best practices.

Aimee McKane, Programme Manager, Lawrence Berkley National Laboratory, discussed the purpose and structure of the EGM and noted participants included energy and policy

making experts. She expressed hope that the EGM would generate in-depth discussion and outlined the two anticipated outcomes of the EGM as: increased international cooperation on energy standards; and discussion and critique of policies to promote IEE.

INDUSTRIAL SYSTEM ENERGY EFFICIENCY

Robert Williams provided an overview of industrial system energy. He said that by recognizing synergies between industrial energy systems optimization and energy management, IEE could become more consistent and sustainable. He explained that there are numerous ways to make specific components more efficient, but that greater efficiency gains can be made when a systems approach is taken, and stressed that analyzing the whole system is necessary to manage energy losses. Williams said UNIDO delivers training on systems optimization, and that industry managers favor payback periods of two years or less and the majority of system changes provide this. He noted that training is resource intensive and does not guarantee institutionalization of systems optimization, and that to be successful such initiatives need to be coupled with policy change, including the use of energy management standards.

CURRENT PRACTICE AND FUTURE POTENTIAL:

Wayne Perry, Technical Director, Kaeser Compressors, explained that current industry practice does not consider lifecycle costs and focuses on short-term profitability. He described the barriers to IEE as, *inter alia*, that: systems management requires a top-down, management-led initiative; operators are evaluated on machinery functioning, not on energy efficiency; and due to quantification difficulties, system efficiency is not routinely considered. He said the future potential for IEE is in addressing the disconnect between operating and capital expenditure by considering energy efficiency at the corporate level.

In the ensuing discussion, participants noted that if systems are efficient, maintenance costs are significantly reduced. Others noted the need to collate data on current practices to encourage action towards a systems approach.

INDUSTRIAL ENERGY MANAGEMENT

Aimee McKane discussed developing industrial standards frameworks for energy management, and said steam and motor driven systems account for over 50% of final manufacturing energy use worldwide. She described a programme to integrate energy management and ISO standards to institutionalize energy management and bring about permanent changes in business culture. She explained that for energy optimization to become ingrained in company culture, a top-down approach is required and capacity building must first occur at the level of government. She also suggested that the collaboration of experts and implementing agencies would help to transform the market. McKane then introduced the "UNIDO Industrial Energy Management: Issues Paper" and invited participants to review the paper and to provide comments.

IMPLEMENTING INDUSTRIAL ENERGY

MANAGEMENT IN EUROPE: Aimee McKane moderated the panel session on industrial energy management in Europe and introduced the panel participants.

Erik Gudbjerg, Managing Director, Lokaleenergi, outlined energy management in Denmark and explained that Denmark introduced a carbon dioxide tax in 1992. He described the Danish energy management system and explained that these are implemented in industry through voluntary agreements. Gudbjerg said the system is characterized by, *inter alia*: three-year agreements; annual energy assessments; payback periods of four to six years; and requirements for energy efficiency procurement and design. He explained that the benefits of energy management include optimization and environmental improvements. He also stressed the need for an EU or international standard in energy management and the importance of forums such as the EGM for exchanging information.

Brian Motherway, Head of Industry Programmes, Sustainable Energy Ireland (SEI), described the Irish Standard (IS) 393 being introduced in Ireland. He said the development was assisted by industry experts, national energy management systems from other countries, and the National Standards Authority of Ireland. He emphasized the standard: approaches energy management holistically; would shift energy management issues from the boiler room to the board room; and would fulfill companies' emissions trading reporting requirements, among others. He highlighted successes in companies that made significant savings by following the IS 393 and detailed measures to increase company buy-in, including free web-based training and support to companies applying for certification.

Mario de Renzio, Chair, European Committee for Standardization (CEN)/European Committee for Electrotechnical Standardization (CENELEC) Task Force 189 on Energy Management, explained CEN's research on areas where new energy standards are necessary. He outlined areas identified by CEN/CENELEC as ones where standards do not exist, including energy management systems, energy managers and experts, ESCOs, energy saving and efficiency calculations, and said his institute is undertaking work on standards for these areas.

