



Asia Clean Energy Forum Bulletin

A Daily Report of the Sixth Asia Clean Energy Forum 2011

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SIXTH ASIA CLEAN ENERGY FORUM 2011 HIGHLIGHTS: WEDNESDAY, 22 JUNE 2011

The 6th Asia Clean Energy Forum 2011, themed “New Business Models and Policy Drivers - Building the Low-Carbon Future,” co-organized by the Asian Development Bank (ADB), the United States Agency for International Development (USAID), and the World Resources Institute (WRI), opened on 22 June, 2011 in Manila, Philippines. Over 550 participants from over 50 countries from governments, financial institutions, civil society, academia, international organizations, and the private sector, gathered in plenary, eight breakout sessions, and parallel side events to discuss methods to encourage large-scale clean energy development and deployment.



Opening Plenary of the Conference

OPENING PLENARY

A CALL TO ACTION: ACCELERATING THE CLEAN ENERGY REVOLUTION

Welcoming participants to the Forum, Haruhiko Kuroda, President, ADB, emphasized that green growth must become the new business as usual for Asia and the Pacific. He expressed his hope that the Forum’s discussions would focus on ideas for new policies, business models and investment strategies to build an inclusive low-carbon future.

Robert Orr, US Executive Director, ADB, described clean and renewable energy efforts in the US, including: research on longer-lasting rechargeable car batteries and new fuels; clean coal; the overhaul of power infrastructure; and investments in smart grids and metering. Noting increasing energy demands in Asia, he outlined USAID support of US \$275 million to the region, including financing for clean energy development, regional power trading, energy conservation, joint technological research, and energy efficiency in buildings.

Amory Lovins, Chairman, Rocky Mountain Institute (RMI), elaborated on how renewables and energy efficiency can nearly eliminate the need for fossil fuels for energy production by 2050. Lovins recounted a range of technologies in the transportation and electricity sectors based on “mindful markets,” smart policies and entrepreneurship. On solutions for future and low-carbon transport needs, Lovins identified “feebates,” ultralight vehicles, simplified manufacturing, electric propulsion, and intelligent traffic management to reduce idle vehicle use. On electricity, he stressed: removing wasteful subsidies and redesigning wasteful devices; distributed microgrids; and other mechanisms for transforming customer costs into capital assets.

Mohamed El-Ashry, Chairman, Renewable Energy Policy Network for the 21st Century (REN21), and Senior Fellow, UN Foundation, declared that sustainable development is not possible without making energy sustainable. He stressed that in order to meet the UN Millennium Development Goals (MDGs) and accelerate access to clean energy technology, it is necessary to increase financing and policy support for renewables globally, and improve a basket of renewables-related capacities in least developed countries (LDCs).

John Byrne, Distinguished Professor, University of Delaware, suggested that the US follow Californian and EU examples to overcome its “energy obesity” and improve economic performance through investments in renewable energy, efficiency and conservation measures. Noting the density and rapid growth of Asian cities, he called for: new institutional systems to shift costs of renewables from consumers to utilities;



Haruhiko Karoda, President, Asian Development Bank

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Panel for session on Towards Sustainable Energy for All

excellence in public transport systems; and the use of urban areas for decentralized power generation, especially by making use of rooftop solar real estate.

BREAKOUT SESSIONS

In the afternoon, participants met in eight breakout sessions on the Forum's main topics. IISD RS was there to cover five of these, on: moving towards sustainable energy for all; using public investment to leverage private capital; deal facilitation and technology development for renewables projects; policies to improve distribution systems and develop smart grids; and new business models and policy drivers.

TOWARDS SUSTAINABLE ENERGY FOR ALL: Bart Édes, ADB, chaired the session.

Mohamed El-Ashry, REN21 and UN Foundation, said it was time to close the global energy access gap, lamenting that in many cases it is not a lack of energy supply, but wasteful use practices that hinder broad energy provision in developing countries. He urged participants to help raise awareness about energy poverty, and said Rio +20 and the UN Year for Sustainable Energy for All in 2012 must be used to spur an economically, socially and environmentally sustainable energy revolution.

Edwin Khew, IUT Global and Sustainable Energy Association of Singapore, called for financial models on provisioning and servicing technology on the ground.

Rajan Velumail, United Nations Development Programme (UNDP), said providing energy access must be explicitly linked with poverty reduction.

Edita Bueno, National Electrification Administration, Philippines, said her government views initial rural electrification efforts as infrastructure projects, making the government responsible for establishing access to energy.

Johane Meagher, Global Sustainable Electricity Partnership (e8), described her organization's work on a global survey on best practices for public-private partnerships (PPPs). She said that e8 would soon announce a cooperative project with ADB on energy poverty.

Responding to a question by Chair Édes on barriers to overcoming energy poverty: Velumail stressed affordability of technologies and the sustainability of projects after project funding ends; El-Ashry said high-level government commitment is generally lacking, but where it exists, great progress has been made; Bueno added that government roadmaps and concrete planning are most important; Meagher lamented that clear and facilitative long-term energy policies are often lacking; and Khew reiterated the importance of training programmes on the ground to avoid malfunctioning renewables becoming white elephants.

On shared responsibility for innovation and renewables adoption, panelists agreed that predictable subsidies matching long investment payback periods are needed. Khew remarked that the poor already pay high prices for privately generated electricity and emphasized that household-managed systems to generate power for lighting and cooking are the most urgent needs, not community micro-grids. Velumail then emphasised that private-public partnerships must invest in institutional capacity.



Panel for the session on Approaches to Deal Facilitation and Technology Development for Clean Energy Projects



Panel for the session on Voluntary, Market-Based Approaches to Drive Exemplary Building Energy Performance

USING PUBLIC INVESTMENT TO LEVERAGE

PRIVATE CAPITAL: This session was chaired by Steven Gray, Climate Change Capital. Isabelle Vincent, French Development Agency (AFD), outlined how development agencies and donors can facilitate policy transformation for clean energy via more holistic thinking about energy systems. She called for development partners to play more active roles in strategy and design, rather than passively waiting for innovation to unfold. She explored various tools and strategies, including indicators accounting for social and environmental externalities, cross-sector and inter-ministerial dialogue, credit line support linked to on-the-ground projects, and strategies permitting policy evolution and dialogue.

Len George, ADB, explained strategies for using funds to capitalize additional investments. He described ADB's support of large-scale solar in India, which facilitates public sector lending for infrastructure development and private sector lending through direct loans, credit guarantees, and other mechanisms for reducing investor risk. He described the need to convene stakeholders through initiatives such as the Asia Pacific Solar Forum, a knowledge platform to share lessons among public, private and civil society sectors.

Satoshi Fukushima, ADB, described technical aspects of ADB's role in the Gujarat Solar Park.

Christianne Carin, Elk Partners LLC, explained how existing technologies can be bundled into stand-alone systems for health clinics, hospitals, sanitation centers, housing facilities and other users. She stated that these flexible, off-grid modules combine renewable energy sources, control software, microgrids, and other components into systems that can be rapidly implemented within two years, in contrast to the 10-15 years typical of larger scale projects. Carin emphasized that opportunities for implementing such stand-alone systems abound and offer significant opportunities for scaling up renewable technologies.

Eugene Yun, Eos Investment Partners, highlighted the need for a "game changer" to escape the vicious circles of inadequate capital, immature private equity, insufficient investment opportunities, and infrastructure underdevelopment. He argued solutions must address a number of complex factors, including fund development, project development, non-commercial risk, and public-private partnerships. Yun said that

innovations in funding structures can meet these challenges by investing at scale, generating highly favorable risk-adjusted returns, mobilizing private sector capital, pooling investible projects, and risk mitigation tools.

In the ensuing discussion, panelists fielded questions from participants on: clean technology funds; the need for multi-sectoral lending and promoting intersectoral dialogues; and civil society's role in allocating foreign investments.

APPROACHES TO DEAL FACILITATION AND TECHNOLOGY DEVELOPMENT FOR CLEAN

ENERGY PROJECTS: Jun Tian, ADB, chaired this session. Irman Boyle, USAID ECO-Asia Clean Development and Climate Program, described CTI PFAN's work in Indonesia, acting as the "missing middle," fostering relationships between project entrepreneurs and financiers by engaging project developers via competitions to provide pro bono mentoring. Boyle said CTI PFAN has successfully supported 21 projects in raising US\$ 275 million in investment money, and has over 80 more projects in the pipeline. Responding to a question from the audience, another representative of CTI PFAN said they are increasingly supporting financial institutions in project assessment and due diligence training rather than project developers as it is often difficult to find suitable developers.

Hong Miao, USAID ECO-Asia Clean Development and Climate Program, shared lessons learned from matching entrepreneurs with investors for CTI PFAN projects in China, where over 70 projects have benefited from the program, seven of which have achieved financial closure. She shared how workshops and forums have built trust and credibility, attracted new business, and strengthened core membership and the overall network.

Leong Kin Mun, EU-Malaysia Biomass Sustainable Production Initiative, presented successful mechanisms for linking EU companies to small to medium-sized enterprises (SMEs) in Malaysia by attracting stakeholders to nurture projects such as biomass production, fuel switching CDM projects, and carbon credit trading. He indicated that, based on existing green policies in Malaysia and interest in the EU to move towards renewable energy, a successful synergy is developing which supports and facilitates relationships between industry, investors and government officials.



Panel for session on Clean Energy Investment Strategies and Products



Russell deLucia, S3IDF

POLICIES TO IMPROVE DISTRIBUTION SYSTEM EFFICIENCY AND DEVELOP SMART GRIDS IN ASIA:

Seethapathy Chander, ADB, chaired the session and stressed the need for investments to reduce energy losses from transmission and distribution.

Mayur Karmarkar, Partnership Asia and International Copper Association, described his association's EU-funded partnership with the government of China, transformer manufacturers and others in the supply chain, which is improving efficiency of distribution transformers manufactured in China, raising standards across the market, and supporting China's preparation for mandatory energy efficiency standards.

Tika Limbu, ADB, presented efforts to reduce current energy losses in transmission and distribution in India caused by factors including inadequate load management, aging equipment, and relatively high shares of domestic and agriculture loads. Noting that growth in India's power sector is almost 10% a year, he said ADB is supporting the formation of a single national grid by 2012, the current phase of which is to install 1,800 km of transmission lines from north-eastern to northern India, avoiding seven million tons of CO₂ emissions.

Grayson Heffner, International Energy Agency (IEA), underscored the need to understand smart grids in the context of the growing complexity of electricity systems. He said sophisticated smart grids with bi-directional communication between energy users and producers are needed to limit global warming. He noted they could improve end-user behavior, demand response, and network efficiency. Heffner then outlined challenges facing smart grids, such as the need to accommodate technological and regulatory requirements including global technology standards and integration with existing infrastructure.

