



**SUMMARY OF THE SECOND CTI JOINT
SEMINAR ON TECHNOLOGY DIFFUSION IN
CENTRAL AND EASTERN EUROPE AND THE
COMMONWEALTH OF INDEPENDENT STATES:
28-29 OCTOBER 2004**

The second Climate Technology Initiative (CTI) Joint Seminar on Technology Diffusion in Central and Eastern Europe and the Commonwealth of Independent States (CIS) took place from 28-29 October 2004 at the Vienna International Centre, Austria. Organized by the CTI and the UN Industrial Development Organization (UNIDO), the Seminar was attended by over 90 representatives from governments, intergovernmental organizations, non-governmental organizations, business and industry groups, and academic institutions.

Focusing on linkages between climate change and energy efficiency, the Seminar aimed to review best practices for the deployment of energy-efficient technology and consider how policies such as energy security, market reform and social and rural development can create incentives for improving energy efficiency. It also sought to identify major barriers to the diffusion of energy-efficient technologies in Central and Eastern Europe and the Commonwealth of Independent States.

During the two-day meeting, participants heard over 30 presentations addressing a range of energy efficiency issues in plenary and break-out sessions. On Thursday, 28 October, three plenary sessions were held to set the context of the Seminar, consider experiences and views from external donors and organizations, and hear about experiences and views from within Central and Eastern Europe and the Commonwealth of Independent States. On Friday morning, 29 October, participants convened in two parallel groups, which considered the relation between energy efficiency and climate change on a sector-by-sector basis. While the first group addressed power, heat and gas generation and supply, and the building, household and transportation sectors, the second group focused on industry. A third group met on Friday afternoon to discuss financing and emission trading.

The Seminar's report and conclusions will be presented at the meeting of the tenth Conference of the Parties to the UN Framework Convention on Climate Change in December 2004, and it is expected that the two-day discussions will foster further dialogue and cooperation among stakeholders on the diffusion of environmentally sound technologies in the region and beyond.

**A BRIEF HISTORY OF THE CLIMATE CHANGE
PROCESS, ENERGY EFFICIENCY AND
TECHNOLOGY TRANSFER**

Climate change is considered one of the most serious threats to sustainable development, with adverse impacts expected on human health, food security, economic activity, water and other natural resources, and physical infrastructure. Global climate varies naturally, but scientists agree that rising concentrations of anthropogenically emitted greenhouse gases in the Earth's atmosphere are leading to changes in the climate. Scientific observations on climate change were brought to policy makers' attention in the late 1970s. While scientific uncertainty was high, debate on whether or how to take action took place throughout the 1980s, with the international community agreeing by the 1990s that a global framework for action was necessary to stabilize the atmospheric concentrations of greenhouse gases in order to avoid "dangerous anthropogenic interference" with the climate system. Gases that were considered important to control included methane, nitrous oxide and, in particular, carbon dioxide. Negotiations on a global framework to address climate change began in 1991, and the UN Framework Convention on Climate Change (UNFCCC) was adopted in June 1992. It entered into force on 21 March 1994, and has a current membership of 189 Parties.

TECHNOLOGY TRANSFER UNDER THE UNFCCC:

Technology transfer is considered a key element in combating climate change under the UNFCCC. Technology transfer has been on the agenda of every session of the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Conference of the Parties (COP) since the Convention's entry into force. UNFCCC Article 4.5, which addresses the need for technology transfer, states

SUSTAINABLE DEVELOPMENTS

that “developed country Parties ... shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention,” adding that “in this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties.”

KYOTO PROTOCOL: The need for technology transfer is also addressed in the UNFCCC’s Kyoto Protocol, which was adopted at COP-3 in Kyoto, Japan, in December 1997. Up to now, negotiators have been finalizing the Protocol’s operational details. The Protocol commits developed countries and countries with economies in transition to a market economy to achieve quantified emissions reduction targets. These countries, known under the UNFCCC as Annex I Parties, agreed to reduce their overall emissions of six greenhouse gases by at least five percent below 1990 levels between 2008 and 2012 (the first commitment period), with specific targets varying from country to country. The Kyoto Protocol also established three mechanisms to assist Annex I Parties in meeting their national targets cost-effectively: an emissions trading system; joint implementation (JI) of emissions-reduction projects between Annex I Parties; and a Clean Development Mechanism (CDM) that encourages projects in non-Annex I Parties. The mechanisms established under the Protocol are expected to contribute to technology transfer. The Protocol will enter into force once it has been ratified by 55 Parties to the UNFCCC, representing at least 55% of the Annex I Parties’ total carbon dioxide emissions for 1990. With the Russian Federation’s ratification of the Protocol in late 2004, the Protocol is expected to enter into force in 2005.

EXPERT GROUP ON TECHNOLOGY TRANSFER: At UNFCCC COP-7 in November 2001, Parties took further action on technology transfer by establishing an Expert Group on Technology Transfer (EGTT) to support the work of the SBSTA in advancing the Convention’s technology-related goals. Since 2002, the EGTT has met several times, adopting a work programme and providing input and advice to the SBSTA on technology transfer. To date, the EGTT has considered a variety of issues, focusing on information dissemination, enabling environments for the transfer of environmentally sound technologies, technology needs assessments and, more recently, options for financing technology transfer. In this regard, UNFCCC workshops were held on technology information (Beijing, China, April 2002), needs assessments (Seoul, Republic of Korea, April 2002), enabling environments (Ghent, Belgium, April 2003), and innovative financing (Montreal, Canada, September 2004).