INDUSTRIAL ENERGY STANDARDS

AMERICAN NATIONAL STANDARDS INSTITUTE MANAGEMENT SYSTEM FOR ENERGY 2000

STANDARD: William Meffert, Senior Research Engineer, Enterprise Innovation Institute, Georgia Institute of Technology, discussed the Management System for Energy (MSE) 2000 Standard developed by his Institute. He said it provides a way to produce sustained best practice energy management in industry and described its implementation. Meffert said the standard aimed to combine technology and management best practices in a voluntary standard and that successful implementation has depended largely on buy-in from management and not from bottom-up adoption. He identified factors influencing company adoption of the MSE 2000 Standard as: cost savings; introduction of a plant certification programme in the US; and companies' increased concern about climate issues.

ENERGY MANAGEMENT AND SYSTEM

STANDARDS IN CHINA: Li Tianan, Director, China Standard Certification (CSC) Center, explained that the center was launched in 1999 and covers over 30 domestic

and industrial product categories. He said the CSC aimed to harmonize and standardize relevant policies in China and laid the foundation for the development of MSE standards. Li said three standards have been developed: MSE requirements; MSE guidelines for performance; and MSE guidelines for energy. He explained the next steps are to collect public comments on the drafts and to pilot the MSEs. He said that a series of MSE standards recognized by the ISO is necessary and suggested UNIDO take a lead role in this initiative.

MEASUREMENT AND VERIFICATION FOR ENERGY EFFICIENCY PROJECTS: Paul Waide, Senior Policy Analyst, IEA, on behalf of Paolo Bertoldi, EC Joint Research Centre, discussed measuring energy efficiency in the EU ETS and tradable (white) certificates for energy savings. He underscored that assigning energy saving quotas to the energy supply sector focuses on outcomes rather than methods for delivery. He said that through assigning quotas, energy suppliers and distributors can act as vectors to catalyze consumer energy efficiency. He discussed the possibility of white certificates being made fungible with the EU ETS to potentially increase gains in energy optimization. Waide said arguments in favor of integrating white certificates into the EU ETS include that non-electricity savings would bring more cost effective carbon reductions from sectors not covered by the EU ETS and thereby reduce the cost of compliance for parties under the EU ETS emissions cap. He said arguments against this included the administrative and technical complexity as well as the possibility that the local benefits of energy efficiency would be lost in an international regime.

ROUNDTABLE ON ENERGY MANAGEMENT STANDARDS: Aimee McKane moderated a dialogue between participants and presenters. Participants highlighted the need for consistency in energy management terminology. Some questioned governments' preparedness to allow an international energy management standard to replace national standards. Others said the private sector, especially those undertaking corporate social responsibility reporting, require a standardized way to add value. One participant queried whether an international standard could fit with the rules of the World Trade Organization and Paul Waide clarified that initial discussions indicated a transparent, international standard would be acceptable.

Some participants questioned how developing countries would be involved and another confirmed that the ISO has 156 members, two thirds of which are developing countries, but that for implementation of an energy management standard, assistance would be required. One participant asked if there are moves toward including energy design requirements in energy management standards. Erik Gudbjerg confirmed that this is part of the Danish scheme and another participant suggested Denmark could develop a complimentary standard to certify energy systems designers.

INDUSTRIAL ENERGY EFFICIENCY IN DEVELOPING COUNTRIES

Najwa Gadaheldam, Industrial Development Office, Energy and Cleaner Production Branch, UNIDO, moderated the session on experiences of IEE in developing countries.

K.S. Kannan, Chief Project Coordinator, Malaysian Industrial Energy Efficiency Improvement Program (MIEEIP), described the Energy Rating Program carried out under

MIEEIP, which identifies energy rating programs as a cost-effective means to bring about gains in energy efficiency. He discussed a program to promote high efficiency motors through hosting informative seminars targeting motor suppliers and consumers and through offering tax exemptions for importing and selling high efficiency motors. He said analysis of purchasing data after the program indicated increased purchases of high efficiency motors, but he cautioned that the program requires continuity.

Abubakar Sambo, Director General, Energy Commission of Nigeria, explained that there are significant energy efficiency gains to be made in Nigeria. He presented a proposal, supported by the Nigerian government, for an African Regional Center for Energy Efficiency and Conservation to be opened in Nigeria. Sambo described the major barriers to energy efficiency promotion in Nigeria as a lack of, *inter alia*, data, awareness, technical skill, adequate institutional frameworks, efficient energy pricing policies, and access to capital finance. He said opportunities exist to develop industrial energy assessment programs, trading in energy efficiency products and the initiation of ESCOs. Sambo underscored that the government is providing incentives for private sector investors. A participant from Kenya suggested the need for regional approaches to ensure all African countries can make progress in energy efficiency.