NEW BUSINESS MODELS AND POLICY DRIVERS:

Gil-Hong Kim, ADB, chaired the session.

Gabinete Reyes Redentor, Pepsi-Cola Products Philippines, described Pepsi's Project Power Play, which set up biomass power plants at all Pepsi plants in the Philippines through



Organizer alerting Participants that sessions are starting



Mark Allington, IFC International

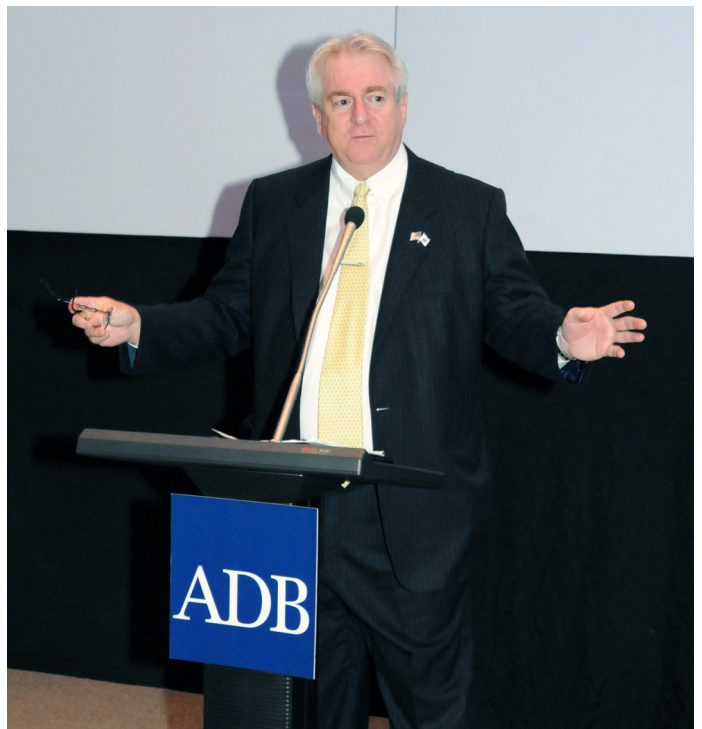
energy service companies, which install, maintain and run the facilities at no cost to Pepsi, who then buys the power produced at a reduced rate. He said this had led to 25 percent savings in energy costs at their largest plant.

Sridhar Samudrala, Mukund Dairy Farm, described how his farm's biogas production facility is used to power his pasteurization plant, which had previously been powered by unsustainably harvested local wood. He said the costs for the change were recouped in less than two years.

Peter Hayes, ADB, and Mark Allington, IFC International, presented on ADB GeoExplorer, an online geographic information systems (GIS) tool for wind and solar energy resource mapping in 10 developing countries in Central West Asia. They said it allows investors to assess energy yield, scale of investment needed, and compare relative economic viability based on a range of detailed geographical, habitat, weather, infrastructure policy and other characteristics. They explained that their plan is to introduce the tool to national private sector, governmental and other stakeholders, to begin further dialogue to explore appropriate next steps for facilitative renewable energy policies.

Aiming Zhou, ADB, shared a business model used to build a rooftop solar system based on SunEdison's work. The model requires no upfront cost due to a long-term power purchase agreement, supports local companies in securing non-recourse loan financing, and helps match solar systems to buildings' energy load profiles.

Panelists then fielded questions from the audience on acquiring upfront financing, replicating successful business models and managing risks.



Robert Orr, US Executive Director, Asian Development Bank



SIXTH ASIA CLEAN ENERGY FORUM 2011 HIGHLIGHTS: THURSDAY, 23 JUNE 2011

On Thursday, participants of the sixth Asia Clean Energy Forum 2011 bustled around the Asian Development Bank on a second day packed with a morning plenary, and 12 breakout sessions organized around the broad themes of policy and regulation; financing and investment; innovative business models; and energy for all. In addition, a parallel side event on grid-connected solar power in the Pacific was held in the afternoon.



Morning Plenary panel from left to right: Peter du Pont, USAID, Henrik Breum, Vestas Wind Systems, Brad Sterley, Standard Chartered Bank, Pankaj Sehgal, Sun Group India, John Morton, Overseas Private Investment Corporation, Woochong Um, ADB

MORNING PLENARY

FINANCING AND BUSINESS MODELS FOR CLEAN ENERGY DEVELOPMENT: Peter du Pont, USAID, chaired the session.

Henrik Breum, Vestas Wind Systems, emphasized recent changes in the area of wind energy including expansion of the investor base, technological improvements and a focus on creating stable returns, comparing the current development in wind energy to advances in automobile development in the early 20th century. He added that the wind industry is now able to make yield guarantees adding, desperately needed predictability of returns for investors.

Pankaj Sehgal, SUN Group India, explained his company's focus on investing in proven technologies rather than providing higher risk venture capital. He referred to subordinated debt as an important financing component for small renewables operations, and identified energy efficiency as low hanging fruit that remains untouched because of high upfront costs, which in India, the government has attempted to overcome via innovative financial mechanisms. Sehgal identified Husk Power Systems as a replicable, decentralized electricity producer providing inspiration for off-grid rural electrification and energy poverty reduction.

John Morton, Overseas Private Investment Corporation, opened by saying we are in the midst of "the most predictable economic transition in history." He said his job is both to catalyze the private sector and to de-risk investments, both of which require new financial products to overcome challenges of "cracking the energy efficiency nut." He offered the creation of insurance against governmental interference in carbon credit creation, to be used for REDD+ (reducing emissions from deforestation and forest degradation, and conservation) projects, as an example.

Woochong Um, ADB, highlighted that ADB is investing in clean energy venture capital funds but also indicated why funds are not flowing more swiftly into the area of clean energy, describing several challenges including the need for regulatory frameworks that provide certainty to investors.

Brad Sterley, Standard Chartered Bank, continued the discussion on challenges by lamenting that although subordinated debt could be used to replace equity for renewables projects, because they are often too small to be considered by investment banks and profits are low and or subsidized, they still face challenges in acquiring funding.

In response to questions and comments from the audience stressing that although capital is available, viable renewable energy businesses are not being financed because they are either too small scale, do not offer high enough annual returns or repay loans quickly enough, panelists reiterated the need to develop new financial products to overcome these challenges, with Sehgal saying more "radical thinking" is needed in banking.



John Morton, Overseas Private Investment Corporation

BREAKOUT SESSIONS

In the afternoon, participants met in 12 breakout sessions on the Forum's four overarching themes of: policy and regulation; financing and investment; innovative business models; and energy for all. IISD Reporting Services was there to cover ten of these, on topics including: domestic and international carbon trading; the role of large companies in enabling energy for all; energy efficiency investment; developing large-scale renewables projects; earning profit through powering the poor – learning from social entrepreneurs; and green solutions for public transport.

CARBON AND ENERGY FINANCE: DOMESTIC CARBON TRADING: Xuedu Lu, ADB, chaired the session. Huan Chen, Ministry of Finance, China, presented on the progress of the Chinese domestic carbon market, outlining feasibility studies, national registries, trading platforms, MRV standards and other steps being undertaken to establish China's recently announced mandatory cap-and-trade market.

Pongvipa Lohsomboon, Thailand Greenhouse Gas Management Organization, indicated that Thailand is strengthening market incentives to reduce domestic emissions. She cited the Thailand Carbon Fund and other measures to facilitate links between domestic projects and international compliance markets, as well as efforts to encourage companies and municipalities to undertake voluntary reductions.

Chu Thi Thanh Huong, Ministry of Natural Resources and Environment, Vietnam, described measures being designed to reduce domestic emissions, including a bilateral offset mechanism between Vietnam and Japan, and the Vietnam National Climate Change Strategy.

Dicky Edwin Hindarto, National Council on Climate Change, Indonesia, emphasized the need to simultaneously pursue market and non-market GHG reduction instruments to address the full range of potential projects and spur development of carbon markets and other supply side measures.

Jennifer Morgan, WRI, underlined the need for countries to work through pros and cons of various distribution options for domestic cap and trade. She highlighted the fundamental tension between distribution based on allocations versus those using auctions, and identified key considerations needed to ensure integrity of domestic markets, namely the: inclusion of non-regulated entities; avoidance of double-counting between markets; and integration of standards across local, regional and national levels.

BUSINESS INNOVATIONS TO ENABLE ENERGY FOR ALL – THE ROLE OF LARGE COMPANIES: Matthew Lynch, World Business Council for Sustainable Development (WBCSD), chaired this session and introduced WBCSD's Access to Energy Initiative.

Peeush Kumar Bishnoi, Siemens AG India, declared that a market driven, rather than policy-driven environment, will be key to overcoming energy access and energy poverty challenges. Bishnoi said Siemens' work on these issues has forced a reevaluation of: who is the customer and what is their purchasing power; what is the appropriate revenue model; and which are the technology options? In doing this, he said



Matthew Lynch, World Business Council for Sustainable Development (WBCSD)



Philippe Reveilhac, Schneider Electric Philippines

that: innovative financing connects revenue models and the customer; innovative technology connects customer and technology options; and policy currently connects revenue models and technology options, but that the market should do so. Scaling up, he said, is not an issue with good business models.

Philippe Reveilhac, Schneider Electric Philippines, introduced Schneider's non-profit BipBop programme, which provides low-cost off-grid energy to bottom-of-pyramid customers, the payments for which recoup Schneider's investment costs. Reveilhac mentioned that wealth creation for local communities is key to opening new markets. He also said innovation needs to be based on listening and anticipating customer wants and needs, and that victory at the bottom of the pyramid will be collective.

Harry Verhaar, Philips Lighting, urged changing current linear models of production, consumption and disposal to circular models based on resource efficiency and focus on quality of life. Accordingly, he said, energy efficiency and renewables must be about prosperity development, not only problem solving. He urged large companies to be more aware of their role as communicators for innovative uses of new technologies, such as off-grid lighting. On scaling up, he said a shift in narrative is needed that will engage fast acting customers and voters, rather than slow moving politics.

ENERGY EFFICIENCY INVESTMENT: The session was chaired by John Morton, Overseas Private Investment Corporation.

Catriona McLeod, ReEx Capital Asia, discussed investing through Energy Service Companies (ESCOs) and energy efficiency funds. She identified typical returns of between 7-15 percent, with higher returns, as well as risks, in industry as compared with the commercial sector. She said Singapore and the Philippines are currently the most profitable markets due to high electricity rates. She identified investment barriers including performance and credit risks, and uncertainties over electricity prices, energy usage, and time horizons.