At SBSTA-20 in June 2004, delegates continued their consideration of technology transfer issues, focusing in particular on the work of the EGTT. Delegates discussed how and whether the results of the survey on the effectiveness of the use of the UNFCCC technology information clearing house (TT:CLEAR) should be reflected in the conclusions; the EGTT’s 2005 work programme; and possible elements of a decision on enhancing the implementation of the framework for technology transfer, to be negotiated at SBSTA-21. They also adopted conclusions

encouraging business and industry, non-governmental organizations and relevant international organizations to organize sector-specific workshops and other activities relevant to enabling environments for technology transfer. It also invites the UN and other relevant organizations, including the CTI, to hold additional regional workshops to finalize the technology needs assessments. In addition, the Secretariat was asked to prepare a technical paper on the applications of environmentally sound technologies for adaptation to climate change, and to continue its work on maintaining and improving TT:CLEAR.

UNIDO-CTI JOINT SEMINAR SERIES: A range of intergovernmental organizations and UN agencies have become involved in the climate change discussions and the issue of technology transfer. With approximately 43% of global carbon dioxide emissions from energy use arising from industrial energy consumption, the UN Industrial Development Organization (UNIDO) has been active in exploring how to support technology transfer in this area under the UNFCCC and Kyoto Protocol. It has been working on energy efficiency and addressing how JI and CDM can play a role in encouraging energy efficiency, particularly in the industrial sector.

The Climate Technology Initiative (CTI), which is one of the International Energy Agency (IEA)’s Implementing Agreements and was founded by a group of developed countries and the European Commission in 1995, has also been actively engaged in technology objectives of the climate change process, helping to foster international cooperation to accelerate the diffusion of climate-friendly technologies.

In 2003, CTI and UNIDO, in cooperation with the UNFCCC and Austrian government, held an Industry Joint Seminar on Technology Diffusion in Eastern Europe and Central Asia. The event, which took place from 28-29 October 2003 at the Vienna International Center in Austria, sought to increase participants’ awareness of climate change and technology transfer issues, review experiences in the region, and promote environmentally sound projects by encouraging collaboration between policymakers, technology transfer specialists, financial institutions, and the private sector. The meeting involved presentations and discussions on the status of technology transfer under the UNFCCC, and on technology transfer under the Kyoto Protocol. The role of OECD countries in diffusing technology in the target regions was also considered, as were financial barriers and the role of multilateral and financial organizations.

The meeting marked the beginning of dialogue and cooperation among key stakeholders on the diffusion of environmentally sound technologies in the region.

MEETING ON INDUSTRIAL ENERGY EFFICIENCY AND CARBON FINANCING:

Immediately following the first Joint Seminar, an Expert Group Meeting on Industrial Energy Efficiency and Carbon Financing took place from 30-31 October 2003 at the Vienna International Center. Organized by UNIDO and Austria’s Ministry of Agriculture, Forestry, Environment and Water Management, the meeting considered how carbon financing can accelerate the uptake of energy-efficient technologies and systems in the industrial sector using the CDM and JI. Participants considered: the use of energy efficiency in

SUSTAINABLE DEVELOPMENTS

the industrial sector as a key option for productivity increases and greenhouse gas emissions mitigation; the national delivery mechanisms required to increase energy efficiency in industry through the CDM and JI; and barriers and opportunities for JI in Eastern Europe. They also discussed the evolution of the carbon market and carbon financing, and gauged progress in the climate change negotiations, and regarding the CDM and JI.

REPORT OF THE SEMINAR

The second CTI Joint Seminar on Technology Diffusion in Central and Eastern Europe and the Commonwealth of Independent States began on Thursday morning, 28 October 2004, with opening speeches from the host country and the organizers. Karl Fiala, Director of International Environmental Affairs-Austrian Ministry for Economic Affairs and Labor, welcomed participants, highlighting the role played by CTI in the climate change process and stressing the importance attached by Austria to the development and export of environmentally friendly technology.

Ida di Pietro Leupold-Lowenthal, Deputy Director of the UN Industrial Development Organization's Multilateral Environmental Agreements Branch, highlighted the timeliness of the Seminar in light of news that the Russian parliament's upper chamber had just ratified the Kyoto Protocol. She expressed hope that entry into force of the Protocol would act as a catalyst for the transfer of climate-friendly technologies. She also drew attention to the EU Emissions Trading Scheme (EU ETS), which she said would "function as one of the Kyoto mechanisms through the new EU Linking Directive." She stressed that the Seminar would focus on energy efficiency in the context of climate change, and outlined UNIDO's various activities in this area, including its network of investment and technology promotion offices. She concluded by stressing UNIDO's commitment to support the UN Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol.

Seminar and CTI Executive Committee Chair Toshiyuki Sakamoto (Japan) described the work of the CTI, which was established in 1995 and works with a range of organizations, including the UNFCCC and Expert Group on Technology Transfer (EGTT), International Energy Agency (IEA), UNIDO, World Bank and UN Development Programme. He anticipated productive presentations and discussions on major barriers to the diffusion of energy-efficient technologies, and on the linkages between climate change and energy efficiency, including through the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI).

SESSION ONE: CONTEXT OF THE SEMINAR

On Thursday morning, 28 October, participants were briefed on the context of the Seminar by speakers representing the Austrian government, CTI, UNFCCC Secretariat, EGTT and UNIDO. The session was chaired by CTI Executive Committee Chair Sakamoto.