Ian Lane, Director, Energy Cybernetics, presented a project to improve the efficiency for compressed air used in a platinum mining facility in South Africa. He said one third of South Africa's electrical energy is consumed by the mining sector and that 20% of this is used in compressed air operation. Lane highlighted the challenges faced in implementing energy efficiency in a remotely situated mine and in obtaining reliable information on the technical and administrative operation of the mining facility. Of the project, he said the absence of standards posed barriers and that technological solutions were not sufficient to secure participant buy-in.

Arthur Prakhovnik, Director, Institute for Energy Saving and Energy Management, explained the barriers to achieving energy efficiency within the climate of shifting to new political and economic systems in the Ukraine. He cited financial, social, legal, managerial and market barriers to improving energy efficiency. He outlined that the focus in the manufacturing sector is on upgrading technology without addressing energy efficiency. Prakhovnik said the Ukraine's strategy for effective energy use focuses on, *inter alia*, reliability, an improved pricing and tariff policy, legislation, and environmental protection and decreasing influence on climate change.

Nguyen Manh Hung, Deputy General Director of the Energy and Petroleum Department, Ministry of Industry of Vietnam, described Vietnam's commitment to energy efficiency and measures being implemented to realize Vietnam's energy efficiency potential. He highlighted successes in creating the "National Targeted Program on Energy Efficiency and Conservation in period 2006-2015" framework, the formation of an Energy Efficiency and Conservation Office by the Minister of Industry under instruction of the Prime Minister, and the implementation of a number of energy efficiency projects with international donor assistance.

ROUNDTABLE DISCUSSION: Aimee McKane moderated a roundtable discussion with panelists. On the issue of developing African regional cooperation, she suggested that a web-based instruction system on energy management could play a role. Abubakar Sambo responded that this would be useful to some, but that on-the-ground support would still be necessary. James Wakaba, Senior Consultant, Energy for Sustainable Development, Kenya, noted existing intergovernmental collaboration on energy in Africa could provide a forum for cooperation on energy efficiency.

Some participants asked for assistance in developing and promoting standards in their countries and suggested forming an expert panel including countries with established standards. Robert Williams said UNIDO could assist in training, and suggested the GEF and REEEP as potential funders. On the additional costs of certification to small businesses, Wayne Perry replied that bundling energy management standards with ISO standards could minimize additional costs. He said that businesses could forego certification yet still implement energy management and best practices. A participant from Egypt said popularizing ISO 9000 and 14000 Standards has been arduous and that introduction of an energy management standard would need external support. Another participant stated that energy management standards should be regionally specific followed by international consolidation at a later stage. Another participant said there is a need for appliance energy efficiency standards in Africa.

INDUSTRIAL STANDARDS FRAMEWORK

TRAINING: Robert Williams outlined UNIDO's training program to develop system optimization experts. He said all the training is systems-based and that UNIDO trains representatives from government sponsored energy centers, consulting companies, equipment manufacturers, ESCOs and factories. He explained that training includes instruction on converting findings from energy use assessments to financial data and calculating the benefits of system optimization. He also stressed that the challenge for local experts was to successfully transform operating culture so that improvements in efficiency continue as factory production and processes change over time.

SYSTEMS OPTIMIZATION LIBRARY: Wayne Perry presented a proposal to develop a systems optimization library of procedures, projects and work instructions. He outlined that ISO standards provide a framework, but not direction. Perry said the proposed library could work together with the ISO and include: a collection of expert experience of all motor driven systems; instructions for efficient operating practices; and simple examples for continuous improvements. He highlighted the need for information to be catalogued for easy reference and easily customized for specific facility needs. In response to questions on the development of a library, Perry explained that funding proposals have been prepared and submitted. Participants stressed that the library should also include other systems, such as steam driven systems.