Ivan Gerginov, Econoler, described experiences with designing and implementing energy efficiency funds in Bulgaria, China, Chile and Egypt in cooperation with ESCOs and banks. Emphasizing the need for flexibility and project monitoring, he described tailor-made approaches ranging from raising venture capital in Chile to working with the Chinese government to create an ESCO to guarantee returns for investments.

Madeleine Verkay, ADB, estimated the energy efficiency investment potential in Indonesia to be US\$ 4 billion, suggesting that the rubber, paper and garment industries could see energy savings of US\$ 70-150 million a year. She also announced that a US\$ 200 million ADB project for technical assistance in this area is in the pipeline.

Sanjoy Sanyal, New Ventures India, described a financing product targeting SMEs. The product, offered in partnership with the Industrial Development Bank of India, enables SMEs to take out a loan for energy efficiency, while the ESCO guarantees the energy savings.



Xuedu Lu, ADB, Steven Gray, Climate Change Capital, Huan Chen, China CDM Fund, Ingo Puhl, Carbon CME Ltd, Jasper Inventor, Greenpeace

RENEWABLE ENERGY - DEVELOPING LARGE-SCALE PROJECTS: This session was chaired by Yue-Lang Feng, ADB.

Matthew Wood, White & Case LLP, shared a case study from a concentrated solar power project in Abu Dhabi, explaining how large-scale renewable energy projects benefit from well-structured contractual frameworks, strong government support and engagement with experienced and reputable sponsors.

Philip Napier-Moore, Mott MacDonald, suggested methods to improve project success, including: providing contract templates to facilitate clarity on roles and responsibilities; calibrating software and technology to regional contexts to improve forecasting and delivery of energy outputs; clarifying local permitting including environmental impact assessment requirements, aviation radar interference, and grid code compliance.

Emmanuel Guyot, Conergy Renewable Energy Singapore, relayed experiences from developing a solar park in Thailand, recalling that solar technology retains the same energy yield over 20 years, making it necessary to optimize efficiencies and invest in high-quality equipment. He reflected that the central role of the engineering, procurement and construction contractor also impacts the return on investment.

Bernhard Raninger, German International Cooperation (GIZ), presented lessons learned from large-scale biogas production in China, including that capacity building and training to improve technical and operational standards during implementation, as well as throughout the lifespan of the project, was integral to success of these projects.

EARNING PROFIT THROUGH POWERING THE POOR – LEARNING FROM SOCIAL ENTREPRENEURS: The panel was chaired by Dirk Münch, E+Co.

Bart Édes, ADB, introduced ideas on how social enterprise can expand access to energy for poor and vulnerable populations by filling gaps left by donors and charities. He shared examples of innovative and successful efforts as well as ADB microfinancing projects. Édes referenced statistics that point to large amounts of available funding for social enterprises.

Cécile Pompei, Barefoot Power, outlined the three roles her company plays in providing affordable solutions to the poor: manufacturing a range of products to support consumers climbing the “energy ladder;” facilitating business development partnerships and subsidiaries; and seeking investors for funding and support.

Jeroen Verschelling, Kamworks, recounted how his company, driven by the demand of 75 percent of Cambodians being off-grid, set out to provide affordable solar solutions to the poor, including a vision to bring product assembly to Cambodia.

Julius Alip, Center for Agriculture and Rural Development (CARD), presented the role his organization plays in providing microfinance and business development services, focusing on capacity building as insurance for success.

The ensuing discussion centered on challenges in: scaling up; maintaining products/systems and providing training; linking investors with social entrepreneurs to overcome existing gaps; marketing products as ‘aspirational’ and competing with trendier items such as cell phones; and improving productivity through product offerings.

CARBON AND ENERGY FINANCE - LEARNING FROM THE CDM: The session was chaired by Xuedu Lu, ADB.

Steven Gray, Climate Change Capital, summarized recent efforts to streamline procedures within the Clean Development Mechanism (CDM) and reflected on its future prospects given uncertainty about the Kyoto Protocol’s second commitment period. He emphasized that CDM, as a financial mechanism with a stringent monitoring, reporting and verification backbone, has been successful in attracting upfront risk capital.

Chen Huan, China CDM Fund, presented the China CDM Fund, established by the government of China to direct revenue from CDM transactions to enhance market-driven mechanisms for addressing climate change. He asserted that the international CDM has triggered domestic action on climate change, noting that China’s budget allocations for energy saving and emission reductions have risen steeply, with US\$ 25 billion going to such efforts in 2009 and 2010.

Ingo Puhl, Carbon CME Ltd, discussed how institutions and mechanisms created through CDM could support Thailand’s efforts towards meeting renewable energy targets and suggested a share of emission reductions needed to meet domestic targets, transferred to a national compliance account, be recognized as Nationally Appropriate Mitigation Actions (NAMAs).

Jasper Inventor, Greenpeace, reminded participants that carbon markets are tools for achieving emissions reductions and not ends in themselves, warning that Annex 1 parties should not forget the importance of maintaining ambitious emissions reduction goals.

THE ROLE OF THE PRIVATE SECTOR IN DELIVERING INNOVATION FOR CLEAN ENERGY: Kala Mulqueeny, ADB, chaired the session.

Neric Acosta, Council for Asian Liberals, pointed towards the need to spur innovation not only in technology but in policy as well. He advocated a policy paradigm that, while not abandoning regulation, did more to enable private sector solutions.

John Haffner, Bridge Renewable Technologies, shared his company’s experience of working with partners in tropical countries to commercialize gasification technologies. He said although ample opportunities exist for bottom-up approaches to succeed on their own, they must be combined with top-down regulation to deliver global scale transformations.

Tim Jarvis, Arup and the Australia Climate Civics Institute, argued that regulation does not create solutions directly but must rather establish market signals needed for innovation to take hold in the private sector.

Unmesh Brahme, SustainabilityCXO Partners Worldwide and India Climate Civics Institute, called for the democratization of electrical power to the rural poor, who lack



economic and political power. Rather than bringing top-down systems to the poor, he advocated approaches centered on ensuring that electrification benefits local livelihoods.

Vince Pérez, WWF International and former Energy Minister, Philippines, presented numerous clean energy projects sponsored by WWF in partnership with private sector and government actors in Southeast Asia to demonstrate civil society's underappreciated capacity to foster innovation.

KEY POLICY AND IMPLEMENTATION ISSUES IN RENEWABLE ENERGY: John Byrne, University of Delaware, chaired the session.

Michael Wilshire, Bloomberg, presented an analysis of clean energy finance and investment. Wilshire predicted continued acceleration in investment, despite policy volatility and price uncertainty, will lead to higher consumer and financial costs, and lower developer returns. He said strong policy shifts towards reducing system costs are expected, and cautioned against the risks posed by aggressive bidding to viable project finance and deployment.

Kyung-Jin Boo, Korean Institute of Energy Economics, provided an overview of clean energy policy in Korea. He said Korea is taking an increasingly market-based path towards low-carbon green growth, and underscored its smart application of feed-in tariffs, renewable portfolio standards, and renewable portfolio agreement.

Bundit Fungtamasan, King Mongkut University of Technology, Thailand, recounted the scaling up of renewable energy in Thailand. He identified challenges, such as grid access and stability, but remained optimistic that financial incentives, microgrids, and other strategies would be able to cope with the task.

Shantanu Dixit, Prayas Energy Group, India, urged investors and policy-makers to take a broader perspective beyond the usual discussion of financial incentives and regulatory frameworks. He said these mechanisms have led to rapid growth of renewable energy in India and elsewhere, but a truly sustainable energy system must consider who will bear incremental cost burdens, how to prioritize access for rural households, and how to deal with energy projects' demands for land and water resources within rural communities.

INSTITUTIONAL MODELS FOR TRANSFORMING RURAL ENERGY ACCESS MARKETS: The session opened with chair Frank van der Vleuten, ETC Energy, urging participants to work together to make an institutional transformation.

Win van Nes, Netherlands Development Organisation (SNV), described how household biogas units operate, illustrating their multiple associated benefits, and stressed the importance of quality control by trained local actors.

Islam Sharif, Infrastructure Development Company Limited (IDCO), shared how his company is providing lighting to five million people in Bangladesh, thereby reducing dependency on kerosene, creating jobs, and reducing carbon emissions. Sharif said having efficient and able partners, a firm commercial

basis, constant review of technologies, and microfinance experience are key to moving from pilot projects to sustainable businesses.

Maaïke Göbel, Renewable Energy & Energy Efficiency Partnership (REEEP), explained her organization's efforts to help achieve the MDGs by supporting partnerships through the Sustainable Energy Industry Association of the Pacific Islands (SEI-API) to find innovative approaches, support pilot projects and provide support for scaling up. She said success often depends on basing strategies on local knowledge and working with in-country champions.

Pradydhi Jati, People Centered Economic and Business Institute (IBEKA), recounted experiences with rural micro hydro. He indicated challenges associated with the arrival of national grids, including: blackouts; expensive installation; installation delays; and poor customer service, have led many villagers to return to the more expensive, but higher quality service, of local micro hydro.

Elizabeth Muguti, African Development Bank (AfDB), highlighted extremely low electrification rates and constraints on generation, transmission and distribution in Africa. She said the AfDB wants to bundle large-scale projects with small-scale, socially oriented endeavors but that communication with borrowing governments must be improved to increase this bundling.

GREEN SOLUTIONS FOR PUBLIC TRANSPORT: The session was chaired by Prajna Rao, WRI's EMBARQ India, who introduced a framework for action on sustainable transport based on avoiding motorized trips, shifting to more efficient modes of transport, and improving vehicle technologies and transport systems.

Sophie Punte, CAI-Asia Center, illustrated that public transport, walking and cycling represent declining shares of total transport in Asia. She highlighted poor pedestrian access to public transport terminals as a barrier to greater public transport use, and added that corruption among public officials has also led to a bias towards expensive, high-status transport projects while neglecting more affordable solutions.

Jitendra Shah, ADB, called for sustainable urban transport to integrate the needs of pedestrians and street vendors, and questioned the bias of policymakers towards car-centric development while the poor at the periphery of expanding cities encounter greater travel times and costs of accessing livelihoods and schools.

Ernesto Camarillo, City of Makati, described the Makati City Transport Development Strategy of 2011-2020 that will create a pedestrian walkway network, bicycle lanes, bus rapid transit (BRT), and electric "jeepneys" powered by organic waste.

Cresencio Montalbo, University of the Philippines, promoted the BRT approach that includes right-of-way lanes, excellent customer service and image branding, noting that it can be done for a fraction of the costs of rail.