Clemens Ploechl, Kommunalkredit Public Consulting, presented experiences and lessons learned from the Austrian CDM/JI Programme. Outlining a three-stage approval procedure for projects, he said lessons

regarding the expression of interest stage included: the need to recognize differing legal requirements in countries and the differing financial and economic standing of applicants; the need to use "letters of no objection" in approval procedures; and the need to clarify ownership of the emissions reductions. Regarding the submission of proposals and negotiation of emission reduction purchase agreements, he stressed differing approval procedures and a lack of capacity within host countries' responsible authorities. Regarding project developers, he highlighted differing experiences and expectations, the benefits for projects of having a JI status, and difficulties in coordinating construction permissions, financing contracts, validation and approval procedures. He concluded by stressing the flexibility of the Austrian Programme, its continuous approval procedure, and consideration of social and ecological benefits, as well as the possibility of prepayment and financial support, and absence of minimum levels of emissions reductions and specific country restrictions. In the ensuing discussion, he clarified that although stakeholder involvement is not a requirement at the submission of proposal/negotiation phase, it is encouraged.

Morihiro Kurushima, CTI, presented CTI's activities related to industry and technology diffusion. He outlined successful examples of involvement of the car industry at the basic survey, project formulation and implementation stages in Mexico and Thailand, and concluded by stressing the importance of collaboration between the government, academia, the banking sector and industry to ensure a sustainable energy, environment and economy.

Daniele Violetti, UNFCCC Secretariat, discussed innovative options for financing the development and transfer of technology. He briefed participants on the UNFCCC workshop on innovative financing held in Montreal, Canada, from 27-29 September 2004. Noting that this was the first time the matter had been officially considered under the UNFCCC, he explained that there had been a valuable exchange of views between public and private sector participants. He highlighted agreement on the importance of technology needs assessments, appropriate toolkits and handbooks, and training and capacity building. He also emphasized the need for ongoing dialogue with the private sector, and the potential role of export credit agencies, CDM and JI. He added that the workshop had highlighted the value of seed financing from donors, and the benefits of "bundling" small-scale projects to reduce transaction costs and encourage private sector investment.

Kishan Kumarsingh, EGTT Vice-Chair, briefed participants on the recent work of the EGTT. Noting that the EGTT had been established at UNFCCC COP-7 in 2001, he explained that it sought to enhance implementation of UNFCCC Article 4.5 (Technology Transfer), and to make relevant recommendations to the Subsidiary Body for Scientific and Technological Advice (SBSTA). He explained that the EGTT has been working on issues related to technology needs assessments, technology information, enabling environments, capacity building, and mechanisms for technology transfer. In particular, he highlighted recent work on the role that favorable enabling environments can play in overcoming barriers to technology transfer at all levels, and on capacity building.

SUSTAINABLE DEVELOPMENTS

Peter Pembleton, UNIDO, presented conclusions from the CTI Industry Joint Seminar on Technology Diffusion in Eastern Europe and Central Asia held from 28-29 October 2003, in Vienna, Austria. Regarding financial barriers, he stressed the need for collateral when financing projects and the benefits of funds such as carbon funds. Regarding sustainable development and business, he noted the need to factor carbon into business processes, adopt cleaner and more efficient practices and processes, and develop networks. He said concerns remain for businesses, including the status of the Kyoto Protocol and non-payment of energy bills by public bodies. Pembleton also drew attention to recommendations to: include climate change in national development plans and take account of sustainable development concerns in climate change plans; incorporate energy costs in pricing policies; and move towards national energy security. He said conclusions on technology highlighted the potential to reduce greenhouse gas emissions at the energy supply and demand levels.

Marina Ploutakhina, UNIDO, presented the main outcomes of the Expert Group Meeting on Industrial Energy Efficiency and Carbon Financing held in October 2003, in Vienna, Austria, to consider energy efficiency in the context of carbon financing. She stressed the need for market reforms to create the necessary economic, financial, legal and technical background for energy-efficient projects, and noted the importance of methodologies for scaling-up small-sized projects to make use of JI and CDM. Ploutakhina said Energy Service Companies (ESCOs) are a major driving force for implementation of energy-efficient projects, and stressed the need to integrate JI and CDM in their services. She further explained the benefits and disadvantages of the EU ETS, noted limited experience with developing CDM/JI projects for industrial energy efficiency, and highlighted capacity building as a major issue.

SESSION TWO: EXPERIENCES AND VIEWS FROM OUTSIDE THE REGION

The Seminar's second session, held late morning on Thursday, 28 October, considered the experiences and views of external organizations and donors on the issue of technology diffusion in Central Eastern Europe and the Commonwealth of Independent States. The session heard from speakers representing the European Commission, IEA and Japanese agencies.

Paolo Bertoldi, European Commission, spoke about the development of ESCOs in Central and Eastern Europe. Outlining the role ESCOs can play in supporting and financing energy systems and guaranteeing energy savings, he noted that some European countries are considerably more advanced in the development of an ESCO industry than others, with Germany, Austria and Hungary leading the way. He outlined key actions undertaken to foster the ESCO industry, including information dissemination about the benefits of ESCOs, identification of funding sources, and standardization of procedures to help end-users and the financial community to understand the issue better. He concluded that recent policy developments, including a proposed EU Energy Services Directive, could help ESCO activities expand in all European countries, adding that the entry into force of the Kyoto

Protocol and its flexible mechanisms would create new opportunities for the ESCO industry. He also highlighted energy efficiency projects as a cost-effective area for reducing greenhouse gas emissions.

Takashi Hongo, Japan Bank for International Cooperation, made a presentation on ways to support emission reduction projects in Central and Eastern European countries. Explaining that his Bank is a government financial institution that provides loans and other financial services, he explained its work in supporting JI. On barriers to the development of emissions-reduction projects, he noted that financing was a key issue, with problems including the small size and relatively high initial costs of many renewable energy projects, and concerns over projects' economic feasibility. He recommended simplifying the Kyoto Protocol, noting that its current complexity discourages investment. He commented on the idea of a Green Investment Scheme intended to encourage investment, which he said could be either fund- or project-based. He concluded by calling for the development of a new business model to support projects resulting in genuine emissions reductions.