INDUSTRIAL ENERGY EFFICIENCY IN BRAZIL:

George Soares, Head of Department, National Program of Energy Conservation (PROCEL), Brazil, discussed the PROCEL IEE program, which was initiated in 2003. He highlighted that electric motor systems accounted for 22% of Brazil's electricity consumption, and that this program

was instigated to address knowledge gaps regarding system optimization. Soares said the program aimed to minimize losses in motor driven systems and to increase high-efficiency motor market penetration and to strengthen technical support. He described the successful increase of skills through establishing regional training centers for industry and said the program had increased communication between research institutions and industry. On capacity building, he explained the program funded training to consultants and implementing agencies and also provided bursaries for students in university energy programs.

USA PLANT ENERGY CERTIFICATION SCHEME: Paul Scheihing, Technology Manager, Industrial Technologies Program, US Department of Energy, discussed the Plant Energy Certification Scheme, explaining that it is an industry-government partnership being developed to ensure a consistent, performance-based framework that fosters continuous progress in industrial energy efficiency. Scheihing said the partnership includes end-users and does not involve suppliers or retailers. He described the Save Energy Now Initiative that began in 2006 and that led to the conservation of over 52 trillion British thermal units (Btu) per annum of natural gas. Scheihing said the new scheme would build on existing initiatives such as this and the US Energy Star program. He said the proposed framework was to develop criteria for Energy Star Plants, Partner Plants and Certified Plants. Scheihing explained the next steps were to: form a steering committee with end users, the American National Standards Institute and government representatives; develop a strategy to engage non-end users; build and launch a Partner Plant program; and develop a Certified Plant program. Scheihing said the long-term goal was to certify 10,000 plants by 2017.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

Lalith Goonatilake, Director, Trade Capacity Building Branch, UNIDO, introduced the panel session on international standards and moderated the discussion. He explained that UNIDO's role in developing countries is to build capacity in standards and measurement departments and to increase certification and accreditation standards to the international level.

Daniel Gerundino, Strategic Advisor to the Secretary General, ISO, discussed international standards supporting energy efficiency, renewable energy and monitoring greenhouse gas emissions. He outlined the ISO's commitment to market relevance and that it had established a pilot project for an energy efficiency and a renewable energy standard. He said existing ISO standards with relevance to energy efficiency and renewable energy had been identified and that technical committees had been assigned to energy efficiency and renewable energy standards. On energy management, he said work had not been proposed, but that the ISO is aware of national energy management standards and supported activities to initiate international standardization.

José Luis Tejera, Business Development and Climate Change Unit Director, Aenor, explained that Aenor develops standardization and certification activities in Spain. He said Aenor also actively participates in the committees and subcommittees of the ISO. Tejera outlined the details of ISO 14064 Standard on greenhouse gas (emission measurement

and monitoring) and said this specification provided guidance at an organizational and project level for quantification of greenhouse gas emissions and removals, and for the validation and verification of greenhouse gas emissions. He expressed support for the proposals from participants to develop an international energy management standard.

Alexandre Mello, Senior Environmental Analyst, Brazilian Confederation of Industries, discussed a study to explore organizations' attitudes towards, and the applicability of, ISO 14064 Standard in Brazil. He said industry in Brazil recognized the need for such a standard, but that widespread implementation was limited and that national standards associations needed to promote participation in the standard.

Paul Waide, discussed IEA's research and analysis on industrial efficiency. He outlined the Group of Eight's (G8) request for the IEA to develop country level indicators for IEE and to identify areas for further analysis. Waide said the IEA's analysis indicated that energy intensity declines have slowed since the 1980s in all sectors, but that without the energy savings and structural changes, 1998 energy use would have been twice as high. He explained the analysis indicated some key insights including, *inter alia*: 20-30% energy efficiency saving potential still exists in large parts of the world; there is a general presumption that non-OECD countries are less efficient than OECD countries, but that this is often not the case; and that 70% of non-fuel energy use is in heavy industry and 30% is in light industry, but the savings potential is evenly split. Waide explained that the IEA publication "Indicators for Industrial Energy Efficiency and CO₂ Emissions" would be available in April 2007. He said the IEA is working closely with the ISO to identify gaps in the standards portfolio and that the EGM discussions would feed into this.

ROUNDTABLE DISCUSSION: Aimee McKane moderated an informal discussion on development and harmonization of international energy management standards. She outlined key actions for taking the discussions forward: inviting the ISO to consider initiating development of a standard in energy management; developing web-based resources for companies to create energy management plans; and conducting feasibility studies on barriers to energy management standards in developing and transition countries.

