



CTI Technology Transfer Seminar Bulletin

A summary report of the Climate Technology Initiative (CTI) Industry Joint Seminar "Successful Cases of Technology Transfer in Asian Countries"

Published by the International Institute for Sustainable Development (IISD)

ONLINE AT [HTTP://WWW.IISD.CA/YIMB/SDDEL/](http://www.iisd.ca/yimb/sdDEL/)
VOLUME 92, No. 6, SATURDAY, 10 MARCH 2007



CLIMATE TECHNOLOGY INITIATIVE INDUSTRY JOINT SEMINAR ON SUCCESSFUL CASES OF TECHNOLOGY TRANSFER IN ASIAN COUNTRIES: 7-8 MARCH 2007

The Climate Technology Initiative (CTI) Industry Joint Seminar on Successful Cases of Technology Transfer in Asian Countries took place from 7-8 March 2007, at the Intercontinental Hotel, Nehru Place, New Delhi, India.

Organized by the CTI in cooperation with The Energy Resources Institute (TERI), India, and supported by the International Centre for Environmental Technology Transfer (ICETT), Japan, the seminar was attended by 120 participants from seven Asian countries. The seminar provided an opportunity for government representatives, policymakers, and experts from industry, financial institutions and academia to review best practices for technology transfer in the Asian region, with particular focus on case studies on biomass fuel, biomass power generation and facilitation of Energy Service Companies (ESCOs). The objectives of the seminar were to encourage transfer of renewable energy and energy-efficient technologies and knowledge by introducing technology options that are yet to be widely diffused, and enhancing understanding of key elements of successful technology transfer practices and technology options that are effective in reducing greenhouse gas emissions. The seminar also sought to strengthen regional linkages and partnerships among the participants to foster future technology transfer projects.

During the day-and-a-half long meeting, participants heard case study presentations organized in three thematic sessions, followed by comments and suggestions from country representatives. There was also one panel discussion. On Wednesday, 7 March, two of the thematic sessions were held: one on biomass fuel and another on biomass power generation. On Thursday, one thematic session took place, on facilitation of ESCOs. This was followed by a panel discussion on cooperation among key sectors for technology transfer.

This report provides a brief history of the climate change process, technology transfer and the CTI Industry Joint Seminar series, followed by a summary of this CTI Industry Joint Seminar on Successful Cases of Technology Transfer in Asian Countries.

A BRIEF HISTORY OF CLIMATE CHANGE POLICY, TECHNOLOGY TRANSFER, AND CTI INDUSTRY JOINT SEMINARS

THE UNFCCC AND 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. Controlled gases include methane, nitrous oxide and, in particular, carbon dioxide. The UNFCCC entered into force in March 1994, and now has 189 Parties.

In December 1997, delegates met in Kyoto, Japan, and adopted the Kyoto Protocol to the UNFCCC that commits developed countries and countries with economies in transition 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 also establishes three flexible mechanisms to assist

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The *CTI Technology Transfer Seminar Bulletin* is a publication of the International Institute for Sustainable Development (IISD) <info@iisd.ca>, publishers of the *Earth Negotiations Bulletin* © <enb@iisd.org>. This issue was written and edited by Asmita Bhardwaj and Lavanya Rajamani, D.Phil. The Editor is Chris Spence <chris@iisd.org>. The Director of IISD Reporting Services is Langston James "Kimo" Goree VI <kimo@iisd.org>. Funding for coverage of this meeting has been provided by the International Center for Environmental Technology Transfer and the CTI Programme Secretariat. IISD can be contacted at 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba R3B 0Y4, Canada; tel: +1-204-958-7700; fax: +1-204-958-7710. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD. Excerpts from the *Bulletin* may be used in other publications with appropriate academic citation. Electronic versions of the *Bulletin* are sent to e-mail distribution lists (HTML and PDF format) and can be found on the Linkages WWW-server at <http://www.iisd.ca/>. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 212 East 47th St. #21F, New York, NY 10017, USA.

the parties in meeting their national targets cost-effectively: an emissions trading system; joint implementation (JI); and the clean development mechanism (CDM), which encourages projects in developing countries. The Kyoto Protocol entered into force on 16 February 2005 and has been ratified by 168 Parties.

TECHNOLOGY TRANSFER UNDER THE UNFCCC AND KYOTO PROTOCOL: Technology transfer is considered a key element in combating climate change under the UNFCCC. Article 4.5 of the Convention addresses technology transfer, stating that “developed countries...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.” Article 10c of the Kyoto Protocol contains a similar commitment.

In 2001, Parties to the UNFCCC adopted a framework for actions to enhance the implementation of Article 4.5. The framework contains five key activities relating to technology needs assessments, technology information, enabling environments, capacity building and mechanisms for technology transfer. Funding to implement the framework is provided through the climate change focal area of the Global Environment Facility and the Special Climate Change Fund. The CDM is also expected to contribute to the transfer of cleaner and more efficient technologies to developing countries.

Parties to the UNFCCC took further action in 2001 by establishing an Expert Group on Technology Transfer (EGTT) to help advance the Convention’s technology-related goals. Since then, workshops have been held on technology information (Beijing, China, April 2002), needs assessments (Seoul, Republic of Korea, April 2002), enabling environments (Ghent, Belgium, April 2003), innovative financing (Montreal, Canada, September 2004 and Bonn, Germany, October 2005), and adaptation technologies (Tobago, June 2005) (for more information on recent UNFCCC events, visit: <http://ttclear.unfccc.int/ttclear/jsp/>).

At the eleventh Conference of the Parties (COP 11) to the UNFCCC, serving as the first Meeting of the Parties (MOP 1) to the Kyoto Protocol, held in Montreal in November-December 2005, delegates, *inter alia*: endorsed EGTT’s 2006 Work Programme; requested a side event on the issue of public technologies; took note of pilot networking between UNFCCC’s Technology Transfer Clearing House and regional technology information centers; and asked the UNFCCC Secretariat to organize a high-level roundtable on lessons learned, technology deployment, transfer, cooperation and partnerships.

A year later, at COP 12 and MOP 2 in Nairobi in November 2006, delegates extended the EGTT for one year, and forwarded text to SBSTA 26 for its further consideration. The text, which remains bracketed pending further negotiation, includes references to: the five themes listed in the framework for technology transfer; reconstitution of the EGTT; establishment of a Technology Development and Transfer Board (TDTB); establishment of a Multilateral Technology Acquisition Fund (MTAF) to buy intellectual property rights; and development of indicators to monitor implementation of the technology transfer framework. The bracketed text also includes terms of reference for EGTT/TDTB.

CTI INDUSTRY JOINT SEMINARS ON TECHNOLOGY DIFFUSION: The Climate Technology Initiative is a multilateral initiative that was established in 1995 at the first Conference of the Parties to the UNFCCC, and operates as an Implementing Agreement under the International Energy Agency (IEA). Its mission is to bring countries together to foster international cooperation in order to accelerate the development and diffusion of climate-friendly and environmentally-sound technologies and practices. CTI works with the UNFCCC Secretariat and the EGTT, as well as relevant IEA Implementing Agreements and other international organizations and initiatives. Its activities are designed to be consistent with UNFCCC objectives, in particular the framework for technology transfer that was adopted at the seventh Conference of the Parties in Marrakesh, Morocco, in 2001. The CTI has an ongoing programme of seminars and workshops designed to support the UNFCCC process and facilitate the diffusion of appropriate technologies and practices.

The CTI also organizes a series of joint industry seminars. The first CTI Industry joint seminar for the Asia and Pacific Region was held in Beijing in May 1998. In subsequent years, it has organized or co-organized various other meetings, including events on technology diffusion for: Asia (Cebu City, the Philippines, January 2000); Eastern Europe and Central Asia (Vienna, Austria, October 2003); ASEAN and Small Island States in the Pacific Region (Jakarta, Indonesia, February 2004); Central and Eastern Europe and the Commonwealth of Independent States (Vienna, October 2004).

The CTI has also arranged seminars on energy efficiency in Asian Countries (Beijing, China, February 2005, and Hanoi, Viet Nam, March 2006) and project formation for joint implementation (JI) activities under the Kyoto Protocol (Madrid, Spain, October 2005).

These meetings were often arranged in partnership with other organizations, such as the UN Industrial Development Organization (UNIDO). For more information on these past events, visit: <http://www.climatetech.net/events/> and http://www.iisd.ca/process/climate_atm.htm (scroll down to the section marked “Other Climate Change, Energy, and Ozone Meetings covered by IISD Reporting Services”).

REPORT OF THE SEMINAR

The CTI Industry Joint Seminar on Successful Cases of Technology Transfer in Asian Countries began on Wednesday morning, 7 March, with opening speeches.

Morihiro Kurushima, Programme Manager, CTI, welcomed participants. He outlined the origin, activities and accomplishments of the CTI, highlighting the CTI’s mission to encourage international cooperation in the development and diffusion of climate-friendly and environmentally-sound technologies and practices. Noting that the CTI has organized numerous events on technology diffusion and capacity building, he drew attention to the focus of the seminar – biomass fuel, biomass power generation, and the facilitation of ESCOs.

Leena Srivastava, TERI, stressed the challenge of addressing poverty and the imperative for economic growth in Asia. Predicting an inevitable rise in energy demand, she emphasized the need for sustainable growth. Highlighting that 80% of India’s infrastructure is yet to be put in place, she identified

an opportunity to follow an alternative development path, and for learning and technology transfer in the process. She also underscored the importance of technology transfer not only to reduce emissions but also to reduce vulnerabilities and address adaptation needs.

Ajay Mathur, Ministry of Power, India, delivered the keynote address. He characterized the process of product development and policy analysis of clean technologies as iterative, and stressed the importance of cross fertilization and learning from experience. He also emphasized the importance of information, experience and knowledge sharing in integrating design knowledge with market demand. Highlighting the inevitability of increased energy use and emissions in India, he identified the need to, *inter alia*, focus on clean energy and energy efficiency, and compensate individuals and industries for moving to more capital intensive but lower-emission energy choices. He drew attention to energy efficiency initiatives in India, including energy labeling of consumer products, design codes and standards to minimize energy use in buildings, and preferential tariffs for renewable energies.

SESSION 1: BIOMASS FUEL

This session was moderated by A. K. Asthana, National Productivity Council, India, and included case-study presentations on utilization of biofuel for tea leaf drying in Indonesia, biomass gasification and power generation in China, and applications of environmentally-friendly technologies for natural rubber processing in India. Following the presentations, participants from the Philippines, Thailand, and Viet Nam commented on the presentations and shared their own country experiences.

Faizul Ishom, Agency for the Assessment and Application of Technology, Indonesia, presented on palm oil as a fuel substitute in the tea leaf drying process. Noting the increased and growing demand for energy in Indonesia, as well as the abundance of bio resources, Ishom stressed the importance of developing biofuels. He explained the process for using environmentally-friendly palm oil as a fuel substitute in the tea leaf drying process, and noted its similarities with standard operations using diesel. Noting that the increase in the price of palm oil had reduced the price difference between palm oil and diesel, Ishom highlighted the need to increase the efficiency of this process. He suggested that one method to achieve this is to integrate into the process a system for heat recovery from the exhaust gas.

Li Haibin, Chinese Academy of Sciences, China, presented on biomass gasification power generation (BGPG) in China. He traced the development and commercialization of BGPG in China. He explained the process and technology, and provided illustrations of typical projects including in Sanya, Jiangxi, Jiedong and Jiangsu. Li noted that three joint-stock companies had been set up to promote BGPG, and that currently, one 20 megawatts and two 4-5 megawatts biomass power plants are in operation. He added that customers include factories in Myanmar, Thailand and Laos. He proceeded to compare three biomass power generation technologies, namely, direct combustion, co-firing, and gasification, and considered their applicability in China. Li concluded that BGPG technology is economically

feasible if the capacity of the plant is less than 10 megawatts, and that biomass direct combustion and power generation technology is feasible if the capacity of the plant is more than 10 megawatts.

James Jacob, Rubber Board, India, presented on the applications of environmentally-friendly technologies for the natural rubber processing industry in India. He discussed clean technology applications such as the use of biomass gasification for processing “technically specified rubber” (TSR) and bio methanation of sheet rubber processing effluents, and highlighted the potential for small-scale industries to earn carbon credits through these applications. He emphasized that rubber, grown largely in the South-East Asian region, is an industrial raw material of strategic importance. Jacob described the process of rubber extraction, including the process of transforming liquid latex to TSR, and highlighted the large energy consumption required for this process. He then discussed a study that examined potential carbon credits and energy savings using biomass gasification in the preparation of TSR, and his agency’s progress in developing CDM projects. He outlined a case-study of substituting electricity with biomass gasifiers during drying of TSR. Jacob discussed the carbon credits potential and energy savings from a sheet rubber effluents biogas plant, and identified the benefits to the local communities. He noted that these technologies were ready to be transferred to other rubber producing countries.

DISCUSSION AND COMMENTS: Victorino Porpio, Nestlé Philippines Inc, Philippines, noted that the Philippines has recently passed a law for biofuel technology development and outlined efforts in planting *jatropha* seeds in the country. He added that clean technologies developed for natural rubber processing should be benchmarked. Chirasak Boonrowd, The Energy Conservation Center of Thailand, highlighted the Center’s efforts in promoting ethanol, noting that biomass gasification is still being researched while biogas production from wastewater and animal effluents has been developed commercially. Stating that the use of palm oil as a biofuel will not be economically viable in Thailand, he outlined the problems that would arise if the Chinese biomass gasification system is introduced in Thailand.

Le Viet Nga, Ministry of Industry, Viet Nam, noted that the Ministry has prepared a blueprint for biofuel development in Viet Nam. She called for cooperation between Viet Nam and Indonesia in biofuel development. She questioned the possibility of using coconut oil as a biofuel and the larger market acceptability of the biomass gasification system developed in China. Le also asked if there existed a framework in China to encourage biomass gas production. She then highlighted the difficulties in encouraging biofuel production in Viet Nam. Faizul Ishom noted that Indonesia has developed the competence to produce *jatropha* and underscored its utility in rural power generation. He said that a wide variety of biofuels are used in Indonesia, such as sugar palm, *jatropha* and coconut oil.

Li Haibin noted that BGPG technologies can cater to multiple uses and therefore be economical under a variety of situations. He highlighted the role of Chinese subsidies in the promotion of ethanol, and plans for similar policies for the promotion of biodiesel. James Jacob highlighted the development of a bilateral

program with Viet Nam for clean technologies in rubber research and development. He then underscored the energy security and nutritional security aspects of biomass-based energy systems in rural areas.

Summarizing the discussion, A. K. Asthana noted that, while biomass-based technologies are useful, their wider application is problematic because of, *inter alia*, the rising cost of biomass, inadequate availability of good quality biomass, and difficulties in creating appropriate biomass-based system designs. Despite these problems, he underscored that biomass power generation remains a cost-attractive option.

SESSION 2: BIOMASS POWER GENERATION

This session was moderated by Yoshitaka Nitta, Central Research Institute of Electric Power Industry, and included case study presentations on BGPG in Indonesia, carbonizing gasification for biomass/waste in Japan, and rice husk power in Thailand. Following the presentations, participants from China, the Philippines, Viet Nam and India commented on the presentations and shared their own country experiences. The moderator, Yoshitaka Nitta, stressed the importance of sustainability, noting that it is dependent on resource availability, efficiency in power generation systems, waste management, and profitability.

M. A. M. Oktaufik, Agency for the Assessment and Application of Technology, Indonesia, presented on the Agency's experience with BGPG. He underscored both the increasing demand for energy and the huge potential of biomass for power generation in Indonesia (an estimated total of 1160 megawatts). Oktaufik introduced the Solar Village and Renewable Energy Indonesia Project, a joint project with the German Government. He outlined and evaluated the implementation of two types of biomass gasifier technologies: fixed-bed, down-draft power gasifier, and fluidized-bed heat gasifier. He concluded, *inter alia*, that: the calorific value of the producer gas increases if the calorific value of the biomass used is higher; wood-specific consumption decreases with higher operating load in the fixed-bed, down-draft power gasifier; the unit price of electricity generated using this technology is lower than that generated from a diesel system, assuming that the biomass waste is free of cost; and, the fluidized-bed gasifier has the potential to meet energy demands in the palm oil, plywood and sugar industries. Responding to a question, Oktaufik noted that although there is no specific law encouraging biogas generation in Indonesia, an energy law is in the pipeline, and underscored that renewable energy is playing an increasing role in meeting energy demand.

Kazuyoshi Ichikawa, Central Research Institute of Electric Power Industry, identified the benefits of biomass energy. He indicated that it reduces carbon dioxide emissions, can be easily converted into a high energy portable fuel, enables use of unused agricultural land, provides jobs in rural communities, and enables restoration of degraded lands. He noted that the introduction of biomass energy is limited by the high cost of biomass collection and transportation, and the large investment required due to the small scale nature of the projects. Ichikawa explained the concept of carbonizing gasification, and described the Advanced Biomass Carbonizing Gasification system developed and operated by his Institute. He also highlighted the Institute's areas of research,

namely: development of evaluation tools for biomass potential and collection costs; biomass energy use; biomass gasification reactivity; and gasification simulation technology. Responding to questions, Ichikawa said that the fins inside the carbonizer rotate at 300 rpm, and are made with a special alloy. He noted that the investment required to introduce a carbonizer into the gasification unit is US\$2500 per kilowatt, but declined to comment on the commercial aspects of biogas generation.

Natee Sithiprasasana, A.T. Biopower Co. Ltd., Thailand, shared the experiences of his organization in operating the rice husk power plant in Pichit, Thailand. He noted that the project was developed in 2000 and started commercial operation in 2005. Noting that this is an award-winning project, he explained that the project works with extensive community involvement and shares benefits directly with the local community. He underscored that the project uses a single fuel instead of multiple ones. Sithiprasasana identified the project's purposes as electricity production and sale to the electricity generating authority, sale of rice husk to the cement industry, and sale of carbon credits. He noted that the project has been approved as a CDM project by the designated national authority. He then elaborated the specific local and global environmental benefits of the project. He underscored that the project employs a novel technology that uses suspension-fired boilers, and that it represents a successful case of technology transfer. He outlined some design features of the technology, and some problems associated with its application, such as the risk of dependence on a single fuel, and the high transportation costs. He noted the need for government intervention in managing the price of the husk and highlighted plans by a group of rice husk power plant owners to build rice husk storage buildings to improve the quality of the rice husk. Sithiprasasana underscored the importance of training for technology transfer and added that the project largely recruits from the local communities. Participants raised questions regarding the specific reasons for grinding rice husks, the capital costs for power plants using suspension-fired boilers, the price of electricity generated and the nature of subsidy support for operating rice husk power generation plants.

DISCUSSION AND COMMENTS: Li Haibin, Chinese Academy of Sciences, suggested that the widespread application of the Japanese carbonized gasification technologies can lead to higher energy efficiency in the industry. He highlighted the difficulties associated with appropriate pricing of electricity generated from rice husk power plants. Apollo Bawagan, Department of Science and Technology, Philippines, noted that the Philippines is in the process of improving its CDM policy. Pham Thu Giang, Ministry of Industry, Viet Nam, said it may be difficult to commercialize the Japanese carbonizing gasification project. Y. P. Abbi, TERI, underscored the importance of ready availability and appropriate pricing of biomass for efficient power generation. He noted the need for a government policy on locating power plants where fuel is readily available. He suggested that the usage of multiple fuels needs to be considered in the plant design.

Natee Sithiprasasana noted problems in the government's tariff structure for rice husk power. M.A.M. Oktaufik stressed that although it is difficult to devise a good formula for pricing renewable energies, they are efficient in providing power to rural areas. Kazuyoshi Ichikawa, stressed that there is no single

technology for biomass power generation. He noted the need to reduce the development costs of biomass power generation and underscored the importance of technology transfer.

Summarizing the session, Y.P. Abbi, TERI, noted that most Asian countries will require energy for their growth needs, and stressed that they must use low intensity carbon technology to meet energy requirements. He noted that there are no universal technological solutions for biomass power generation and outlined some problems associated with widespread application of these technologies. He emphasized the importance of subsidies in making Indian biomass power projects operational. Abbi also outlined some areas for further research, such as the need for technology development to suit multiple biomass types.

SECTION 3: ENERGY SERVICE COMPANIES

This session was moderated by Ajay Mathur, Ministry of Power, India, and included presentations on the development of ESCOs in China, successful cases of ESCO projects in Japan, and the development of the ESCO market in India. Following the presentations, participants from India and Japan commented on the presentations and shared their experiences. Mathur noted that ESCOs provide facility owners with confidence that investment in energy services results in annual savings. He added that although the concept was “seductive and simple”, its implementation is difficult.

Zhao Ming, China ESCO Association (EMCA) presented on EMCA and ESCO industry development in China. She outlined the World Bank/GEF China Energy Conservation Project initiated in 1998, highlighting the results of the first phase, which established three pilot energy management companies. She reported that, by the end of 2006, 1426 projects had been implemented with an investment of US\$550 million, resulting in energy savings of 2.8 million tons of carbon equivalent, and carbon dioxide emission reductions of 1.8 million tons of carbon equivalent. Zhao noted that the second phase of the project, consisting of the ESCO service component and ESCO commercial loan guarantee programme, was initiated in 2003. She then described the mission and activities of the EMCA, launched in 2004. She said its mission is to promote the sustainable development of the ESCO industry in China, which EMCA carries out through, *inter alia*, information dissemination, training, provision of technical assistance, and international cooperation and exchange. She described three types of energy performance contracting (shared savings, guaranteed savings, and outsourcing energy management) and three types of ESCOs (technology-oriented, market-oriented and capital-oriented). Zhao concluded by highlighting the market opportunities for ESCOs in China, and the need for financing, capacity building, industry standards, customer awareness and acceptance, and policy support.

Hiroshi Murata, INS Facility Co. Ltd, Japan, presented on successful cases of ESCO projects in Japan. Murata noted an increase in energy consumption in the commercial sector, and outlined government efforts to promote energy efficiency, including by disseminating the Building Energy Management System, and promoting utilization of ESCO projects by private companies. He highlighted the potential size of capital investment

as ¥ 2.4715 trillion, and potential energy saving in crude oil equivalent as 4.04 million kiloliters/year. He discussed the spread of ESCO projects by sector and type of contract, and listed its advantages. He noted that ESCO businesses did not require capitalization, incurred lower risk, and increased property-profit ratio. He highlighted, in particular, the advantages of ESCO projects for energy-saving retrofit work. These advantages include: energy savings without additional cost, since costs for retrofitting are compensated by the reduction in utility costs; guaranteed energy savings; and provision of comprehensive services. Murata suggested that ESCO projects be promoted by increasing government support, providing financing, developing government markets, and forming organizations to learn from the experience and conduct research.

G.C. Datta Roy, DSCL Energy Services Co. Ltd., India, underscored the huge potential for an energy efficiency market in India, and proceeded to list what ESCOs offer in this regard. This includes support for project implementation, energy performance contracting, risk sharing, operation and maintenance outsourcing, and sustainability. Based on a “need benefit” analysis, he noted that commercial and municipal markets should be immediate targets. Roy discussed global experiences with developing the ESCO market, and elaborated on ESCO development in India. He explained that three ESCOs were formed in 1994 as part of a USAID programme, but of these only one still exists. He noted the emergence of a few new ESCOs, but said the numbers compare unfavorably with China’s. Roy said market penetration is less than 1% of its potential. He noted that although the energy efficiency market is large and tempting, market development is slow. He highlighted the need for the key stakeholders to be sensitized through wider dissemination of information. He also stressed the need for market competition, since more competitors in the market would mean actors gain greater credibility. He concluded that the next few years would define the future of the ESCO market in India.

DISCUSSION AND COMMENTS: Dicky Edwin Hindarto, PT. KONEBA, Indonesia, highlighted the ESCO scheme in Indonesia and noted the potential for ESCOs in the building sector. Raymond Alvarez Marquez, Trigen Energy Phils. Inc, Philippines, highlighted financing as a major hurdle to ESCOs in the Philippines, and noted the need to develop an ESCO accreditation mechanism. He invited CTI to promote knowledge on ESCOs in the Philippines. Prasert Sinsukprasert, Ministry of Energy, Thailand, emphasized that ESCOs are an important mechanism for achieving energy efficiency targets and a growing industry in Thailand. He outlined aspects of government policies such as an energy efficiency revolving fund for ESCOs, and tax incentives. Dang Hai Dung, Ministry of Industry, Viet Nam, expressed concern regarding financing ESCOs. Ajay Mathur underscored the importance of simplifying and standardizing ESCO business process, improving access to finance, and identifying the role of governments in providing financial and non-financial incentives to ESCOs.

Responding to questions and comments, Zhao Ming said EMCA is working to standardize the methodologies for energy baselines. Noting that the Chinese ESCO loan guarantee programme operates with World Bank support, she said that the

International Finance Corporation is also providing finance to ESCOs in China. She noted the government's role in encouraging ESCOs, including the formulation of a special committee to promote ESCOs in Shanghai. She noted EMCA's efforts in creating contracts for ESCOs and referred financial institutions to EMCA's website for details of ESCOs.

Hiroshi Murata said ESCOs have a major role to play in Japan. G. C. Datta Roy highlighted the need for ESCO process standardization and harmonization of ESCO contracts with government contracting procedures. He said ESCOs do not need financial incentives from the government, but do need guidelines to clarify the nature of taxes accruing to the project.

Summarizing the discussion, Ajay Mathur noted the need to build institutional capacities for dispute resolution and to establish payment guarantee mechanisms. He underscored the need for building the capacity of banks for appraisal and risk profiling of ESCO projects. He said that, instead of providing financial incentives, taxation incentives available to the power generation sector should also be extended to energy conservation. Mathur emphasized that the government needs to "hand hold" ESCOs, and that the Indian Bureau of Energy Efficiency is compiling a list of potential ESCOs.

Participants discussed accreditation of monitoring and evaluation agencies for ESCOs and the creation of sector-specific ESCOs as a way to simplify ESCO business procedure.

PANEL DISCUSSION: COOPERATION AMONG KEY SECTORS FOR TECHNOLOGY TRANSFER

Morihiro Kurushima, CTI, moderated this panel discussion, which included three panelists from government and research organizations. He underscored the importance of creating markets for ESCOs and noted that CTI provides an ideal platform for sharing experience.

Ajay Mathur, Ministry of Power, India, expressed concern over the inadequate development of environmentally clean technologies and noted a need to develop a good business model for biomass gasification for thermal use. Highlighting the difficulties in transferring biomass technologies in Asian countries A. K. Asthana, National Productivity Council, India, identified the need to develop standard guidelines for such transfer. He added that power fluctuations are a problem in biomass-based power generation. Yoshitaka Nitta, Research Institute of Electric Power Industry, Japan, said biofuels provide an important environmentally-friendly alternative to fossil fuels.

Participants then discussed: difficulties in power generation from biomass; the need to formulate a policy to manage biomass use for power generation; the importance of CDM credits for biomass projects; and applications of biomass technologies for providing affordable energy access.

CLOSING SESSION

Girish Sethi, TERI, said CTI is the best forum for sharing experiences in technology transfer, and underscored the need for promoting South-South cooperation in this regard. Morihiro Kurushima, CTI, expressed the hope that the conference would help build greater opportunities for technology transfer. The meeting ended at 1:30 pm.

UPCOMING MEETINGS

CTI/UNIDO JOINT SEMINAR: SMALL-SCALE INDUSTRIAL ENERGY EFFICIENCY PROJECTS IN CDM AND JI: Taking place from 19-20 March 2007, in Vienna, Austria, this seminar will be held in cooperation with UNIDO and UK Trade and Investment in Vienna, Austria. It will bring together experts from OECD and Central and Eastern European (CEE)/ Commonwealth of Independent States (CIS) countries to examine issues relevant to the transfer of climate-friendly industrial technology and contribute to global discussions carried out by the climate-change community and institutions on key issues relevant to energy efficiency projects, methodological issues and barriers for their development and implementation. For more information, contact: Zalfa Sheety; e-mail: z.sheety@unido.org; Internet: http://www.climatetech.org/events/index_old.cfm?Page=1&EventsID=4843

EIGHTH SESSION OF IPCC WORKING GROUP II:

The 8th meeting of the IPCC WG 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: +41-22-7 30-8025/13; e-mail: IPCC-Sec@wmo.int; internet: <http://www.ipcc.ch/calendar2007.htm>

INTERNATIONAL CONFERENCE ON CLIMATIC CHANGES AND THEIR IMPACTS ON COASTAL ZONES AND RIVER DELTAS: VULNERABILITY, MITIGATION AND ADAPTATION: This conference will take place from 21-25 April 2007, in Alexandria, Egypt. For more information, contact: Conference Secretariat; e-mail: amhkhater@yahoo.com; Internet: <http://www.ccie.eg.net/index.html>

NINTH SESSION OF IPCC WORKING GROUP III AND 26TH SESSION OF THE IPCC: IPCC-26 is scheduled for 4 May 2007, in Bangkok, Thailand, immediately following the 9th 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>

26TH 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>

For more upcoming meetings, please visit: <http://www.iisd.ca/upcoming/linkagesmeetings.asp?id=5>.