Takeshi Sakurai, New Energy and Industrial Technology Development Organization (NEDO) of Japan, presented NEDO's CDM/JI-related activities and domestic climate change policy measures, including quantitative targets for greenhouse gases and the establishment of a Liaison Committee for the use of Kyoto Mechanisms, which is charged with approving CDM/JI projects. He said NEDO's activities to promote CDM/JI include feasibility studies to identify private sector projects that are expected to lead to future JI or CDM projects, and a subsidy system for CDM/JI activities.

Nicolas Lefevre, IEA, presented a quantitative approach to assessing the interactions between climate change and energy security policies. He said policy proxy measures for energy security address geopolitical and power reliability aspects. Regarding geopolitical energy security measures, he noted a focus on market concentration rather than infrastructure, stability of suppliers and supply liquidity. He said power system reliability relates to back-up capacity requirements and output flexibility. Lefevre described the evolution of climate change and energy security measures, based on four country studies, to illustrate the value of a quantitative approach. He concluded that such an approach, *inter alia*, allows for the testing of different assumptions and assessing trends, and helps in evaluating the policy implications of different scenarios when applied to modeling results.

SESSION THREE: EXPERIENCES AND VIEWS FROM INSIDE THE REGION

On Thursday afternoon, 28 October, participants heard presentations on technology diffusion from representatives of countries from Central Eastern Europe and the Commonwealth of Independent States. The session, which was chaired by Peter Pembleton, UNIDO, featured speeches outlining perspectives from Albania, Bulgaria, Georgia, Kazakhstan, Poland, Romania, the Russian Federation, Slovakia, Serbia and Ukraine.

Ermira Fida, National Coordinator for Climate Change of Albania, spoke about mainstreaming climate change into her country's energy efficiency policies. She profiled Albania's energy sector, noting low *per*

SUSTAINABLE DEVELOPMENTS

capita energy consumption, reliance on old technology, high energy intensity, and an emphasis on hydropower. She indicated that the UNFCCC's national communications process had assisted efforts to mainstream climate change, with key findings feeding into the development of a national energy strategy. She explained that the national strategy aims to establish an efficient energy sector, increase reliability and security of supply, and create an effective institutional and regulatory framework. Fida said energy savings were planned in the domestic, industrial and transport sectors, with the domestic sector expected to see an increase in thermal insulation, liquefied petroleum gas (LPG) for heating, and energy-efficient light bulbs.

Nikolay Nikolov, Bulgaria's Energy Efficiency Agency, spoke about the country's energy efficiency policy and its relationship with climate change. He drew attention to Bulgaria's dependence on imported primary energy sources, primarily from Russia. Explaining that his country's energy efficiency goals included reducing energy intensity and improving local energy sources, he outlined work to develop an appropriate legal and regulatory framework. He indicated that Bulgaria had also established an energy fund of US\$17 million to support energy efficiency activities, with financing provided primarily by the World Bank and the government. Nikolov noted that the country was also engaged in certification and auditing of the building and industry sectors. On climate change, he explained that Bulgaria had seen a reduction of greenhouse gases of 55% from 1988-2002, allowing it to meet its target under the Kyoto Protocol. He added that 10 contracts had already been signed for JI projects, including those relating to the power sector, district heating and biomass.

George Abulashvili, Energy Efficiency Center of Georgia, presented on the use of energy efficiency initiatives as a tool for Georgian energy security. Considering various indicators of energy security, including the potential of indigenous energy sources, energy efficiency levels and integration of national and regional energy sectors, he concluded that Georgia's energy security is among the lowest in the region. He highlighted the correlation between high levels of energy intensity and high levels of greenhouse gas emissions, and outlined the development of energy efficiency measures in Georgia. Abulashvili recommended adopting legal, administrative and economic measures, introducing soft taxation for energy-efficient products, liberalizing energy markets, removing subsidies, and increasing transparency.

Lyubov Inyutina, Climate Change Coordination Center of Kazakhstan, presented the country's priorities and incentives for capacity building to address climate change and promote energy efficiency. She said capacity-building opportunities for companies include interacting with environmental and finance departments, learning-by-doing, and developing target scenarios. Noting that Kazakhstan is considered an Annex I country under the Kyoto Protocol but not under the UNFCCC, she highlighted CDM/JI projects and related capacity-building programmes and projects in Kazakhstan. She proposed measures to move forward at the national level, including developing institutional arrangements and establishing a national register of assigned amounts units (AAUs), emissions reduction units

(ERUs), certified emissions reductions (CERs), and removal units (RMUs). At the business and civil society level, Inyutina recommended identifying strategic partners for project development and developing a CDM/JI collaborative framework to share experiences. She stressed the need for awareness-raising programmes, dissemination of CDM/JI benefits, removal of subsidies, risk mitigation and investment in energy-saving and efficient technologies.

Roman Babut, Polish National Energy Conservation Agency, described the national, regional and local policies and initiatives to support energy efficiency. Outlining Poland's institutional framework, he noted that the country's 2500 local authorities had been required to play a key role in energy policy. He highlighted various institutions set up at the national, regional and local levels to support energy efficiency, and described cooperative initiatives with the UK, Sweden, Denmark, Japan and Germany. He concluded that energy efficiency is "not a one or two day Seminar, but an ongoing process," and espoused the benefits of international cooperation.

Corneliu Radulescu, Romanian Agency for Energy Conservation, discussed energy efficiency and JI under the Kyoto Protocol. He outlined Romania's energy efficiency activities, outlining investment in municipalities that focused primarily on schools and hospitals. He also discussed activities in the industrial sector, and outlined his country's renewable energy policies. On JI, he noted that 11 projects were under development, and reported on cooperation with the Netherlands, Switzerland, Norway, Austria, Denmark, Sweden and the World Bank's Prototype Carbon Fund. Looking ahead, he noted plans to finalize the country's national action plan on climate change, approve a methodology for JI projects, and develop JI activities with Canada, Italy, Japan and France.

Elena Holodova, Russian Federation's Ministry of Economic Development and Trade, reviewed prospects for energy saving in the Russian Federation through the Kyoto Protocol mechanisms. She stressed the need for urgent institutional and funding arrangements for inventory and monitoring systems, and outlined Russia's activities towards implementing the Protocol, including the Energy Efficient Economy Federal Programme, dialogues with the EU and Baltic region States, Memoranda of Understanding with various countries, and the Green Investment Scheme. Following a question on Russia's institutional setting and responsibilities, she acknowledged a lack of clarity at present as a result of a restructuring required following ratification of the Kyoto Protocol.

Viera Fecková, Slovak Cleaner Production Center, presented Slovakia's experience to address energy efficiency and climate change. She outlined the regulatory framework related to energy efficiency, drawing attention to the absence of a carbon tax, the novelty of consumption taxes, integration of EU legislation regarding plants, processes and pollution, and the lack of recycling programmes addressing energy efficiency. Fecková highlighted projects related to the Kyoto Protocol, cleaner technology transfer and assessment, and cleaner production and energy efficiency. She concluded by noting an increase in energy prices, growing competitiveness and the potential for

SUSTAINABLE DEVELOPMENTS

technology transfer and investments. However, she also drew attention to barriers stemming from limited resources in small and medium enterprises.

Jelena Blazic, Serbia's Ministry of Mining and Energy, spoke about energy efficiency policy, focusing on the current situation, barriers and challenges. Noting that an Energy Efficiency Agency had been established in May 2002, she drew attention to activities in the areas of government policy, building stock, industry, municipal energy, transport, renewable energies, combined heat and power production, and regional energy efficiency centers. She noted that specific goals or actions for achieving greater energy efficiency included implementing the country's national energy efficiency programme, strengthening institutional capacities, harmonizing policies with EU regulations, and cooperating regionally. Barriers to developing energy efficiency projects included inadequate financial resources, as well as a lack of knowledge and understanding of the benefits of energy efficiency.

Heorhiy Veremiychyk, Ukraine's Ministry of Environmental Protection, outlined his country's policies for JI. He outlined the legislative and institutional arrangements that had been established, as well as procedures for JI project approval. He also reported on various capacity-building activities to support project development, and described projects currently in the pipeline involving the Netherlands, Austria and Denmark. He said these projects relate to district heating systems, coal mine and landfill methane capture and conversion, cogeneration technologies, and the use of sunflower husks for steam and power production at an oil extraction plant.

SESSION FOUR: GROUP SECTORAL SESSION

On Friday, 29 October, participants considered energy efficiency and climate change on a sector-by-sector basis. In the morning, two groups met in parallel. The first group, chaired by Morihiro Kurushima, CTI, considered power, heat and gas generation and supply, the building/household sector, and transportation. The second group, chaired by Robert Williams, UNIDO, examined industry. In the afternoon, a third group, chaired by Andrei Marcu, International Emissions Trading Association, discussed financing and emissions trading.

GROUP ONE—POWER/HEAT/GAS GENERATION AND SUPPLY, BUILDING/HOUSEHOLD, AND TRANSPORTATION:

Hiroiyuki Nakai, Chubu Electric Power Co. (CEPCO), presented CEPCO's activities to address climate change. He outlined CEPCO's strategy for greenhouse gas emissions reductions, based on an increased use of nuclear power, a decrease in coal-generated electricity, and the construction of efficient power plants, as well as use of CDM and JI. He said CEPCO's feasibility studies for JI projects had focused on rehabilitation of power stations, and described a rehabilitation project in Romania. He concluded by noting, *inter alia*, the large potential for carbon credits in Central and Eastern Europe and the Commonwealth of Independent States, the need for Memoranda of Understanding between countries and simplification of approval procedures, and issues with the EU ETS following EU accession.

Vasco de Janeiro, Union of the Electric Industry—EURELECTRIC, reviewed the prospects for electric power technology to address climate change and identified best practices from European electric companies. He said a high level of security supply requires maintaining all energy options, improving authorization procedures, providing stable and cost-efficient environmental regulations, and removing tax distortions. Regarding technologies, he stressed the need for a large number of technologies, cleaner and better distributed energy services, and market mechanisms that internalize the costs of environmental and social services. He said nuclear and large hydro power are necessary to achieve the Kyoto Protocol's targets, and stressed the need to reduce the cost of renewable energy sources and create market-oriented support schemes. On technology transfer and diffusion, de Janeiro noted the importance of the political, environmental and social aspects, the rule of law, stable monetary policies, transparency and stakeholder consultation. He also stressed that the Kyoto Protocol's mechanisms could be a key driver if the rules and procedures of the CDM were simplified. He then introduced the "Energy Wisdom Programme," a voluntary initiative on sustainable development aimed at demonstrating energy efficiency improvement and greenhouse gas emissions reductions achieved by a range of companies. He concluded with a recommendation not to let emotion cloud the debate regarding energy options, underscoring nuclear sources as one of the lowest-cost solutions, and noting that the electricity industry needs well designed policies to lead the way for sustainable energy supply.

Vlatko Cingoski, Electric Power Company of Macedonia, presented possible development projects based on CDM in Macedonia. Noting the need to increase energy production to 809 megawatts by 2015 to meet demand growth, he briefly reviewed potential projects in the field of construction, rehabilitation, re-powering and upgrading of thermal power plants and hydro power plants, and the use of alternative power sources. He concluded by noting that greenhouse gas emissions are not a huge problem in Macedonia yet, while also drawing attention to an expected large increase in demand, the desirability of CDM projects, and the need for additional staff training to develop pilot projects.

Hans Nilsson, IEA, presented on the urgency of demand side management (DSM), stressing that better resource use results in lower costs of services and more secure and reliable energy supply. Noting that DSM involves the planning and implementation of activities designed to influence customer use of electricity in ways that will produce desired changes in the utility's load shape, he outlined the mechanics of DSM. Nilsson also introduced the IEA DSM Programme aimed at ensuring that demand-side activities are an active and first choice element in sustainable energy policies. He said recent concerns relating to DSM include climate change and environment, governance, system reliability and customers' market role. He also reviewed business areas that could benefit from DSM, and concluded by noting that DSM can have a positive impact on security of supply, diversification and system reliability, and will be more business oriented.

SUSTAINABLE DEVELOPMENTS

Sergei Levchenko, Joint Institute for Energy and Nuclear Research of Belarus, presented a study on the calculation of energy efficiency applications in buildings, based on modeling heat and mass transfer processes. He noted that the model offered a 3D visualization of the building, and outlined the factors taken into account for the calculation, including heat loss, thermal resistance of walls and roofs, and daily variation in heat consumption. He said other models will be developed to allow computer-based control of users' household energy efficiency.

Bilyana Chobanova, EnEffect Center for Energy Efficiency, presented on the municipal Bulgarian energy efficiency network EcoEnergy. She reviewed the network's current work to: introduce local energy efficiency policies, including an energy information system and municipal energy planning; reduce the energy expenses of municipal budgets; and reduce the energy expenses of end users. She stressed the significant potential for energy efficiency and greenhouse gas emissions reductions at the municipality level, and the need to prioritize local capacity building. She also introduced the Regional Network for Efficient Use of Energy and Water Resources in Southeast Europe (RENEUER).

GROUP TWO—INDUSTRY: Robert Williams, UNIDO, opened the session, expressing hope that the group's specific discussion on industry could complement the broader presentations on energy efficiency, the UNFCCC and the potential for Kyoto Protocol-based projects. He then gave the first of the group's four presentations, focusing on ways to promote energy efficiency in industry by adopting a systems-based approach. Noting that factories often think in terms of improving individual components in their energy systems, such as motors, pumps or piping, he explained that efficiencies can often be achieved by considering the energy system as a whole. He advocated life-cycle cost analysis as a way to encourage managers to seek out energy efficiencies, as it showed the long-term costs of inefficient energy systems. He argued that system optimization involves: evaluating a factory's work requirements and matching the system to these requirements; eliminating inefficient practices; altering individual components such as motors or compressors to better match the overall system requirements; applying appropriate control strategies; identifying maintenance problems; and upgrading maintenance practices.

Hiroyuki Kurita, Shimizu Corporation of Japan, briefed participants on a feasibility study for introducing cogeneration into district heating systems in Dnepropetrovsk, Ukraine. He explained that the project's aim is to improve the efficiency of the district heating scheme by applying JI, and that it involves introducing two sets of gas turbines into the energy system for an industrial site. He noted projected energy efficiency savings of 29.6%, and emissions reductions of 43.5% over 25 years, as well as satisfactory returns on the initial investment. He also drew attention to Shimizu's involvement in a variety of other CDM/JI projects relating to district heating, landfill gas capture, solid waste methane utilization and hydro power.

Alla Pakina, Moscow State University, discussed energy losses and modern approaches to energy saving in Russia. Noting that most of Russia's technology and infrastructure is obsolete and inefficient and

that energy intensity is high, she argued for a change of ideology towards environmental management and economic development based on appropriate institutional and regulatory frameworks and technological approaches. Citing deterioration of the oil pipeline network as an example of where improvements could be made, she highlighted potentials for energy savings in extractive industries, processing, transportation and exportation of goods.

Helmut Berger, ALLPLAN, made a presentation on the optimization of steam and condensate systems of paper machines. He explained how his company had helped improve efficiency in a paper mill by developing a complex simulation model to show how specific changes within the system might impact efficiency. This simulation had identified significant potential improvements that had been demonstrated by actively experimenting with the system, resulting in costs savings of 350,000 euros per annum.

GROUP THREE—FINANCING AND EMISSIONS

TRADING: Andrei Marcu, International Emissions Trading Association, introduced the session on financing and emissions trading by reviewing the current state of affairs in the greenhouse gas market. He reported on the EU Emissions Trading Scheme, which enters its pilot phase from 2005-2007. Reminding participants that the aim of the scheme is to help EU members meet their Kyoto targets, he said companies would need to start acting now if these targets are to be reached, especially as major emissions reduction projects can take several years to be developed. He also raised issues of transparency and harmonization of verification processes and agreement contracts, and suggested that national allocations under the EU scheme would have to be tightened considerably for the second trading period. With regards to the Kyoto Protocol, he expressed concerns relating to the CDM Executive Board, and argued that JI should not replicate the CDM approach but learn from its experiences.

Olga Gassan-zade, Point Carbon, discussed the carbon market and carbon finance. She offered an assessment of the global carbon market, indicating that the market as a whole was expected to grow from 100 million euros in 2003 to 360 million euros in 2004. Noting the current fragmentation of the market, she observed that the price per ton of carbon varied from more than 8 euros under the EU ETS and for CERs, to less than 5 euros under the CDM and JI. She predicted that the EU ETS would dominate the overall market over the next few years, with a value of 10 billion euros and carbon traded as a commodity. Regarding the Kyoto Protocol, she noted that the EU scheme's rules relating to "double counting" of credits could make JI projects less viable in EU Accession States, while other countries such as Bulgaria, Romania and the Russian Federation might become more attractive as a result. Gassan-zade expressed concerns at the slow progress in processing CDM projects through the CDM Executive Board. On the issue of energy efficiency, she noted that projects focusing on energy efficiency barely feature under the CDM, but are better represented on the JI market. She also stressed the need to address concerns over CDM/JI complexity and risk.

SUSTAINABLE DEVELOPMENTS

Pierre Langlois, Econoler International, presented the Romanian experience to illustrate barriers to project financing for energy efficiency projects in developing countries and transition economies. He said main barriers include a lack of awareness about energy efficiency and financing. Stressing that the Fund for Romania's Energy Efficiency (FREE) designed to support project implementation had not been utilized, he said financing is not the only issue, and stressed the need for market prices for energy, appropriate government regulations and agency involvement, and stakeholder engagement.

Oliver Walter, VA TECH Finance, described an example of financing of a pilot JI project under the Kyoto Protocol. Noting that the Tsankov Kamak project had started in 2001 with the aim of financing a Bulgarian power plant, he explained that the project is financed on the basis of an export credit agreement and commercial credit agreements, and stressed its collateral structure consisting of, *inter alia*, government involvement, escrow accounts, pledge of assets, and emissions reduction certificates in particular. He concluded by stressing the benefits of the project for both the donor country (Austria) and recipient country (Bulgaria), including cleaner energy, reduction of CO₂ emissions, job creation and transfer of know-how for the latter.

Pavel Shestopal, Ukrainian Agency for Rational Energy and Ecology, reviewed prospects for the Kyoto mechanisms in Ukraine. He reported on the country's status under the climate change process and its preparations to participate in the Kyoto mechanisms. On JI, he said Ukraine's tentative priority areas include: coal bed methane recovery; improved efficiency of coal and natural gas combustion; energy efficiency in the natural gas transmission system; rehabilitation of district heating systems; waste energy recovery in metallurgy; landfill gas utilization; and renewable energy. He also highlighted potential incentives to encourage JI investments, including guaranteeing JI projects in selected categories through AAUs, approving early crediting for projects, establishing project pooling facilities, and co-financing.

Vasco de Janeiro, Union of the Electricity Industry—EURELECTRIC, spoke about the impacts of emissions trading on the electricity industry. He stressed the European electricity industry's commitment to tackling climate change, and underscored their success in decoupling energy demand from emissions during the past decade. He endorsed a market-based approach, and reviewed the EU ETS, noting that national allocation plans will be critical to its success. In this regard, he indicated that companies would need to develop strategies to deal with issues such as risk and compliance. However, he noted that emissions trading was just one issue companies had to consider, along with concerns over security of supply and market liberalization. He argued that emissions trading would affect electricity prices by causing companies to internalize the cost of carbon, and proposed that governments "let the markets work" now that the key principles governing the scheme have been established.

SESSION FIVE: SUMMARY AND CONCLUSIONS

On Friday afternoon, 29 October, Seminar Chair Toshiyuki Sakamoto convened the Seminar's closing session, requesting the chairs of the two parallel groups that had met earlier in the day to brief participants on the groups' presentations and discussions (for further details, see "Session Four," groups one and two).

Reflecting on the Seminar, several participants noted progress achieved since the first Seminar in 2003, especially regarding the issue of carbon financing, and stressed the usefulness of these seminars.

Peter Pembleton, UNIDO, informed participants that a side event will be convened on the issue of technology diffusion at UNFCCC COP-10 in December 2004, and expressed his satisfaction with the success of this Seminar.

Chair Sakamoto stressed the quality of presentations and the richness of discussions during the two-day Seminar, noting that important and specific ideas had been developed on mobilizing energy efficiency projects in CDM and JI, including bundling of small-scale projects into larger ones, and ways to incorporate ESCOs into CDM or JI. He thanked the organizers and participants, and closed the Seminar at 5:20 pm.

UPCOMING MEETINGS

CLIMATE CHANGE AND BUSINESS CONFERENCE AND EXPO 2004:

This international Conference, supported by the Australian and New Zealand Governments and co-organized by business and union groups as well as the Pew Center on Global Climate Change, is scheduled to take place from 3-5 November 2004, in Auckland, New Zealand. The Conference will consider the linkages between business and climate change, and include discussions on business opportunities and improving companies' performance by reducing energy costs and emissions. For more information, contact: The Conference Company, Ltd; tel: +64-9-360-1240; fax: +64-9-360-1242; e-mail: secretariat@climateandbusiness.com; Internet: <http://www.climateandbusiness.com>

22ND SESSION OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE:

The 22nd session of the Intergovernmental Panel on Climate Change (IPCC) will convene from 9-11 November 2004, in New Delhi, India. The IPCC will focus on its fourth assessment report. For more information, contact: IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025; e-mail: IPCC-Sec@wmo.int; Internet: <http://www.ipcc.ch/calendar.htm>

EMA EMERGING MARKETS CONFERENCE: EMISSIONS & RENEWABLES:

The Emissions Marketing Association's Conference on Emissions and Renewable Energy in Emerging Markets will be held from 14-17 November 2004, in Houston, Texas, US. For more information, contact: David Feldner, EMA Executive Director; tel: +1-414-276-3819; fax: +1-414-276-3349; e-mail: dfeldner@emissions.org; Internet: <http://www.emissions.org/conferences/houston04/>

SUSTAINABLE DEVELOPMENTS

FIRST MINISTERIAL MEETING OF THE METHANE TO MARKETS PARTNERSHIP: This meeting will be held from 15-17 November 2004, in Washington, DC, US. The Methane to Markets Partnership is a new international initiative designed to promote cost-effective, near-term methane recovery internationally through partnerships between countries in coordination with the private sector, multilateral development banks, and other relevant NGOs. For more information, contact: Conference Management Division; tel: +1-781-674-7374; fax: +1-781-674-2906; e-mail: meetings@erg.com; Internet: <http://www.methanetomarkets.org/>

16TH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL: The 16th meeting of the Parties to the Montreal Protocol will take place from 22-26 November 2004, in Prague, Czech Republic. For more information, contact: Ozone Secretariat, UNEP; tel: +254-2-62-3850; fax: +254-2-62-3601; e-mail: ozoneinfo@unep.org; Internet: http://hq.unep.org/ozone/Meeting_Documents/mop/16mop/16mop.asp

WORLD CONFERENCE ON ENERGY FOR SUSTAINABLE DEVELOPMENT – TECHNOLOGY ADVANCES AND ENVIRONMENTAL ISSUES: This Conference, organized by the National Renewable Energy Laboratory and the Arab Academy for Science and Technology and Maritime Transport, will take place from 6-9 December 2004, in Cairo, Egypt. It aims to provide a forum for discussions between energy experts, technology users and manufacturers/suppliers, decision makers and planners, and interested business for the near-term deployment of sustainable energy technologies and concepts, particularly in relation to the Middle East. For more information, contact: Fuad Abulfotuh, Arab Academy; e-mail: mceet@link.net; Internet: <http://www.aast.edu/mceet/confindex.htm>

WORLD CONFERENCE ON ENERGY FOR DEVELOPMENT: This meeting, hosted by the Dutch Ministry of Foreign Affairs and the Ministry of Housing, Spatial Planning and the Environment, with support from the World Bank, UNDP and the World Business Council on Sustainable Development, will take place from 12-14 December 2004, in Noordwijk, the Netherlands. For more information, contact: Secretariat, tel: +31-70-339-1812; fax: +31-70-339-1306; e-mail: projectteam@energyfordevelopment.org; Internet: <http://www.energyfordevelopment.org>

TENTH CONFERENCE OF THE PARTIES TO THE UNFCCC: The tenth Conference of the Parties (COP-10) to the UN Framework Convention on Climate Change (UNFCCC) will convene from 6-17 December 2004, in Buenos Aires, Argentina. COP-10 will be held back-to-back with the twenty-first sessions of the subsidiary bodies (SB-21). A side event, tentatively scheduled for 8 December, will address technology transfer-related issues. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://www.unfccc.int>

CONFERENCE ON CLIMATE CHANGE RISKS & OPPORTUNITIES: LEARNING FROM THE LEADERS: This Conference, which will be held from 13-14 January 2005, in New York,

NY, US, will address the legal and practical implications of climate change for US businesses, consider the experience of the major companies that have taken “early action” to reduce greenhouse gas emissions, and discuss steps companies can take to develop an effective and profitable strategy for contributing to climate change mitigation. For more information, contact: Robyn Stewart, Center for Economic and Environmental Partnership, Inc., New York; tel: +1-518-432-6400; e-mail: robyn@ceepinc.org; Internet: <http://lists.iisd.ca:81/read/messages?id=22315>

RIO 05 CONGRESS – WORLD CLIMATE AND ENERGY EVENT: The Rio 05 Congress will take place from 15-17 February 2005, in Rio de Janeiro, and from 18-20 February 2005, in Fortaleza, Brazil. This event aims to bring together experts from the scientific community, industry and the public sector to discuss research, policies and products relating to sustainable energies. For more information, contact: Vanessa Espi, Organizing Committee; tel: +55-21-2233-5184; fax: +55-21-2518-2220; e-mail: info@rio5.com; Internet: <http://www.rio5.com>

CARBON MARKET INSIGHTS EVENT 2005: This annual event, organized by emissions consultancy Point Carbon, will take place from 1-3 March 2005, in Amsterdam, the Netherlands. It will provide a forum to consider the latest developments relating to the carbon market, including the state of the Kyoto Protocol’s Clean Development Mechanism and Joint Implementation initiative, the EU’s emissions trading scheme, and other regional and national schemes. Participants will also discuss the Kyoto Protocol’s second commitment period expected after 2012, and various pricing scenarios for the emerging carbon market. For more information, contact: Point Carbon Organizing Committee; tel: +47-924-29-400; fax: +47-925-70-818; e-mail: conference@pointcarbon.com; Internet: <http://www.pointcarbon.com/category.php?categoryID=286>

CAIRO NINTH INTERNATIONAL CONFERENCE ON ENERGY & ENVIRONMENT (EE9): This Conference will take place from 13-19 March 2005 in Cairo and Sharm El-Sheikh, Egypt. For more information, contact: Ralph Kummeler, College of Engineering, Wayne State University; tel: +1-313-577-3775; fax: +1-313-577-5300; e-mail: rkummeler@chem1.eng.wayne.edu; Internet: <http://ee9.sat-eng.com/index.htm>

SOLAR WORLD CONGRESS 2005: This event will convene from 6-12 August 2005, in Orlando, Florida, US, and will bring together researchers, scientists, engineers, architects, designers and other renewable energy professionals to discuss solar energy issues. In particular, the Congress will consider linkages between solar and water issues under the theme, “Bringing Water to the World.” To mark the 50th anniversary of the first major solar Conference, which was held in Arizona in 1955, the 2005 Congress will include a special session on the History of Solar Energy and the International Solar Energy Society. For more information, contact: Becky Campbell-Howe, American Solar Energy Society; tel: +1-303-443-3130 ext. 103; fax: +1-303-443-3212; e-mail: bchowe@ases.org; Internet: <http://www.swc2005.org>