Paul Waide and Erik Gudbjerg said many web-based resources exist for energy management plans and that these should be used to continue development in this area. Daniel Gerundino noted that the development of energy management standards at a national level displayed the maturity of the issue and urged participants to propose the development of international standards on energy management to the ISO and to engage the standards commissions in their own countries to coordinate with the ISO. He said the ISO could develop a standard within a short timeframe if there is sufficient support, pressure, and input from the stakeholders.

Participants identified that outcomes from the meeting could be publicized through: a UNIDO press release; the REEEP network; publications of the International Institute for Sustainable Development; an IEA informal report to government representatives; and participants reporting back to their organizations. One participant suggested greater

cooperation with Korean and Japanese energy management standards bodies to support international cooperation for the initiatives discussed.

PROJECT FUNDING AND NEXT STEPS

Graham Clough, Advisor, Strategic Partnerships, UNIDO, moderated the discussion. He introduced the discussion on project funding, and the next steps for working with UNIDO and the panelists.

REEEP: Marianne Moscoso-Osterkorn, International Director, REEEP, explained that REEEP was initiated with a renewable energy focus, but has evolved to have an increasing focus on energy efficiency. She said REEEP primarily works on capacity building and awareness raising. Moscoso-Osterkorn announced REEEP's call for funding proposals and invited participants with specific projects in mind to submit them to REEEP. She confirmed that REEEP placed a high priority on energy efficiency projects and currently funds a project in Africa on energy standards and labeling. Moscoso-Osterkorn confirmed that REEEP had Euros 6 million available, in grants of up to Euros 100,000. She clarified that REEEP requires the significant co-financing of projects and that decisions on recipient countries are influenced by donor preferences. She elaborated that proposals with a clear link to recipient government policy are looked upon favorably.

UNIDO CLEANER PRODUCTION PROGRAMME: Heinz Leuenberger, Director, Energy and Cleaner Production Branch, UNIDO, introduced the Cleaner Production (CP) Program, explaining that it was established in 1994 and operates 35 National CP Centers and Programs in developing countries. He said the program involved two phases and that the first phase included: awareness raising and information dissemination; training for target groups; technical assistance at the plant level; and CP policy advice. Leuenberger explained the second phase included: developing environmentally sound technology; transferring and promoting CP technology; and integrating CP with related systems, such as quality assurance. He highlighted that although energy efficiency is not new to CP, a systems approach to energy efficiency is new. Leuenberger clarified that initiating a CP center requires the following: an official request from a government; a host institution; and a donor.

GEF: Edward Clarence-Smith, GEF Coordinator, UNIDO, discussed GEF funding for energy efficiency projects within the climate allocation. He described the project development cycle and noted that of GEF's US\$2.8 billion available funding for 2007-2011, US\$360 million is available for energy efficiency projects. He said that, of GEF's ten implementing agencies, UNIDO is most suited to support and implement energy efficiency projects. Clarence-Smith cautioned that GEF requires strong co-financing for energy efficiency projects, elaborating that the requirement is at least 1:1, but that this could be higher, such as in the order of 4:1. He confirmed that the GEF would be willing to fund projects that may be eligible for consideration under the CDM in later stages.

CLOSING SESSION

Robert Williams highlighted the general agreement among participants regarding the need for an international energy management standard. Aimee McKane summarized

the follow-up from the EGM as: the drafting of an EGM statement in support of an international standard for energy management; distributing the statement to all participants for comment; distribution of a meeting summary; and an invitation to all participants to submit web-based material on energy management standards.

Robert Williams outlined the potential project opportunities that UNIDO will take forward in collaboration with participants as: an industrial standards framework with GEF support; the development of an energy management website, after consideration of current web-based resources; a study to examine issues and barriers for an energy management standard; and the establishment of an energy management working group to work towards harmonization of existing national energy management standards. He thanked participants for their cooperation and discussion, and closed the meeting at 5:38 pm.