David Margonsztern, ADB, presented the Kathmandu Sustainable Urban Transport Project as a case study in reforming urban transport systems.





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SUMMARY REPORT OF THE SIXTH ASIA CLEAN ENERGY FORUM 2011: 22-24 JUNE 2011

The Sixth Asia Clean Energy Forum 2011, themed “New Business Models and Policy Drivers - Building the Low-Carbon Future,” took place from Wednesday, 22 to Friday, 24 June 2011 in Manila, Philippines, preceded by preparatory meetings from 20-21 June. The event was organized by Asian Development Bank (ADB), the United States Agency for International Development (USAID), and the World Resources Institute (WRI), and aimed to promote best practices in clean energy policy and regulation, financing and investment, innovative business models, and energy access.

More than 550 participants from over 50 countries, representing governments, financial institutions, civil society, academia, international organizations, and the private sector, gathered in daily plenaries, breakout sessions, and parallel side events to discuss innovative and creative methods to encourage large-scale clean energy development and deployment.

The Forum was framed around four overarching thematic areas: policy and regulation; financing and investment; innovative business models; and energy for all. Important recurring messages of the Forum included: developing financial mechanisms to more effectively link both large and small scale project developers with private and public financiers; strengthening capacity to design and implement business models for clean and renewable energy projects; creating an enabling environment for markets; maturing the market for renewables; addressing operational and technical dimensions of renewable energy projects to develop credible financial products; and doing all of these things with special care to ensure that they are inclusive of efforts to improve energy access and eradicate energy poverty.



Opening Plenary for the Sixth Asian Clean Energy Forum

output is generally greenhouse gas neutral, their fuel source is a finite resource which must be extracted from the earth; examples include nuclear power and clean coal technologies.

While renewable and clean energy sources have emerged as fundamental to meeting the challenges posed by climate change, they have also been recognized as being an essential foundation for meeting the livelihood needs of the poor, who are often not only economically impoverished, but energy-poor as well. Specifically, 1.6 billion people have no access to electricity and 2.5 billion lack adequate access to modern energy services. Alleviating this energy poverty is seen as a prerequisite to achieving the UN Millennium Development Goals (MDGs) by 2015, and renewable energies are seen as uniquely placed to begin overcoming this challenge by offering opportunities for small-scale, decentralized energy production, ideal for reaching rural and remote areas not serviced by existing energy grids.

Taken together, the environmental, social, and economic drivers behind renewable energy uptake have led to an increasing focus by the international community on the need to facilitate the scaling-up of clean and renewable energy both regionally and globally. To this effect, there has been an emerging UN process since the UN Conference on Environment and Development (UNCED) in 1992 in Rio

A BRIEF HISTORY OF THE ACEF AND INTERGOVERNMENTAL CLEAN AND RENEWABLE ENERGY-RELATED PROCESSES

During the fuel crisis of the 1970s, many countries began exploring alternative sources of energy. The international community’s first major attempt to develop a strategy for the use of alternative fuels was the 1981 UN General Assembly Resolution A/RES/36/193 on the outcomes of the UN Conference on New and Renewable Sources of Energy.

Beginning in the 1990s, renewable and clean energy increased in importance given the environmental implications of rising greenhouse gas emissions linked with economic growth. Renewable forms of energy such as solar, wind, geothermal and biomass are those that can be regenerated without compromising future generations. Clean energy sources are differentiated from renewable energy in that, while their

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de Janeiro, Brazil, including various UN organizations and agencies, as well as a series of international conferences and forums. Most recently, the International Renewable Energy Agency (IRENA) entered the scene in April 2011. IRENA's objectives are to provide an international institutional framework to consolidate policy efforts and facilitate information sharing to catalyze the transition toward a renewables-based society.

The following is an overview of international processes that have shaped the progression of renewable energy.

UN CONFERENCES AND SUMMITS

At UNCED, delegates adopted Agenda 21, an action plan for implementing sustainable development. Agenda 21 addresses sustainable energy, in Chapter 9 on protecting the atmosphere, which notes that controlling atmospheric emissions of greenhouse gases and other substances will increasingly require reliance on environmentally sound energy systems, particularly new and renewable sources of energy. The chapter also addresses, *inter alia*, the need for research and development, the transfer and use of technologies; and measures to overcome barriers for the use of renewables.

In the years following UNCED, several UN conferences and summits addressed renewable energy and sustainable development issues in their outcome documents. These included the Global Conference on Sustainable Development in Small Island Developing States (1994), International Conference on Population and Development (1995), World Summit on Social Development (1995), Fourth World Conference on Women (1995), UN Conference on Human Settlements (1996) and World Food Summit (1996). The World Solar Summit in 1996 and the 19th Special Session of the UN General Assembly (UNGASS 19) in 1997 also addressed energy issues, with UNGASS 19 deciding that the issue should be further examined during the ninth session of the Commission on Sustainable Development (CSD 9) in 2001.

CSD

In April 2001, CSD 9 adopted Decision 9/1 (E/CN.17/2001/19) on "Energy for sustainable development." The Decision included recommendations to encourage the role of the private sector, strengthen research and development and institutional capacities, develop and use indigenous sources of renewable energy, and strengthen financial support to developing countries. It also addressed issues of energy accessibility and rural energy, noting that access to affordable energy services is a prerequisite for implementation of the goal accepted by the international community to halve the proportion of people living on less than US\$1 per day by 2015. IISD Reporting Services (RS) coverage of CSD 9 can be found at: <http://www.iisd.ca/csd/csd9/>.

CSD 15, at its May 2007 meeting, also addressed energy issues, although delegates did not reach consensus on any decisions. IISD RS coverage of CSD 15 can be found at: <http://www.iisd.ca/csd/csd15>

WSSD

The World Summit on Sustainable Development (WSSD) convened in August-September 2002 in Johannesburg, South Africa. WSSD participants adopted the Johannesburg Plan of Implementation (JPOI), which addresses renewable energy in several of its chapters. Regarding sustainable consumption and production patterns (Chapter III), governments agreed to increase substantially the global share of renewable energy sources. The JPOI also addressed renewable energy issues

in text on poverty eradication (Chapter II), small island developing states (Chapter VII), and Africa (Chapter VIII). At the WSSD, Gerhard Schröder, then German Chancellor, invited the international community to Germany for an International on Renewable Energy (Renewables 2004), which launched the series of IREC meetings. IISD RS coverage of WSSD can be found at: <http://www.iisd.ca/2002/wssd>

RENEWABLES 2004

The International Renewable Energy Conference (Renewables 2004) took place from 1-4 June 2004 in Bonn, Germany. Participants addressed issues, including: policies for renewable energy market development; best-practice examples and success stories; financing options; strengthening capacities, research and policy development, and institutions; energy services and the MDGs; and the contribution of renewable energy in meeting the climate challenge. The outcomes of the conference included policy recommendations, an international action programme and a political declaration. The declaration called for the establishment of a global policy network, which led to the creation of the Renewable Energy Network for the 21st Century (REN21). IISD RS coverage of Renewables 2004 can be found at: <http://www.iisd.ca/sd/ren2004>

BIREC 2005

The Beijing International Renewable Energy Conference (BIREC), hosted by China in November 2005, addressed practical measures, success stories, and effective legislative and policy measures to create institutional and technical infrastructures. Participants adopted the Beijing Declaration, which recognized the need for significant financial resources, both public and private, for investment in renewable energy and energy efficiency, and emphasized the need for enhanced international cooperation for capacity building in developing countries, among other issues.

WIREC 2008

The Washington International Renewable Energy Conference (WIREC), convened from 4-6 March 2008 in Washington DC, US. Participants discussed four main themes: market adoption and finance; agriculture, forestry and rural development; state and local authorities; and research and development. By the end of the conference over 100 domestic and international pledges had been submitted for the Washington International Action Programme, to accelerate the global uptake of renewable energy. IISD RS coverage of WIREC 2008 can be found at: <http://www.iisd.ca/ymb/wirec2008>

DIREC 2010

The Delhi International Renewable Energy Conference (DIREC) took place from 27-29 October 2010, in New Delhi, India. The conference's key outcomes included the DIREC Declaration and 30 new pledges by governments, civil society and the private sector under the Delhi International Action Programme to take concrete actions to up-scale renewable energy. IISD RS coverage of DIREC 2010 can be found at: <http://www.iisd.ca/ymb/energy/direc2010/>

GLOBAL RENEWABLE ENERGY FORUM 2008

This Forum was held from 18-21 May 2008 in Foz do Iguaçu, Brazil, and endeavored to create a suitable environment to promote inter-regional dialogue and to set up joint actions between countries and regions to reduce poverty and enhance energy security through the use of renewable energy. IISD RS coverage of this meeting can be found at: <http://www.iisd.ca/ymb/greb2008/>

GLOBAL RENEWABLE ENERGY FORUM 2009

This Forum was held from 7-9 October 2009 in León, Mexico, to encourage innovative multi-stakeholder and multi-regional partnerships for scaling-up renewable energy. The meeting concluded with several recommendations, including the need to: establish a global access fund to target chronic problems of access to energy; develop clear sustainability guidelines and standards for biofuels; strengthen regional research capacities through networks; and establish UN-Energy and industry partnerships. IISD RS coverage of the Forum can be found at: <http://www.iisd.ca/ymb/energy/greb2009/html/ymbvol128num3e.html>

IRENA

The IRENA statute was adopted on 26 January 2009, and entered into force on 8 July 2010. The first meeting of the IRENA's Assembly, its governing body, was held from 3-5 April 2011 after two years of work by its Preparatory Commission. IRENA's purpose is to promote the widespread and increased adoption and sustainable use of all forms of renewable energy by acting as a global clearinghouse of knowledge on renewable energy and assisting member states in defining renewable energy strategies. As of June 2011, IRENA has 149 signatories, with 74 states and the EU having also ratified its statute. IISD RS coverage of IRENA's final Preparatory Commission and first Assembly meetings can be found at: <http://www.iisd.ca/irena/irenaa1/>

ASIA CLEAN ENERGY FORUM 2006

The ADB's first Asia Clean Energy Forum, was envisaged as a knowledge-sharing event for policymakers and practitioners, to consult on ADB's Energy Efficiency Initiative and its Energy Policy Review, share lessons learned on energy related technical assistance and to introduce ADB's Carbon Market Initiative.

ASIA CLEAN ENERGY FORUM 2007

The second Asia Clean Energy Forum was themed "Policy and Finance Solutions for Energy Security and Climate Change." Participants, including project developers, the financial community and policy makers, met to identify challenges related to project development and finance, and explored innovative ways to tackle these challenges. The ADB also announced the launch of an annual target of US\$1 billion investments in clean energy.

ASIA CLEAN ENERGY FORUM 2008

The third Asia Clean Energy Forum was themed "Investing in Solutions that Address Climate Change and Energy Security." The meeting served as a platform for sharing best practices on: catalyzing public-private energy partnerships to increase deployment of clean energy technologies and systems; improving cooperation stakeholders involved in financing clean energy programs; and identifying financing challenges for project developers and initiating follow-on assistance.

ASIA CLEAN ENERGY FORUM 2009

The fourth Asia Clean Energy Forum was conducted as part of ADB's first "Climate Change and Clean Energy Week" and focused on initiatives to simultaneously address climate change, strengthen long-term energy security, and help businesses overcome the global economic downturn. Discussions focused on: energy efficiency and renewable energy; urban and transport issues; access to energy for the poor; and energy and global climate change. At the Forum, the

ADB revised upwards its annual investment in clean energy initiatives to US\$ 2 billion per year by 2013 and launched the Energy for All Partnership, aiming to bring power to 100 million people in the region by 2015.

ASIA CLEAN ENERGY FORUM 2010

The fifth Asia Clean Energy Forum was themed "Meeting the Technology Transfer Challenge" and brought together policymakers, private sector firms, and non-governmental organizations to explore aspects of technology transfer relating to: policy and regulation; technology and program implementation; financing efficiency and renewables; climate change frameworks and carbon markets; and providing energy for all.

REPORT OF THE FORUM

PLENARY SESSIONS

From Wednesday to Friday, participants engaged in morning plenary discussions on the following topics: accelerating the clean energy revolution; financing and business models for clean energy; and visions for a low-carbon future.

Opening Plenary - A Call to Action: Accelerating the Clean Energy Revolution: Welcoming participants to the Forum on Wednesday morning, Haruhiko Kuroda, President, Asian Development Bank (ADB), emphasized that green growth must become the new business as usual for Asia and the Pacific. He expressed his hope that the Forum's discussions would focus on ideas for new policies, business models and investment strategies to build an inclusive low-carbon future.

Robert Orr, US Executive Director, ADB, described clean and renewable energy efforts in the US. Noting increasing energy



Haruhiko Kuroda, President, ADB



Robert Orr, US Executive Director, ADB

demands in Asia, he outlined United States Agency for International Development (USAID) support of US\$ 275 million to the region, including financing for clean energy development, regional power trading, and joint technological research.

Amory Lovins, Chairman, Rocky Mountain Institute, elaborated on how renewables and energy efficiency can nearly

eliminate the need for fossil fuels for transport and energy production by 2050. On solutions for future and low-carbon transport needs, Lovins identified "feebates," ultralight vehicles, simplified manufacturing, and electric propulsion. On electricity, he stressed: removing wasteful subsidies and redesigning wasteful devices; distributed microgrids; and other mechanisms for transforming customer costs into capital assets.

Mohamed El-Ashry, Chairman, Renewable Energy Policy Network for the 21st Century (REN21), and Senior Fellow, UN Foundation, declared that sustainable development is not possible without making energy sustainable. He stressed



Mohamed El-Ashry,
Chairman, REN21,
and Senior Fellow, UN
Foundation

the need to increase global financing and policy support and improve renewables-related capacities in least developed countries.

John Byrne, Distinguished Professor, University of Delaware, suggested that the US follow Californian and EU examples to overcome its “energy obesity” and improve economic performance through investments in renewable energy, efficiency and conservation measures. He called for new institutional systems to shift costs of renewables from consumers

to utilities, and the use of urban areas for decentralized power generation.

Plenary on Financing and Business Models for Clean Energy Development: On Thursday morning, Peter du Pont, USAID, moderated a plenary panel session.

Henrik Breum, Vestas Wind Systems, compared the recent pace of change in the wind sector to advances in automobile development in the early 20th century, adding that the wind industry is now able to make yield guarantees, adding desperately needed predictability of returns for investors.

Pankaj Sehgal, SUN Group India, referred to subordinated debt as an important financing component for small renewables operations, and identified energy efficiency as low-hanging fruit that remains untouched because of high upfront costs, which, the Indian government has attempted to overcome via innovative financial mechanisms. Sehgal identified Husk Power Systems as a replicable, decentralized electricity producer providing inspiration for off-grid rural electrification and energy poverty reduction.

John Morton, Overseas Private Investment Corporation, commented that we are in the midst of “the most predictable economic transition in history,” but that catalyzing the private sector and de-risking investments require new financial products for “cracking the energy efficiency nut.”



John Byrne, University
of Delaware

As an example, he offered the creation of insurance against governmental interference in carbon credit creation, to be used for REDD+ (reducing emissions from deforestation and forest degradation, and conservation) projects.

Woochong Um, ADB, highlighted that ADB is investing in clean energy venture capital funds, agreeing that challenges to attracting private sector funding include the need for regulatory frameworks that provide certainty to investors.

Brad Sterley, Standard Chartered Bank, lamented that, although subordinated debt could be used to replace equity for renewables projects, such projects are often too small to be considered by investment banks, and profits are low and or subsidized.

Audience comments stressed that capital is available but viable renewable energy businesses are not being financed because they are either too small scale, or do not offer high enough annual returns or repay loans quickly enough. Panelists reiterated the need to develop new financial products to overcome these challenges, with Sehgal saying more “radical thinking” is needed in banking.

Closing Plenary: Putting It All Together: Visions for a Low-Carbon Future: Ann Quon, Principal Director, Department of External Relations, ADB, chaired the closing plenary on Friday morning.

Steve Sawyer, Global World Energy Council, said the main barriers to renewable uptake are fossil dependent legacy technologies and systems currently in use. He proposed that “clean” energy technologies such as new nuclear, Carbon Capture and Storage and clean coal, distract from moving towards a new energy path. Sawyer said it is not plausible for civil society to become very active in power generation technology, subsidy reform and infrastructure debates, but that the recent referendum over nuclear energy in Italy illustrates that civil society is willing and able to indicate development pathways to be taken.

Michael Wilshire, Director, Renewable Energy and Energy Smart Technologies, Bloomberg, agreed with Sawyer on barriers but added that financing availability has been as significant a barrier as legacies to date. He explained that both stable policies and improved cost competitiveness are needed to overcome these challenges and warned that financial stimulus packages, important recent sources of renewables financing, are soon expiring.



L-R: Peter du Pont, USAID; Henrik Breum, Vestas Wind Systems; Brad Sterley, Standard Chartered Bank; Pankaj Sehgal, SUN Group India; John Morton, Overseas Private Investment Corporation; and Woochong Um, ADB



L-R: Ann Quon, ADB; Steve Sawyer, GWEC; Michael Wilshire, Renewable Energy and Energy Smart Technologies, Bloomberg; Zhou Dadi, Energy Research Institute, National Development and Reform Commission, China; Athena Ronquillo-Ballesteros, WRI; and Xianbin Yao, ADB

Zhou Dadi, Director General Emeritus, Energy Research Institute, National Development and Reform Commission, China, said a more precise definition of “low carbon future” is needed, as renewables and enhanced energy efficiency are only half the equation, with important questions remaining regarding societal and industrial development models. He added that there is no single solution to bringing about wide renewable energy deployment, but universally, governance must be strong and decisions should have strong scientific bases.

Athena Ronquillo-Ballesteros, Project Manager, International Financial Flows and Environment Project, World Resources Institute (WRI), said weak, and often nonexistent, regulatory support for renewables is a major barrier to their uptake, stressing that citizens must hold institutions accountable for implementing the policies they create, and also for creating those policies transparently to ensure public acceptance and ownership.

Xianbin Yao, Director General, Regional and Sustainable Development Department, ADB, said country specific policies and plans are important. He indicated that ADB is working to both finance innovation and innovate within finance. He urged that the energy poor be taken on board in energy policymaking.

In response to Chair Quon’s question about visions for a clean energy future, Yao urged countries to take a holistic perspective of their economies that accounts for all resource constraints, including energy; Ronquillo-Ballesteros called for innovation across the value chain, transformations in energy efficiency, scaling-up, and transparency in decision-making and implementation; Zhou advocated for energy conservation beyond the narrower goal of energy efficiency; Wilshire supported diverse solutions including cost reductions, energy efficiency, technological innovation and getting to scale; and Sawyer sought revolutions in pricing and regulation that would allow the low-hanging fruit of energy efficiency to finally be harvested.

In response to Quon’s request for take home messages from the Forum, Sawyer said, “We have met the enemy and he is us, and we must change,” while Zhou concluded that “everything that needs to be done is possible with what we have now.”

BREAKOUT SESSIONS

Throughout the meeting, participants took part in 24 breakout sessions along the Forum’s four overarching thematic tracks of: policy and regulation; financing and investment; innovative business models; and energy for all. IISD RS covered 18 of these and the following section summarizes these sessions grouped by the thematic tracks.

POLICY AND REGULATION TRACK

Policies to Improve Distribution System Efficiency and Develop Smart Grids in Asia: On Wednesday afternoon, Seethapathy Chander, ADB, chaired this session and stressed the need for investments to reduce energy losses from transmission and distribution.

Mayur Karmarkar, Partnership Asia and International Copper Association, described his association’s EU-funded partnership with the government of China, transformer manufacturers and others in the supply chain, which is



Tika Limbu, ADB

improving distribution efficiency, raising market standards, and supporting China’s mandatory energy efficiency standards.

Tika Limbu, ADB, presented efforts to reduce current energy losses in transmission and distribution in India. Noting that growth in India’s power sector is almost 10 percent a year, he said ADB is supporting the formation of a single national grid by 2012, the current phase of which will avoid seven million tons of carbon dioxide emissions.

Grayson Heffner, International Energy Agency (IEA), underscored the need to understand smart grids in the context of the growing complexity of electricity systems. He said sophisticated smart grids with bi-directional communication between energy users and producers are needed to limit global warming. He outlined various challenges, including the establishment of global technology standards, and integration with existing infrastructure.

Carbon and Energy Finance: Domestic Carbon Trading: In a session chaired by Xuedu Lu, ADB, on Thursday morning, Huan Chen, Ministry of Finance, China, outlined feasibility studies, trading platforms, monitoring, reporting and verification standards and other activities to establish China’s mandatory cap-and-trade market.

Pongvipa Lohsomboon, Thailand Greenhouse Gas Management Organization, indicated that Thailand is strengthening market incentives to reduce domestic emissions. She cited measures including the Thailand Carbon Fund, and efforts to encourage companies and municipalities to undertake voluntary reductions.

Chu Thi Thanh Huong, Ministry of Natural Resources and Environment, Vietnam, described plans to reduce domestic emissions, including a bilateral offset mechanism between Vietnam and Japan, and the Vietnam National Climate Change Strategy.



L-R: Michael Wilshire, Bloomberg; Kyung-Jin Boo, Korean Institute of Energy Economics; and John Byrne, University of Delaware

Dicky Edwin Hindarto, National Council on Climate Change, Indonesia, emphasized the need to pursue market and non-market greenhouse gas reduction instruments to address the full range of potential projects and spur carbon markets and other supply side measures.

Jennifer Morgan, WRI, underlined the need for countries to work through pros and cons of various distribution options for domestic cap-and-trade. She highlighted the tension between allocations versus auctions, and identified key considerations needed to ensure integrity of domestic markets.

Key Policy and Implementation Issues in Renewable Energy: This session took place on Thursday afternoon and was chaired by John Byrne, University of Delaware. Michael Wilshire, Bloomberg, predicted continued acceleration in investment, despite policy volatility and price uncertainty. He said strong policy shifts towards reducing system costs are expected, and cautioned against the risks posed by aggressive bidding to viable project finance and deployment.

Kyung-Jin Boo, Korean Institute of Energy Economics, said Korea is taking an increasingly market-based path towards low-carbon green growth, and underscored its smart application of feed-in tariffs, renewable portfolio standards, and renewable portfolio agreement.

Bundit Fungtamasan, King Mongkut University of Technology, Thailand, recounted challenges to scaling-up of renewable energy in Thailand, such as grid access and stability, but remained optimistic that financial incentives, microgrids, and other strategies would be able to cope with the task.

Shantanu Dixit, Prayas Energy Group, India, urged investors and policymakers to take a broader perspective beyond the usual discussion of financial incentives and regulatory frameworks. He said truly sustainable energy systems must consider who will bear incremental cost burdens, how to

prioritize access for rural households, and how to deal with energy projects' demands for land and water resources within rural communities.

Green Solutions for Public Transport: This session took place on Thursday afternoon, chaired by Prajna Rao, WRI's EMBARQ India, who introduced a framework for action on sustainable transport.

Sophie Punte, CAI-Asia Center, illustrated that public transport, walking and cycling represent declining shares of total transport in Asia, and added that corruption among public officials has also led to a bias towards expensive, high-status transport projects.

Jitendra Shah, ADB, called for sustainable urban transport to integrate the needs of pedestrians and street vendors, and questioned the bias of policymakers towards car-centric development.

Ernesto Camarillo, City of Makati, described the Makati City Transport Development Strategy of 2011-2020 that will create a pedestrian walkway network, bicycle lanes, bus rapid transit (BRT), and electric "jeepneys" powered by organic waste.

Cresencio Montalbo, University of the Philippines, promoted the BRT approach that includes right-of-way lanes, excellent customer service and image branding, noting that it can be done for a fraction of the costs of rail.

David Margonsztern, ADB, presented the Kathmandu Sustainable Urban Transport Project as a case study in reforming urban transport systems.

FINANCING AND INVESTMENT TRACK

Using Public Investment to Leverage Private Capital:

This session took place on Wednesday and was chaired by Steven Gray, Climate Change Capital. Isabelle Vincent, French Development Agency (AFD), called for development partners to play more active roles in strategy and design to facilitate policy transformation via more holistic thinking about energy systems. She explored tools and strategies for policy evolution and dialogue, including indicators accounting for social and environmental externalities and credit line support linked to on-the-ground projects.

Len George, ADB, explained strategies for using funds to capitalize additional investments. He described ADB's support of large-scale solar in India, which facilitates public sector lending for infrastructure development and private sector



L-R: Steven Gray, Climate Change Capital; Isabelle Vincent, AFD; Satoshi Fukushima, ADB; Len George, ADB; Christianne Carin, Elk Partners LLC; and Eugene Yun, Eos Investment Partners

lending through direct loans, credit guarantees, and other mechanisms for reducing investor risk. He described the need to involve stakeholders through initiatives such as the Asia Pacific Solar Forum, a knowledge-sharing platform.

Christianne Carin, Elk Partners LLC, explained how existing technologies can be bundled into stand-alone systems for health clinics, hospitals, sanitation centers, housing facilities and other users. She stated that these flexible, off-grid modules combine renewable energy sources, control software, microgrids, and other components into systems that can be rapidly implemented within two years, offering significant opportunities for scaling-up renewable technologies.

Eugene Yun, Eos Investment Partners, highlighted the need for a “game changer” to escape the vicious circles of inadequate capital, immature private equity, insufficient investment opportunities, and infrastructure underdevelopment. He said innovations in funding structures can meet these challenges by investing at scale, generating highly favorable risk-adjusted returns, mobilizing private sector capital, pooling investible projects, and applying risk mitigation tools.

In discussion, panelists fielded questions from participants on: clean technology funds; the need for multi-sectoral lending and promoting intersectoral dialogues; and civil society’s role in allocating foreign investments.

Energy Efficiency Investment: This Thursday morning breakout session was chaired by John Morton, Overseas Private Investment Corporation.

Catriona McLeod, ReEx Capital Asia, identified typical returns of 7-15 percent from investments in Energy Service Companies (ESCOs) and energy efficiency funds. She observed higher returns, as well as risks, in industry as compared with the commercial sector, and reckoned that Singapore and the Philippines are currently the most profitable markets due to high electricity rates. She said investment barriers include performance and credit risks, and uncertainties over electricity prices, energy usage, and time horizons.



Catriona McLeod, ReEx Capital Asia

Ivan Gerginov, Econoler, described designing and implementing energy efficiency funds in Bulgaria, China, Chile and Egypt in cooperation with ESCOs and banks, adopting flexible, tailor-made approaches ranging from raising venture capital in Chile to working with the Chinese government to create an ESCO to guarantee returns for investments.

Madeleine Varkay, ADB, estimated the energy efficiency investment potential in Indonesia to be US\$ 4 billion, suggesting that the rubber, paper and garment industries



Madeleine Varkay, ADB

could see energy savings of US\$ 70-150 million a year. She also announced that a US\$ 200 million ADB project for technical assistance in this area is in the pipeline.

Sanjoy Sanyal, New Ventures India, described a financing product targeting small to medium sized enterprises (SMEs), offered in partnership with the Industrial Development Bank of India, enabling SMEs to take out a loan for energy efficiency while the ESCO guarantees the energy savings.

Carbon and Energy Finance - Learning from the CDM:

This session was chaired by Xuedu Lu, ADB, and took place on Thursday afternoon. Steven Gray, Climate Change Capital, summarized recent efforts to streamline procedures within the Clean Development Mechanism (CDM), emphasizing that as a financial mechanism with a stringent monitoring, reporting and verification backbone, the CDM has been successful in attracting upfront risk capital.

Chen Huan, China CDM Fund, introduced the China CDM fund that was established by the government of China to direct revenue from CDM transactions towards market-driven mechanisms for addressing climate change. He asserted that the international CDM has triggered domestic action on climate change, noting that China’s budget allocations for energy-saving and emission reductions have risen steeply, with US\$ 25 billion going to such efforts in 2009 and 2010.

Ingo Puhl, Carbon CME Ltd, discussed how institutions and mechanisms created through CDM could support Thailand’s efforts towards meeting renewable energy targets even if CDM does not continue. To accomplish this, he suggested a share of emission reductions needed to meet domestic targets be recognized as a part of Thailand’s Nationally Appropriate Mitigation Actions (NAMAs), housed within a national compliance account.

Jasper Inventor, Greenpeace, reminded participants that carbon markets are only tools for achieving emissions reductions, warning that Annex 1 parties should not forget the importance of maintaining ambitious emissions reduction goals.

Experience with Tradable Energy Certificates: This session took place on Friday and was chaired Pil-Bae Song, ADB.

Andrew Livingston, Office of the Renewable Energy Regulator, Australia, shared Australia’s pioneering experience with Renewable Energy Certificates (RECs), disclosing specific mechanisms used to create credibility and stability in



L-R: Xuedu Lu, ADB; Steven Gray, Climate Change Capital; Chen Huan, China CDM Fund; Ingo Puhl, Carbon CME Ltd; and Jasper Inventor, Greenpeace

the markets such as: an online registry to build transparency and trust; the splitting of large- and small-scale RECs; using a clearinghouse to safeguard stability of small-scale markets; and enforcing regulations.

Aiming Zhou, ADB, reviewed: how the REC framework fits together with other policies; the benefits of using RECs; and what is driving their use. He explained the development of policies within ADB as well as current REC initiatives such as a case study from Sri Lanka.

Balawat Joshi, ABPS Infrastructure Advisory, recounted recent developments in India within the emerging REC market, identifying challenges due to lack of: visibility in ceiling and floor prices; understanding of REC mechanisms and definitions of technology; and buyers in the market. He opined however, that it is possible to overcome these barriers and achieve a robust market.

Anoop Singh, Indian Institute of Technology Kanpur, shared further insights of India's experience engaging in the REC market. He clarified that the market is a promising option but its success hinges on quality of design and the influence of regulation and policy.

INNOVATIVE BUSINESS MODELS TRACK

Approaches to Deal Facilitation and Technology

Development for Clean Energy Projects: This session took place on Wednesday, and was chaired by Jun Tian, ADB. Irman Boyle, USAID ECO-Asia Clean Development and Climate Program, described Climate Technology Initiative's Private Financing Advisory Network's (CTI PFAN) work in Indonesia, acting as the "missing middle," fostering relationships between project entrepreneurs and financiers by engaging project developers via competitions to provide *pro bono* mentoring. Responding to a question from the audience, another representative of CTI PFAN said they are increasing support to financial institutions in project assessment and due diligence training rather than project developers, as it is often difficult to find suitable developers.

Hong Miao, USAID ECO-Asia Clean Development and Climate Program, shared lessons learned from matching entrepreneurs with investors for CTI PFAN projects in China. She shared how workshops and forums build trust and credibility, attract new business, and strengthen core membership and the overall network.

Leong Kin Mun, EU-Malaysia Biomass Sustainable Production Initiative, presented successful mechanisms for linking EU companies to SMEs in Malaysia by attracting stakeholders to nurture projects such as biomass production, fuel switching CDM projects, and carbon credit trading. She indicated that a successful synergy is developing, which supports and facilitates relationships between industry, investors and government officials.

New Business Models and Policy Drivers: This panel took place on Wednesday afternoon and was chaired by Gil-Hong Kim, ADB. Gabinete Reyes Redentor, Pepsi-Cola Products Philippines, described Pepsi's Project Power Play, which set up biomass power plants at all Pepsi plants in the Philippines through ESCOs, that install, maintain and run the facilities at no cost to Pepsi, which then buys the power produced at a reduced rate. He said this had led to 25 percent savings in energy costs at their largest plant.

Sridhar Samudrala, Mukund Dairy Farm, described how his farm's biogas production facility in India is used to power his pasteurization plant, which had previously been powered by unsustainably harvested local wood. He said the costs for the change were recouped in less than two years.

Peter Hayes, ADB, and Mark Allington, IFC International, presented on ADB GeoExplorer, an online geographic information systems (GIS) tool for wind and solar energy resource mapping in 10 developing countries in Central West Asia. They said it allows investors to assess energy yield, and scale of investment needed, and to compare relative economic viability based on a range of detailed characteristics of geography, habitat, weather, and infrastructure policy.

Aiming Zhou, ADB, shared a business model used to build a rooftop solar system based on SunEdison's work. The model requires no upfront cost due to a long-term power purchase agreement, supports local companies in securing non-recourse loan financing, and helps match solar systems to buildings' energy load profiles.

Renewable Energy: Developing Large-Scale Projects:

This session took place on Thursday morning and was chaired by Yue-Lang Feng, ADB. Matthew Wood, White & Case LLP, shared a case study from a concentrated solar power project in Abu Dhabi, United Arab Emirates (UAE), explaining how



L-R: Yue-Lang Feng, ADB; Matthew Wood, White & Case LLP; Philip Napier-Moore, Mott MacDonald; Emmanuel Guyot, Conergy Renewable Energy Singapore; and Bernhard Raninger, GIZ



L-R: Kala Mulqueeny, ADB; Neric Acosta, Council for Asian Liberals; John Haffner, Bridge Renewable Technologies; Tim Jarvis, Arup and the Australia Climate Civics Institute; Unmesh Brahme, SustainabilityCXO Partners Worldwide and India Climate Civics Institute; and Vince Pérez, WWF International and former Energy Minister, Philippines

large-scale renewable energy projects benefit from well-structured contractual frameworks, strong government support and engagement with experienced and reputable sponsors.

Philip Napier-Moore, Mott MacDonald, suggested methods to improve project success, including: providing contract templates to facilitate clarity on roles and responsibilities; and calibrating software and technology to regional contexts to improve forecasting and delivery of energy outputs.

Emmanuel Guyot, Conergy Renewable Energy Singapore, relayed experiences from developing a solar park in Thailand, recalling that solar technology retains the same energy yield over 20 years, making it necessary to optimize efficiencies and invest in high-quality equipment.

Bernhard Raninger, German Society for International Cooperation (GIZ), presented lessons learned from large-scale biogas production in China, including that capacity building and training to improve technical and operational standards during implementation, as well as throughout the lifespan of the project, were integral to success.

The Role of the Private Sector in Delivering Innovation for Clean Energy: This session took place on Thursday afternoon and was chaired by Kala Mulqueeny, ADB. Neric Acosta, Council for Asian Liberals, pointed towards the need to spur innovation not only in technology but in policy to enable private sector solutions as well. John Haffner, Bridge Renewable Technologies, shared his company's experience of working with partners in tropical countries to commercialize gasification technologies. He said although ample opportunities exist for bottom-up approaches to succeed on their own, they must be combined with top-down regulation to deliver global scale transformations.

Tim Jarvis, Arup and the Australia Climate Civics Institute, argued that regulation does not create solutions directly but must rather establish market signals needed for innovation to take hold.

Unmesh Brahme, SustainabilityCXO Partners Worldwide and India Climate Civics Institute, called for the democratization of electrical power to the rural poor. Rather than bringing top-down systems for the poor, he advocated approaches that ensure electrification benefits local livelihoods.

Vince Pérez, WWF International and former Energy Minister, Philippines, presented numerous clean energy projects sponsored by WWF in partnership with private sector and government actors in Southeast Asia to demonstrate civil society's underappreciated capacity to foster innovation.

Business Models for Sustainability: This session took place on Friday morning and was chaired by Retno Setianingsih, USAID Indonesia. Sununtar Setboonsarng, ADB, presented on biofuels in the Greater Mekong Subregion. She announced that, focusing on small-scale farmers' cultivation of jatropha for biodiesel and other products, ADB will soon launch a US\$ 4.6 million regional capacity building program to improve regional cooperation in bioenergy, conduct pilot-testing of biomass, enhance capacity for jatropha use, and

develop knowledge products. Furthermore, she said a US\$ 80 million loan facility for biofuels is in the pipeline for 2013. She commented that testing, research and new practices to improve productivity and soil condition had improved outcomes for rural people growing jatropha.

Ellen May Zanoria, Gold Standard Foundation, presented her organization's work in the benchmarking of carbon reduction products for the compliance and voluntary carbon markets, using criteria including renewable energy or end-use energy efficiency benefits, co-benefits, two-step stakeholder involvement in design and feedback, and ongoing monitoring. She cited examples of Gold Standard projects, including rural lighting and heating, solar cookers and enhanced woodstoves. Regarding scaling-up of pilots, she described the bundling of projects to achieve critical mass, noting that ongoing management and maintenance is needed to ensure that programs continue to deliver over 10 to 15 years. In response to concern about the high transaction costs, she described the Gold Standard's scheme for micro-scale projects allowing for simpler verification and validation processes.

Pasha Ponomarev, Accenture, identified market barriers to energy efficiency including existing policies, unavailability of information and local expertise, uncertainty over contract terms and payback period, and transaction costs. Noting the challenge of realizing profits, he recommended focusing on project development through careful assessment and stakeholder education on how to get returns from projects; and replicable transaction models with sector-specific products that are widely available and supported by public finance. He noted that best-practice models for ESCOs should be disseminated in order to avoid problems of poor delivery that could damage the efficiency sector, recalling that ESCOs in the US had been plagued by lawsuits following deregulation and privatization in the 1990s.

ENERGY FOR ALL TRACK

Towards Sustainable Energy for All: This session took place on Wednesday afternoon and was chaired by Bart Édes, ADB. Mohamed El-Ashry, REN21 and UN Foundation, lamented that in many cases wasteful use practices hinder broad energy provision in developing countries, urging participants to help raise awareness about energy poverty. He said the UN Conference on Sustainable Development (also known as Rio+20) and the UN Year for Sustainable Energy for All in 2012 must be used to spur an economically, socially and environmentally sustainable energy revolution.

Edwin Khew, IUT Global and Sustainable Energy Association of Singapore, called for financial models to support provisioning and servicing technology.

Rajan Velumail, UN Development Programme (UNDP), said energy access must be linked with poverty reduction.

Edita Bueno, National Electrification Administration, Philippines, said her government views initial rural electrification efforts as an infrastructure project for which the government is responsible.

Johane Meagher, Global Sustainable Electricity Partnership (e8), described a global survey on best practices for public-private partnerships, saying that e8 will soon announce a cooperative project with ADB on energy poverty.

Responding to a question by Chair Edes on barriers to overcoming energy poverty: Velumail stressed affordability of technologies and sustainability of projects after initial funding ends; El-Ashry said high-level government commitment is still generally lacking, but where it exists, great progress has been made; Bueno added government roadmaps and concrete planning are most important; Meagher lamented that clear and facilitative long-term energy policies are often lacking; and Khew reiterated the importance of training programmes on the ground.

On shared responsibility for innovation and renewables adoption, panelists agreed that predictable subsidies matching long investment payback periods are needed. Khew remarked that the poor already pay high prices for privately generated electricity and emphasized that the most urgent needs are for household-managed systems.

Business Innovations to Enable Energy for All – The Role of Large Companies: This session took place on Thursday and was chaired by Matthew Lynch, World Business Council for Sustainable Development (WBCSD) who introduced WBCSD's Access to Energy Initiative.

Peeush Kumar Bishnoi, Siemens AG India, declared that a market-driven, rather than policy-driven environment, is key to overcoming energy access and energy poverty challenges. He said that: innovative financing connects revenue models to customers; innovative technology connects customers to technology options; and policy currently connects revenue models to technology options, but that the market should do this. With good business models, he said, scaling-up is not an issue.

Philippe Reveilhac, Schneider Electric Philippines, introduced Schneider's non-profit BipBop programme, which provides low-cost off-grid energy to bottom-of-pyramid customers, the payments for which recoup Schneider's investment costs. Reveilhac said innovation needs to be based on listening and anticipating customer wants and needs, and that victory at the bottom of the pyramid will be collective.

Harry Verhaar, Philips Lighting, urged changing current linear models of production, consumption and disposal to circular models based on resource efficiency and focus on quality of life. Accordingly, he said,



Matthew Lynch, WBCSD



Philippe Reveilhac, Schneider Electric Philippines



Harry Verhaar, Philips Lighting

energy efficiency and renewables must be about prosperity development, not only problem solving. On scaling-up, he said a shift in narrative is needed that will engage fast-acting customers and voters, rather than slow-moving politics.

Earning Profit through Powering the Poor – Learning from Social Entrepreneurs: This session took place on Thursday and was chaired by Dirk Münch, E+Co. Bart Édés, ADB, introduced ideas on how social enterprise can expand access to energy for poor and vulnerable populations, referencing statistics that point to large amounts of available funding for social enterprises.

Cécile Pompeï, Barefoot Power, outlined the role her company plays in providing affordable solutions to the poor: manufacturing a range of products to support consumers climbing the "energy ladder"; facilitating business development partnerships and subsidiaries; and becoming investors.

Jeroen Verschelling, Kamworks, recounted how his company, driven by the demand of 75 percent of Cambodians being off-grid, set out to provide affordable solar solutions to the poor, including a vision to bring product assembly to Cambodia.

Julius Alip, Center for Agriculture and Rural Development (CARD), presented the role of his organization in providing microfinance and business development services, focusing on capacity building as insurance for success.

The ensuing discussion centered on challenges in: scaling-up; maintaining products/systems and providing training; linking investors with social entrepreneurs; marketing products as "aspirational" and competing with trendier items such as cell phones; and improving productivity through product offerings.

Institutional Models for Transforming Rural Energy Access Markets: This session, on Thursday, opened with Chair Frank van der Vleuten, ETC Energy, stressing the importance of transforming institutions.

Win van Nes, Netherlands Development Organisation (SNV), described household biogas units' operation, illustrated their benefits, and stressed the importance of quality control by trained local actors.

Islam Sharif, Infrastructure Development Company Limited (IDCO), shared how his company provides lighting to five million people in Bangladesh, thereby reducing dependency on kerosene, creating jobs, and reducing carbon emissions. Sharif said having efficient and able partners, a firm commercial basis, constant review of technologies, and microfinance experience are key to moving from pilot projects to sustainable businesses.



Cécile Pompeï, Barefoot Power



Jeroen Verschelling, Kamworks



Win van Nes, SNV

Maaïke Göbel, Renewable Energy & Energy Efficiency Partnership (REEEP), explained her organization's efforts to help achieve the MDGs by supporting partnerships through the Sustainable Energy Industry Association of the Pacific Islands (SEIAPI). She said success depends on local knowledge and working with in-country champions.



Maaïke Göbel, REEEP

Pradygdhi Jati, People Centered Economic and Business Institute (IBEKA), recounted experiences with rural micro hydro, indicating challenges associated with national grids, including: blackouts; expensive installation; installation delays; and poor customer service.

Elizabeth Muguti, African Development Bank (AfDB), highlighted low electrification rates and constraints on generation, transmission and distribution in Africa. She said the AfDB wants to bundle large-scale projects with small-scale, socially oriented endeavors, but that communication with borrowing governments must be improved to scale-up these efforts.

Clean Energy Solutions for the Poor: This session took place Friday morning with Rehan Kausar, ADB, serving as chair.

Prakash Ghimre, SNV, and Zhang Ming, China Association of Rural Energy Industry (CAREI), presented opportunities for expanding access to domestic biogas plants for cooking in rural Asia. They estimated potential cost reductions of 20-25 percent, and said these improvements could increase Asian market penetration from 44 million to over 100 million units.

Lyndon Frearson, CAT Projects, described the Bushlight India Model for delivering reliable electricity to remote villages. He clarified that durable solutions are neither one-size fits all, nor limited to any particular technology. Rather, he stressed, rural electrification should tackle the three-fold structural barriers of operation and maintenance, technology and design, and community planning. Frearson stated that rural electrification could achieve the in-country capacity to deliver lasting success by linking these structural challenges to the larger context of finance, supply chains, and governance.

Rimtaig Lee, Korea Wind Energy Industry Association, said there were significant opportunities to expand small wind energy systems to rural Asia. Lee described the technical aspects of small wind, which his organization is aiming to deploy in demonstration projects in two to three target countries at costs as low as US\$ 4 per watt.

Fazley Rabbi, Grameen Shakti, described his organization's work with the Solar Home System, a countrywide effort to deploy PV solar in Bangladesh. He said this initiative creates locally-based technology centers for the purpose of training and employing women to install and repair solar installations. He highlighted that the organization has used micro-credit to install a total capacity of 31.5 megawatts of Solar PV in Bangladesh, and are adding 50,000 new customers each month, boosting labor productivity and local employment.

In the discussion, Kehar summarized the central lesson across the presentations as being that significant opportunities for scaling-up and reducing the costs of rural electrification exist by channeling projects through the non-profit sector.

CLOSING REMARKS

On Friday morning, following the closing plenary, Jennifer Morgan, WRI, proposed three "game-changing ideas" to the ADB for a clean economy in Asia:

adopting International Energy Agency guidelines for rapidly increasing energy capacity in renewables and energy efficiency measures; providing financing for the application of feed-in tariffs to more and larger projects; and developing transparent processes for allocating the costs of renewable energy while implementing benefit sharing with communities who own the land and water resources.

Alfred Nakatsuma, USAID Indonesia, said he was optimistic that the importance of clean energy in Asia will increase due to steady economic growth, and stressed the importance of the private sector in the development and use of clean energy.

Ursula Schafer-Preuss, ADB, cautioned that sustainable development and sustainable energy must go hand-in-hand.



Ursula Schafer-Preuss, ADB



Jennifer Morgan, WRI



Alfred Nakatsuma, USAID Indonesia

Recounting Amory Lovins' call to "reinvent fire," she stressed that new sources of "fire" must be within reach of the poor, and emphasized that infrastructure must not be created for its own sake, but for the inclusive and sustainable society we hope to create.

Aiming Zhou, ADB, closed the Forum at 12:41pm.

UPCOMING MEETINGS

Third Africa Carbon Forum: The Africa Carbon Forum is a trade fair and knowledge-sharing platform for carbon investments in Africa, organized by the UN Framework Convention on Climate Change (UNFCCC), the UN Environment Programme (UNEP), the UNEP Risoe Centre, the International Emissions Trading Association (IETA), the UN Institute for Training and Research (UNITAR), the UN Conference on Trade and Development (UNCTAD), the World Bank and the AfDB. It will include matchmaking and deal facilitation sessions that will allow potential Clean Development Mechanism (CDM) project developers to showcase their projects to interested parties, including investors and carbon buyers. **dates:** 4-6 July 2011 **location:** Marrakesh (Marrakech), Morocco **contact:** Miriam Hinostroza **email:** acf@risoe.dtu.dk **www:** <http://africacarbonforum.com/2011/english/index.htm>

High-Level Africa Consultative Forum on Renewable Energy: The International Renewable Energy Agency (IRENA) is convening a meeting to discuss specific implementation challenges facing Africa with respect to

renewable energy technologies, as well as practical approaches to generate the critical policy and technical information, advice and capacity that are required to support the extensive deployment of renewable energy in Africa. **dates:** 8-9 July 2011 **location:** Abu Dhabi, United Arab Emirates (UAE) **contact:** Mahenau Agha phone: +971-241-79-062 **email:** magha@irena.org **www:** <http://www.irena.org/menu/index.asp?mnu=Subcat&PriMenuID=30&CatID=79&SubcatID=105>

International Conference on Promoting Eco-Innovation: The conference will be an integrated policy-oriented event, and will address several thematic areas of the programme of work of the UN Economic Commission for Europe (UNECE) Committee on Economic Cooperation and Integration. It will also seek synergies with UNECE activities in sustainable energy and environmental policy. **dates:** 11-13 July 2011 **location:** Tel Aviv (Tel Aviv), Israel **contact:** UNECE phone: +41-0-22 917 44 44 fax: +41-0-22 917 05 05 **email:** info.ece@unece.org **www:** http://unece.org/ceci/documents/2011/icp/conf_icp11.html

Sustainable Energy Finance Summer Academy: This course is intended to provide decision-makers and project developers with a comprehensive framework on renewable energy and energy efficiency financing projects. **dates:** 17-22 July 2011 **location:** Frankfurt (Hessen), Germany **phone:** +49-069-1540-08692 fax: +49-069-1540-084692 **email:** summeracademy@fs.de **www:** <http://www.frankfurt-school.de/content/en>

Financing Sustainable Electrification Latin America Dialogues: This Dialogue aims to encourage debate and share perspectives and experiences in investment policies and regulatory frameworks for electricity generation projects with low-carbon emissions. **dates:** 22-24 August 2011 **venue:** Economic Commission for Latin America and the Caribbean (ECLAC) Headquarters **location:** Santiago, Chile **contact:** Federico Bernardelli phone: +56-2-210-2182 **email:** federico.bernardelli@cepal.org **www:** <http://www.eclac.org/cgi-bin/getProd.asp?xml=/noticias/calendarioActividades/5/42795/P42795.xml&xsl=/tpl-i/p43f.xsl&base=/tpl/blanco.xslt>

Quantifying and Managing Land Use Impacts of Bioenergy: Jointly organized by IEA Bioenergy and the Brazilian Bioethanol Science and Technology Laboratory (CBTE), this workshop will look at methods for quantifying direct and indirect land use change, recognizing further land use impacts of bioenergy such as in greenhouse gas accounting and renewables programs, and finally how to minimize the lands use impacts of bioenergy. **dates:** 19-21 September 2011 **venue:** University of Campinas **location:** Campinas (Sao Paulo), Brazil **contact:** Martin Junginger **email:** h.m.junginger@uu.nl **www:** <http://www.bioenergytrade.org/upcomingactivities/qm-land-use-impacts-of-bioenergy.html>

Caribbean Renewable Energy Forum 2011: This annual event, co-sponsored by the Inter-American Development Bank, CARICOM, and the Organization of American States, will look at policy and regulatory issues and the forces driving finance and investment in renewable energy sources in the Caribbean context, and the scope for a regional approach. **dates:** 12-14 October 2011 **location:** Bridgetown, Barbados **contact:** Matthew Perks **phone:** +1-845-440-7800 **email:** mperks@caribbeanenergyforum.com **www:** <http://www.caribbeanenergyforum.com>

Third Meeting of the Group of Experts on Global Energy Efficiency 21 (GEE21): The UNECE Group of Experts will continue work on the Global Strategy for Energy Efficiency Market Formation. **dates:** 17-18 October 2011 **location:** Geneva, Switzerland **contact:** Viktor Badaker, Project Manager GEE21 **email:** viktor.badaker@unece.org **www:** http://www.unece.org/energy/welcome/Calendar_Meeting.html

International Year for Sustainable Energy for All: In December 2010, the UN General Assembly adopted a resolution proclaiming 2012 as the “International Year for Sustainable Energy for All” (Resolution 65/151), aimed at creating “an enabling environment for the promotion and use of new and renewable energy technologies, including measures to improve access to such technologies.” **date:** year-round **location:** worldwide **www:** http://www.un.org/ga/search/view_doc.asp?symbol=A/65/436

Fifth World Future Energy Summit 2012: The fifth edition of the World Future Energy Summit (WFES) will promote innovation and investment opportunities surrounding alternative energy, clean technology and environment. **dates:** 16-19 January 2012 **location:** Abu Dhabi, UAE **contact:** WFES Director Ara Fernezian phone: +971-2-4446113 fax: +971-2-4443768 **email:** ara.fernezian@reedexpo.ae **www:** <http://www.worldfutureenergysummit.com>

Second Session of the IRENA Assembly: The second IRENA Assembly is scheduled to take place in January 2012. **dates:** 14-15 January 2012 **location:** Abu Dhabi, UAE **contact:** Adnan Amin, Executive Director phone: +971-2-4179001 **email:** secretariat@irena.org **www:** <http://www.irena.org>

GLOSSARY

ADB	Asian Development Bank
AfDB	African Development Bank
CDM	Clean Development Mechanism
CSD	UN Commission on Sustainable Development
CTI PFAN	Climate Technology Initiative's Private Financing Advisory Network
ESCOs	Energy Service Companies
GIZ	German Society for International Cooperation
IEA	International Energy Agency
IRENA	International Renewable Energy Agency
MDGs	UN Millennium Development Goals
RECs	Renewable Energy Certificates
REN21	Renewable Energy Policy Network for the 21st Century
SMEs	small to medium-sized enterprises
SNV	Netherlands Development Organisation
UNCED	UN Conference on Environment and Development
USAID	United States Agency for International Development
WRI	World Resource Institute