UPCOMING MEETINGS

IEA WORKSHOP: SCALING UP ENERGY

EFFICIENCY: BRIDGING THE ACTION GAP: This meeting will take place from 2-3 April 2007, in Paris, France. The workshop will bring together senior energy and environment policy makers, multilateral development agencies and experts from within and beyond the countries of the Organization for Economic Cooperation and Development (OECD) to consider measures to bridge the action gap. Its recommendations will inform the policy discourse of the fifteenth session of the UN Commission on Sustainable Development (CSD-15) and 2007 G8 Summit, as well as the 2007 IEA Biennial Ministerial Meeting. For more information, contact: Paul Waide, IEA; tel: +33-1-40-57-65-00; fax: +33-1-40-57-65-59; email: Paul.Waide@iea.org; internet: http://www.iea.org/Textbase/work/workshopdetail.asp?WS_ID=298

EIGHTH SESSION OF WORKING GROUP II OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE:

The eighth meeting of IPCC Working Group II on adaptation will be held in Brussels, Belgium, from 2-5 April 2007. For more information, contact: Rudie Bourgeois, IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025/13; e-mail: IPCC-Sec@wmo.int; internet: <http://www.ipcc.ch/calendar2007.htm>

INTERNATIONAL MOTOR SUMMIT 2007: The International Motor Summit will take place from 10-11 April 2007, in Zurich, Switzerland. The Standards For Energy Efficiency of Electric Motor Systems (SEEEM) will co-host the summit in collaboration with the Swiss Agency for Efficient Energy Use and the Swiss Energy Program. The summit will provide a forum for energy experts, government officials, energy agencies, motor manufacturers and industrial motor system end-users to discuss strategies to promote high-efficiency motor systems globally. For more information, contact: Swiss Agency for Efficient Energy Use (S.A.F.E); tel: +41-44-226-3070; fax: +41-33-226-3099; e-mail: conrad.u.brunner@energy-efficiency.ch; internet: <http://www.energy-efficiency.ch>

NINTH SESSION OF IPCC WORKING GROUP III AND TWENTY-SIXTH SESSION OF THE IPCC: IPCC-26 is scheduled for 4 May 2007, in Bangkok, Thailand, immediately following the ninth session of Working Group III,

to be held from 30 April to 3 May 2007. For more information, contact: Rudie Bourgeois, IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-7 30-8025/13; e-mail: IPCC-Sec@wmo.int; internet: <http://www.ipcc.ch/calendar2007.htm>

FIFTEENTH SESSION OF THE UN COMMISSION ON SUSTAINABLE DEVELOPMENT: Building on the "review year" discussions at CSD-14, CSD-15 will convene from 30 April to 11 May 2007, in New York, US. For more information, contact: Division for Sustainable Development, Department of Economic and Social Affairs; tel: +1-212-963-8102; fax: +1-212-963-4260; e-mail: dsd@un.org; internet: <http://www.un.org/esa/sustdev/csd/policy.htm>

TWENTY-SIXTH SESSIONS OF THE UNFCCC SUBSIDIARY BODIES AND THIRD SESSION OF THE KYOTO PROTOCOL AD HOC WORKING GROUP: SB-26 will take place from 7-18 May 2007, in Bonn, Germany, alongside the third session of the Ad Hoc Working Group on Further Commitments from Annex I parties under the Kyoto Protocol and the third workshop of the UNFCCC Dialogue on Long-Term Cooperative Action on Climate Change. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; internet: <http://unfccc.int/meetings/sb26/items/3919.php>

RUSSIA AND THE KYOTO PROTOCOL: This conference will take place from 24-25 May 2007, in St. Petersburg, Russia. The conference will include presentations and discussions of up-to-date topics on Russia's share of the global carbon market, with specific focus on assigned amount unit (AAU) trading and investing in JI projects in Russia. For more information, contact: Point Carbon; tel: +38-044-278-3356; email: kyiv@pointcarbon.com; internet: <http://www.pointcarbon.com/Events/Other%20Point%20Carbon%20events/St.%20Petersburg%20Conference/category1386.html>

GLOSSARY

CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CERs	Certified Emission Reductions (CDM)
CFC	Chlorofluorocarbon
CFL	Compact Fluorescent Lamp
CTI	Climate Technology Initiative
EGM	Expert Group Meeting
ERUs	Emission Reduction Units (JI)
ESCO	Energy Services Company
EU ETS	European Union Greenhouse Gas Emission Trading Scheme
GEF	Global Environment Facility
HFC	Hydrofluorocarbon
IEE	Industrial Energy Efficiency
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MSE	Management System for Energy
PoAs	Programme of Activities (CDM)
SSC CDM	Small scale CDM (projects)
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization