ASIA CLEAN ENERGY FORUM 2017

THE FUTURE IS HERE: ACHIEVING UNIVERSAL ACCESS AND CLIMATE TARGETS

ORGANIZED BY

ADB

USAID FROM THE AMERICAN PEOPLE

KOREA ENERGY AGENCY

DONORS

Australian Aid

Department for Business, Energy & Industrial Strategy

GLOBAL CCS INSTITUTE

From the People of Japan

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

GOBIERNO DE ESPAÑA

MINISTERIO DE ECONOMÍA Y HACIENDA

SWEDEN

Government of Canada / Gouvernement du Canada

PARTNERS

Note: ADB recognizes "China" as the People's Republic of China, "Korea" as the Republic of Korea, and "Vietnam" as Viet Nam.

DAY 1

Integrating Generation and Transmission Planning to Enable Renewable Energy Deployment

5 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone A

Organizers: US Agency for International Development (USAID), National Renewable Energy Laboratory (NREL)

This workshop will introduce the renewable energy zones (REZ) approach to integrated generation and transmission planning, which encourages utility-scale renewable energy development in areas that have the highest likelihood of being cost-effective. The REZ approach helps to speed the deployment and utilization of renewable energy while minimizing impacts of variable renewable energy on the stability of the power system. The hands-on training component of this workshop will utilize the Renewable Energy (RE) Data Explorer, an online tool that provides a dynamic mapping and analysis capabilities to facilitate renewable energy decision-making, investment, and deployment.

Time	Activity
9:00 a.m.–9:10 a.m.	**Introduction and overview** USAID – *Jen Leisch*
9:10 a.m.–9:40 a.m.	**Country/regional perspective: Green Energy Corridors and the need for integrated transmission and distribution planning** India
9:40 a.m.–10:30 a.m.	**The RE zones approach to power sector planning** NREL – *Jaquelin Cochran*
10:30 a.m.–11:00 a.m.	**Morning break**
11:00 a.m.–11:20 a.m.	**Introduction to the Renewable Energy Data Explorer** NREL - *Ilya Chernyakhovskiy*
11:20 a.m.–12:15 p.m.	**Hands-on Exercise: Renewable Energy Data Explorer – informing RE zones and planning** • NREL walks through tool interface, navigation, data layers and screening criteria to identify candidate RE zones and estimate their technical potential using online RED-E tutorial • Participants follow along with the tutorial interactively or dive into more technical aspects of the tool based on their experience level (computer required) Facilitated by NREL (Ilya and Jaquelin) and USAID Clean Power Asia
12:15 a.m.–12:30 p.m.	**Observations, questions, and wrap-up**

Green Energy Finance Workshop (Wind)

5 June 2017

9:00 a.m.–12:30 p.m.

Multifunction Hall 2 - New Atrium

Organizers: Renewables Academy (RENAC), Association of Development Financing Institutions in Asia and the Pacific (ADFIAP)

The Green Energy Finance Workshop at ACEF 2017 is focused on wind energy. It will provide a venue for discussion on the project structure and cash flow estimation of wind farm projects, as well as the changing landscape of wind energy tariffs. The workshop is offered within RENAC's Green Banking Programme which aims at providing participants with specific expertise in renewable energy and energy efficiency technologies, as well as appropriate risk evaluation and mitigation schemes.

Time	Activity
9:00 a.m.–9:30 a.m.	**Introduction to the Green Banking Programme** Presenter: *Corazon D. Conde*, Group Head of ADFIAP Consulting
9:30 a.m.–9:50 a.m. 9:50 a.m.–10:30 a.m.	**Introduction to Wind Energy** Presenter: *Pramod Jain*, President Innovative Wind Energy, Inc., **Project Structure and Cash Flow Estimation of Wind Farm Projects** – Typical wind project structure and contracts – Financing approach Presenter: *Volker Bromund*, RENAC / PT PRIME Consultancy
10:30 a.m.–11:00 a.m.	**Coffee Break**
11:00 a.m.–11:45 a.m. 11:45 a.m.–12:30 p.m.	**Cash Flow Estimation of Wind Farm Projects based on a Case Study** – Introduction to the case – Revenue estimation (quantity and price) – Operating cost estimation for sample project – Cash Flow pro forma and risk inclusion Presenter: *Volker Bromund*, RENAC / PT PRIME Consultancy **Panel Discussion: "Changing Landscape of Wind Energy Tariffs."** – Future of wind energy tariffs in the region and its impact on developers – Newer schemes for large projects like B2B sale, reverse auction and others – Future of tariffs for smaller off-grid, minigrid and island-grid projects Chair: *Pramod Jain*, President Innovative Wind Energy, Inc. *Suan Hwee Song*, Senior Specialist, Structured Finance team, Vestas, Singapore *A.K. Samarasinghe*, General Manager, Ceylon Electricity Board, Sri Lanka
12:30 p.m.–2:00 p.m.	**Lunch Break**

DAY 1

Asia Solar Energy Forum (ASEF)

5 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone B

Organizer: Asian Development Bank (ADB)

The 10th Meeting of Asia Solar Energy Forum (ASEF) will highlight the transformation of ASEF. As the industry progresses, ASEF will be promoted in a larger context, which means topics on solar plus energy storage, solar plus mini grid, and others like internet of things will be discussed. In addition to the presentations on 5 June 2017 there will be ASEF sessions jointly organized with Asia Clean Energy Forum (ACEF) held during 6–8 June 2017.

Time	Activity
8:30 a.m.–9:00 a.m.	**Registration**
9:00 a.m.–9:05 a.m.	**Opening Remarks** *Yongping Zhai,* Technical Advisor (Energy) of Asian Development Bank and Chair of ASEF
9:05 a.m.–9:25 a.m.	**Keynote Address** **"Integrating Solar Into Our Life"** *Zhengrong Shi*, Professor, University of South Wales, Australia and Founder of Suntech **"Affordable Finance at Scale: Role of Innovative Financial Instruments"** *Upendra Tripathy*, Interim Director General, International Solar Alliance, India
9:25 a.m.–10:45 a.m.	**Session 1: Affordable PV and Impacts on Business Models** This session presents a spectrum of project experience and viewpoints which indicate that rapid declines in system costs for solar and storage, coupled with a technology project in smart grids/ mini grids and new business models for energy as a service, suggest that access to energy for all is sustainable and affordable. **Moderator:** *Yongping Zhai*, Technical Advisor (Energy) of Asian Development Bank and Chair of ASEF **Presentations:** • **Solar-Ice Project in Dhiffushi Island in Maldives** *Toshikazu Ohashi*, Manager of International Business and Cooperation Division, Kansai Electric Power Co., Inc • **Feasibility Study of High Renewable Energy Penetration in an Island** *Jerry Yan*, Director of Future Energy Profile and Professor of Energy Engineering at Malardalen University and Royal Institute of Technology • **The Energiewende 3.0: Smart Peer-to-Peer Solar Grids for Rural Electrification & Empowerment** *Sebastian Groh*, Chief Executive Officer and co-Founder, ME SOLshare Ltd.

	• **Next Generation SCADA Realized by IT Technology for Renewable Energy Integration and Energy Saving** *Masanori Morozumi*, Deputy Manager, NTT Data Corporation, Japan • **Private Sector Solar Microgrids in Rural Nepal** *Anjal Niraula*, General Manager, Gham Power **Q & A**
10:45 a.m.–11:00 a.m.	**Coffee Break**
11:00 a.m.–12:25 p.m.	**Session 2: The Solar Revolution and Energy Sector Transformation** *The rapid cost declines of solar PV and new business models are arguably the most disruptive activities driving energy sector transformation worldwide. This session will present examples of recent large scale development in developing economies in Asia and forward-looking perspectives in other developing countries of Asia.* **Moderator:** *Wei-nee Chen*, Chief Corporate Officer, Sustainable Energy Development Authority, Malaysia **Presentations:** • **100% Renewable Electricity in Sri Lanka** *Milou Beerepoot*, Regional Technical Specialist, Energy and Climate Change Mitigation, Global Environment Finance Group, United Nations Development Programme • **Growth of Rooftop Solar Power in India** *H. K. Parikh*, General Manager (Credit), Punjab National Bank of India *Anand Agarwal*, Assistant General Manager, Punjab National Bank, India • **Solar Home System (SHS): Bangladesh Success Case** *Syed Munir Khasru*, Chair, The Institute for Policy, Advocacy and Governance, Banglesh • **Development of Solar PV Deployment in Sri Lanka and its Challenges** *Upali Daranagama, Former Additional Secretary, Ministry of Power and Renewable Energy, Sri Lanka* • **Scaling up Solar : Feed-in-tariffs vs. Competitive Auctions** *Csilla Kohalmi-Monfils, EVP Strategy and New Business, ENGIE Asia-Pacific* **Q & A**
12:25 p.m.–12:30 p.m.	**Closing Remarks** *Priyantha Wijayatunga*, Director of Energy Division of South Asia Regional Department of the Asian Development Bank and Secretary General of Asia Solar Energy forum
12:30 p.m.–2:00 p.m.	**Lunch**
12:30 p.m.–2:00 p.m.	**ASEF General Meeting (Invitation only), PDR 3 and 3A**

Enabling Private Sector Clean Energy Investment in South and Southeast Asia: Recommendations from Leading Corporations and Governments

5 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone C

Organizers: Asia LEDS Partnership, US Agency for International Development (USAID), USAID CEADIR Initiative, Bloomberg New Energy Finance

This workshop will showcase emerging strategies and innovative approaches to enable large-scale corporate clean energy procurement in Asia's growing markets. In addition, the event will highlight technical and financial assistance available from CEIA, CEADIR, and collaborating partners to catalyze private sector investment in RE and EE in the region, including through innovative, blended-capital facilities. Finally, lessons learned from the Clean Energy Ministerial 21st Century Power Partnership will be presented, including insights from the largest multinational companies actively pursuing RE goals, and recommendations for enhancing the regulatory environment.

Time	Activity
9:00 a.m.–9:30 a.m.	**Private Sector Recommendations to Accelerate Clean Energy Investment in Asia** **Opening Remarks** *Peter du Pont*, Senior Climate Change Advisor, USAID, and, Co-Chair Asia Clean Energy Forum **Workshop Moderator:** Mikell O'Mealy, Activity Manager, USAID CEADIR Presentation of regional and country-specific recommendations from private sector leaders in Southeast and South Asia on priority actions that governments can take to accelerate investment in clean energy solutions at scale. *20 minute presentation followed by 10 minutes of questions from the audience and discussion*
9:30 a.m.–10:00 a.m.	**Market Trends and Insights for Investors, Project Developers, and Governments** **Presenter:** *Ali Izadi*, Head of Japan and Korea, Bloomberg New Energy Finance Overview of the current investment environment for clean energy in Asia, including trends in key markets and renewable energy technologies, particularly solar and wind, and insights on opportunities for investors, project developers, and governments.

Time	Activity
10:00 a.m.–10:30 a.m.	**Enabling Renewables at Scale – Key Needs and Opportunities for Grid-Connected Solar and Wind in Asia** **Presenter:** *Boonrod Yaowapruek*, Investment Mobilization Lead, USAID Clean Power Asia Solar and wind electric power have become competitive with fossil fuels in terms of levelized cost of energy, but barriers and risks still limit wider adoption in the region. This session will highlight the role of public finance in risk mitigation and structured finance to mobilize additional private capital for renewable electric power production at a larger scale. *20 minute presentation followed by 10 minutes of questions from the audience and discussion*
10:30 a.m.–11:00 a.m.	**Morning Break**
11:00 a.m.–12:00 p.m.	**Leadership in the Philippines: Public-Private Sector Collaborations to Accelerate Clean Energy Investment** This panel will showcase private and public sector commitments and actions to scale up clean energy investments in the Philippines. It will highlight the perspectives of leading policy makers, corporations, utilities, and investors and the important role of public-private sector collaboration. **Moderator** *Marlon Apanada*, Managing Director, Allotrope Philippines **Panelists:** *Atty. Jose M. Layug,* Jr., Chair Person, Philippines National Renewable Energy Board – on public sector leadership to enable private sector investment at scale *Anna Gonzales*, Sustainability Head, Ayala Land Inc. – on corporate leadership and commitments to promote a clean energy transition *Annie Reodica*, Renewables Program Manager, Manila Energy Company (MERALCO) – on integrating renewables in the distribution network *Salvador Antonio Castro, Jr., President and CEO, CleanTech Global Renewables, Inc. – on successes and challenges in large-scale clean energy investment and development* *Moderator will facilitate questions and discussion following the panel presentation*
12:00 p.m.–12:30 p.m.	**Sharing Lessons Learned and Identifying Priority Needs and Opportunities** **Moderator:** *Mikell O'Mealy*, Activity Manager, USAID CEADIR An interactive group discussion to share lessons learned from efforts to scale up private sector clean energy investment in Asia and identify country-specific and priority regional opportunities, including improving enabling environments. Questions will focus on how private sector investment can help countries achieve their NDC targets for clean energy, and linking public sector actions to grid-scale investment in renewable sources, particularly solar and wind. The workshop will conclude with an overview of tools, resources, and technical and other assistance available to support private and public sector leaders in expanding clean energy investments in Asia.

DAY 1

Promoting Clean Energy in the Pacific Islands

5 June 2017

9:00 – 12:30 AM

Multifunction Hall 1 - New Atrium

Organizer: Pacific Region Infrastructure Facility (PRIF)

The role of multilateral partners in providing financial and technical assistance remains crucial to achieving 100% renewable energy targets set by the Pacific island countries (PICs) by 2030. The Pacific Region Infrastructure Facility (PRIF), hosted by ADB, facilitates an Energy Sector Working Group of technical specialists drawn from each of the PRIF member agencies, who will present on their project activities in various Pacific countries with a focus on innovative technologies and policy approaches and assistance. Other international development partners will present their programs and key regional agencies, power utilities and government officials will showcase successful projects.

Time	Activity
9:00 a.m.–9:30 a.m.	Presentations by members of the PRIF Energy Sector Working Group
9:30 a.m.-10:30 a.m.	Presentations by international development partners, UN agencies, NGOs.
10:30 a.m.-11:00 a.m.	**Coffee break**
11:00 a.m.-12:00 p.m.	Presentations by key regional organizations, utilities, government officials
12:00 p.m.-12:30 p.m.	Moderated panel discussion and Q&A

Sustainable Energy for All Investment Forum

5 June 2017

9:00 a.m.–5:30 p.m.

Auditorium Zone D

Organizer: Asian Development Bank

Engaging the Private Sector is essential to achieving the Sustainable Energy for All (SEforAll) 2030 Goals. The first half of the SEforAll Investor Forum will be devoted to discussing business models and IT solutions that push the boundaries of sustainable clean energy application. After lunch, the forum will attempt to deconstruct major hurdles in the large-scale application of clean energy in Asia, and how ADB can help overcome these barriers through the strategic application of development funding. The event will culminate in an investment pitch session that features clean energy companies that are raising funding.

Time	Activity
8:30 a.m.–9:00 a.m.	**Registration**
9:00 a.m.–9:30 a.m.	**Opening Panel** • **Welcome Message** *Gil-Hong Kim*, Senior Director, ADB • **SEforAll Asia Pacific Hub** *David Elzinga*, ADB
9:30 a.m.–10:30 a.m.	**Session 1: Rationalizing the Business Accelerator Space in the Asia Pacific Region** This panel will discuss how ADB can support local and regional business accelerators and incubators to collaborate effectively in the identification, capacity building and investment facilitation of sustainable energy companies in the Asia Pacific Region. **Moderator:** TBD • **The importance of a localized business accelerator strategy** *Karthik Chandrasekar*, Sangam Ventures • **Regional platforms that match entrepreneurs with investors** *Nagaraja Rao*, PFAN
10:30 a.m.–11:00 a.m.	**Networking Break**

11:00 a.m.–12:30 p.m.	**Session 2: Innovative Sustainable Energy Technologies and Business Models** This panel will feature technologies and technologies that have an expansive and potentially game-changing application in the sustainable energy sector in the Asia Pacific Region. **Moderator:** • **Peer-to-peer sale of electricity through blockchain technology** *Nichole Yang*, Energo Labs • **Using the *Internet of Things* to achieve economies of scope** *Chintan Soni*, Ecolibrium • **Revolutionizing space cooling through phase-changing technology** *Rajat Gupta*, TESSOL
12:30 a.m.–2:00 p.m.	**Networking Lunch**
2:00 p.m.–3:30 p.m.	**Session 3: Blended Financing Creates a Pathway to Scale** This panel will discuss how blended financing can help overcome short-term risks in sustainable energy transactions, and eventually pave the way to fully commercial businesses. **Moderator:** • **Deploying working capital for energy access enterprises in India** *Gouri Sankar*, Maanaveeya • **The role of CSR in rural economic development** *Chandrasekaran Raghuraman*, E-Hands • **Establishing and Deploying an Innovation fund** *Charu Chadha*, GSMA • **Blended Climate Finance: Catalyzing investments in clean energy** *Cara Tobin*, PEng, ClimatePlace.ch
3:30 p.m.–4:00 p.m.	**Networking Break**
4:00 p.m.–5:30 p.m.	**Session 4: Business Plan Presentation** This session will feature sustainable energy companies that have been recommended by the Energy for All Partnership, and give them a platform to make an investment pitch to the investors in the audience. **Moderator:** *Fritzie Vergel* • **Global Himalayan Expedition (India)** *Paras Lumba*, CEO • **SolShare (Bangladesh)** *Sebastian Groh*, CEO • **Nizam Bilji (Pakistan)** *Saad Ahmad*, CEO • **NRG Solutions Pvt. Ltd. (Cambodia)** *Jack Pegler*, Operations Manager
5:30 p.m.–6:00 p.m.	**Closing Panel** • **Closing Remarks** *Yongping Zhai*, Technical Advisor (Energy), ADB

Promoting Renewable Energy Investments in Pakistan

5 June 2017

9:00 a.m.–5:30 p.m.

Annex 2

Organizer: Asian Development Bank (ADB), US Agency for International Development (USAID)

Investment in energy infrastructure in Pakistan has remained inadequate, and the system suffers from low efficiency. Developing the country's abundant renewable energy resources could address its energy shortage and support development efforts in rural areas, where only 57% enjoy electricity access; but barriers to RE deployment remain high as financial resources, access to technology, and specific expertise are limited, and investors sense risk. This DDW will explore options for Pakistan to promote RE investments, both for large scale grid connected and decentralized off-grid solutions, and will give investors, project developers, and representatives from the government a space to discuss ways forward.

Time	Activity
8:30 a.m.	**Registration of Participants**
9:00 a.m.	**Welcome and Opening** *Wencai Zhang*, Vice-President, ADB *Jerry Bisson*, Mission Director, USAID/Pakistan
9:15 a.m.	**Keynote Address** • **Renewable Energy Development in Pakistan** *Amjad Ali Awan CEO*, AEDB
9:45 a.m.	**Deep Dive: Pakistan Solar Sector Rapid Assessment** **Presenter:** *Samuel Tumiwa*, ADB **Panelists :** *Irfan Yousaf*, AEDB *Yasser Malik*, CEO, Enertech Pakistan
10:30 a.m.	**Break**
11:00 a.m.	**Deep Dive: Opportunities for Investments** **Panelists:** *Khaleez Nazar Kiani*, Secretary Energy, Balochistan *Iffat Farooq*, Additional Secretary, Energy Department, Punjab *Qayyum Zaman*, GM Hydel, PEDO *ADB Access to Energy Project in Punjab & KPK* **Moderator:** *Imran Ahmed*, Program Management Specialist, Energy Office, USAID/Pakistan
12:30 p.m.	**Lunch**

2:00 p.m.	**Deep Dive: Investor's Forum** **Panelists:** *Tariq Saddozai*, Chairman, NEPRA *Saad Ahmad*, Nizam Energy *Yasser Malik*, CEO, Enertech Pakistan **Moderator:** Mohammed Azim Hashimi, ADB
3:30 p.m.	**Break**
4:00 p.m.	**Wrap Up** **Panelists:** *Zafar Abbas*, Joint Secretary, Ministry of Water and Power *Gary Shu*, Director, Energy Office, USAID/PakistanF. Cleo Kawawaki, Director, CWEN

The Power System of Tomorrow: Pathways Towards Large-Scale Integration of Variable Renewable Energy

5 June 2017

2:00 p.m.–5:30 p.m.

Auditorium Zone A

Organizers: GIZ, US Agency for International Development (USAID), National Renewable Energy Laboratory (NREL)

As the share of variable RE (vRE) in grid supplied electricity grows, adequate technical and regulatory interventions, coordination of actors, and profound market foresight is needed to ensure proper integration that will result in reliable and cost effective operation of power systems. This year's workshop will be guided by three vRE integration 'intervention areas': role of the existing generation fleet, role of vRE, and role of transmission system, including operations. The DDW aims to identify various options & actions for successful vRE integration; identify opportunities for stakeholder coordination; and disseminate lessons learned from countries which are at various stages of vRE integration.

Time	Activity
2:00 p.m.	**Welcoming address and introduction of workshop aims** *Christoph Menke*
2:00 p.m.	**Introduction by USAID** *Jennifer Leisch*, USAID
2:05 p.m.	**Renewable Integration: Experiences from International Cooperation** *Frank Seidel*, GIZ
2:10 p.m.	**Increasing system flexibility through market and non-market options** *Jaquelin Cochran*, NREL
2:45 p.m.	**The German energy transition & integration of vRE: Dispatching and evacuation of RE generation** *Niels Ehlers*, 50Hertz Transmission
3:30 p.m.–4:00 p.m.	**Break**
4:00 p.m.–4:15 p.m.	**Integration of variable renewables in India—The Role of Renewable Energy Management Centers** *Kashish Bhambhani*, POWERGRID CORP India
4:15 p.m.– 4:30 p.m.	**Integration of variable renewables in the Philippines** *TBC (Department of Energy*, Republic of the Philippines)
4:30 p.m.	**Start of panel discussion** **Panelists:** *Jaquelin Cochran*, NREL *Niels Ehlers*, 50Hertz Transmission *Kashish Bhambhani*, POWERGRID CORP India *Kamani Jayasekera*, Ceylon Electricity Board *PH Representative*
5:25 p.m.	**Workshop wrap-up** *Speaker: Christoph Menke and Jennifer Leisch*
.	**End of workshop**

DAY 1

Internet of Things (IoT) and Smart Grid—The 21st Century Technologies for the Power Sector: Mainstreaming in Asia and the Pacific

5 June 2017

2:00 – 5:30 p.m.

Multifunction Hall 2 - New Atrium

Organizer: Asian Development Bank (ADB)

ADB is committed to the modernization of the power sector in its member countries. One of the new initiatives is the mainstreaming of internet of things (IOT) and Smart Grid technologies in the sector. The DDW will focus on building an understanding of IOT and Smart Grid in the Power Sector, its benefits, and the policies and capacity required for its adoption. All facets of IOT and Smart Grid will be covered: Sensors, communication devices, data analytics, cloud-based platforms, security, financing, policy and others. The workshop will cover four areas: generation facilities, transmission and distribution network, prosumers and system operations/control centers.

Time	Activity
2:00 p.m. 10 mins	**Welcome address**
2:10 p.m. 20 mins	**Keynote and Introduction**
2:30 p.m. 20 mins	• **Case Study: Leveraging smart data for predictive maintenance in wind industry.** Use of IOT for condition monitoring and predictive maintenance of wind turbines. Deep dive into sensors, analytics and return on investment and hurdles. *Ganlu Chen*, Vestas, Head Asset Management Center, People's Republic of China.
2:50 p.m. 20 mins	• **Case Study: Use of IOT in transmission and distribution network in India.** Deep dive into the technologies being piloted, different results and experiences including benefits and will also cover the challenges that are being faced. *Somesh Kumar*, Leader Power and Utilities, Ernst & Young, India.
3:10 p.m. 20 mins	• **Case Study: Leveraging IoT and Cognitive Capabilities in Field Operations and Asset Performance Management.** Deep dive into technology, implementation, benefits, return on investment and hurdles. *Santhosh Nair*, IBM, Industry Leader, ASEAN, Energy & Utilities Industry Solutions, Malaysia.
3:30 p.m. 30 mins	**Coffee and networking break**
4:00 p.m. 20 mins	• **Case Study: Energy Asset Management in Smart Grid.** Use of IOT for Asset Management *June Choi*, Senior Vice-President, Head of Smart Energy Business Division, Republic of Korea.

4:20 p.m. 20 mins	• **Case Study: Smart Grid in Indian Utilities.** Deep dive into technology, implementation, benefits, return on investment and hurdles. *Hemendra Agrawal*, Deputy General Manager, Smart Grid, Power Grid Corporation of India Limited, India.
4:40 p.m. 20 mins	• **Case Study: Building EMS Applied Smart Grid and IoT in Dubai.** Deep dive into KEPCO's Smart Grid Station where power, gas, and water supply in buildings are interconnected to heating/cooling facilities, solar power, ESS, AMI, EV chargers, smart devices and the grid, and all of this is integrated into one system using ICT. *Huyoung Lee*, Director General, Planning Office, Innovative Business Planning & Strategy Department, KEPCO, Republic of Korea
5:00 p.m. 30 mins	**Round table discussion** Moderator: *Arun Ramamurthy* – Policy – Financing – Utility's perspective

DAY 1

From Start-Up to Scale-Up What it Really Takes to Scale Clean Technology

5 June 2017

2:00 – 5:30 p.m.

Auditorium Zone C

Organizers: Asian Development Bank (ADB), Cleantech Group, New Energy Nexus

Clean energy is gaining momentum, driven by energy startups that are developing the technologies, business models, projects, and services required to deploy climate change solutions at scale. But while clean energy entrepreneurs and their startups may be the key to Asia's clean energy future, there are very few of them, they can't access risk capital, and lack broader support. In this DDW, participants will get an overview of Asia's innovation landscape and explore examples from around the world that have enabled innovation and spurred clean energy entrepreneurship through policy support and incentives.

	Activity
1:30 p.m.–2:00 p.m.	**Registration**
2:00 p.m.–2:05 p.m.	**Opening and Welcome** *Yongping Zhai*, Technical Advisor (Energy), ADB
2:05 p.m.–2:15 p.m.	• **Introduction: Why Cleantech Entrepreneurs Matter** *Daniel Hersson*, Team Leader, ADB Climate Technology Finance Center (CTFC)
2:15 p.m.–2:30 p.m.	• **Presentation: The State of Cleantech Innovation in Asia** *Richard Youngman*, CEO, Cleantech Group Global Cleantech Innovation Index 3rd Edition Special Report on Asia
2:30 p.m.–2:30 p.m.	**Panel: From Start-up to Scale-up: Building Cleantech Businesses** **Moderators:** *Richard Youngman*, Cleantech Group and Qiyong Cao, CTFC **Panel:** *Chintan Soni*, Founder and CEO Ecolibrium Energy *Lv Zheng Liang*, General Manager, Tsingyun Solar *Cody Friesen*, Founder & CEO, Zero Mass Water *A panel of cleantech entrepreneurs who have successfully scaled up will discuss what it took to build and scale their businesses*, the barriers and challenges they faced, and the best support they've received and from whom.
3:30 p.m.–4:00 p.m.	**Coffee Break and Networking**

4:00 p.m.–4:45 p.m.	**Presentations and Q&A** **Bridging the Gap: Helping Cleantech Startups Scale Up** **Moderators:** *Richard Youngman*, Cleantech Group *Susumo Yoneoka*, Senior Energy Specialist, ADB **Presenters** *Khushalee Vakil*, CIIE/Infuse, India – "Building an ecosystem for cleantech start-ups" *Xiao Jing*, TusStar Incubator, PRC – "From university lab to market" *Hendrik Tiesinga*, New Energy Nexus, US – "Connecting start-ups with utilities" *Karthik Chandrasekar*, Sangam Ventures, India Cleantech enablers will present different models, systems, and ongoing programs designed to support cleantech startups.
4:45 p.m.–5:25 p.m.	**Group Discussion: From Talk to Action: Making it Happen** **Facilitator:** Hendrik Tiesinga, New Energy Nexus This facilitated group discussion will discuss concrete, specific support initiatives and actions we should consider in order to help scale cleantech startups in the region.
5:25 p.m.–6:30 p.m.	**Wrap-up** *David Elzinga*, Senor Energy Specialist, ADB
6:30 p.m.–7:30 p.m.	**Networking and Cocktails**

DAY 1

Evaluation of Energy Programs and Policies

5 June 2017

2:00 p.m.–5:30 p.m.

Multifunction Hall 1 - New Atrium

Organizer: IEPPEC

This workshop will bring energy policy makers together to build a thorough understanding of the role and potential of monitoring and evaluation (M&E) in energy policy making and program implementation (with a focus on energy efficiency), provide participants with tools and resources for M&E, and enable IEPPEC to understand the capacity development needed by policy makers and evaluators.

Time	Activity
2:00 p.m.–2:30 p.m.	• **Introduction to workshop and participants** *Edward Vine*
2:30 p.m.–3:00 p.m.	• **Introduction to energy policy evaluation theory and practice covering the basic principles and evaluation, monitoring and verification** *Edward Vine*
3:00 p.m.–3.30 p.m.	• **Conducting an evaluation; an eight step process** *Charles Michaelis*
3:30 p.m.–4:00 p.m.	**Coffee Break**
4:00 p.m.–5:00 p.m.	• **Evaluation case studies** *Michael Reid* *Charles Michaelis*
5:00 p.m.–5:10 p.m.	• **Key findings from white paper on evaluation of energy efficiency policies and programs in APEC Member Economies** *Edward Vine*
5:10 p.m.–5:30 p.m.	• **Identifying capacity needs (including training) and how the IEPPEC community could support Asian energy policy makers and evaluators to implement effective energy policy evaluation in their economies through strategies, policies, protocols and regulations** *Small group discussions facilitated by Edward Vine, Michael Reid and Charles Michaelis*

Enhancing Energy Sector Climate Resilience in Asia

5 June 2017

2:00 p.m.–5:30 p.m.

Auditorium Zone B

Organizer: International Energy Agency (IEA)

The climate-resiliency challenge to the energy sector in Southeast Asia includes changes to water demand, the ability to localize and buffer supply disruptions, and extreme weather events. The Seventh Forum on the Climate-Energy Security Nexus will improve understanding of these risks and the landscape of current policies/programs addressing them; explore the potential implications of a clean energy transition (e.g. more variable renewables, increased electrification) on resilience; share best practices in identifying, assessing, and addressing risks; identify data, modelling, tools, and policy needs; and discuss opportunities to strengthen collaboration on resilience. The Forum will take place at ACEF 2017 as a Deep Dive Workshop, and as sessions in the "Future of Energy in Asia" thematic track.

Time	Activity
2:00 p.m.–3:30 p.m.	**Creating an enabling environment to enhance climate resilience** In this session, speakers will discuss how enabling policy and financial environments can be established to drive resilience-building investments and business practices in the energy sector. • How can government policies and regulations drive businesses to build resilience? How can climate resilience be pursued alongside other objectives of economic development and promoting energy access? • What are successful models being used to finance resilience-building activities? How can momentum in driving investment for clean energy and energy efficiency be used for resilience objectives? • How can we move beyond financing disaster recovery to investing in climate preparedness of assets?
	Moderator: *Caroline Lee*, IEA **Mindanao Development Authority** Romeo Montenegro, Deputy Executive Director **Australia Energy Market Operator (AEMO)** Sorrell Grogan, Engineer, Operations Department **ADB** Andrew Jeffries, Director, Southeast Asia Energy Division

4:00 p.m.–5:30 p.m.	**Building resilient energy assets and infrastructure** In this session, speakers will highlight best practices in building resilience into existing and new energy infrastructure, as well as the barriers that are creating challenges for asset owners, managers, and operators. • How are investors and energy asset owners/managers identifying and assessing climate risks, and how do these assessments inform investment and operational decisions? • What gaps or barriers are creating challenges in identifying and addressing climate risks to energy assets? What are best practices in leading power and oil and gas companies, and how can they be shared? **Moderator:** *Jesus Posadas*, Undersecretary, Philippines Department of Energy **World Bank** *Xiaoping Wang*, Senior Energy Specialist **China National Petroleum Corporation (CNPC)** *Xu Xiaoling*, Director of CSR Research Office **Eskom (South Africa)** *Lwandle Mqadi*, Specialist, Climate Change and Sustainable Development: Group Risk and Sustainability (via video conference) **ADB** *Frédéric Asseline*, Principal Climate Change Specialist

Electric Vehicles

5 June 2017

2:00 p.m.–5:30 p.m.

Multifunction Hall 3 - New Atrium

Organizer: Asian Development Bank

Speakers will engage in a moderated debate on two issues on electric vehicles: "Are we going to see 50% EV sales by 2030? " and "What car will you be driving in 2025, and why?" Specific questions and videos on EVs will help widen the knowledge of the audience.

Time	Activity
1:30 p.m.	**Opening Remarks** • **Set the scene using a video on electric car** **Session debate:** Are we going to see 50% EV sales by 2030? *(4 speakers each team 5 min each: 45 min total)*
3:30 p.m.	**Break**
4:00 p.m.	• **Set the scene with another short video on electric car** **Session debate:** What car will you be driving in 2025, why? *(4 speakers each team 5 min each: 45 min total)*
5:00 p.m.	**Poll results and conclusion**
	Sohail Hasnie will lead the team opposing the EVs to ensure balanced participation.

DAY 2

Reverse Auctions to Scale Renewable Energy

6 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone A

Organizers: US Agency for International Development (USAID), US Energy Agency (USEA)

Thanks to the competitive pressure that reverse auctions promote, prices for solar and wind have plummeted to levels competitive with, and sometimes even lower than conventional generation types. Countries can design auction programs to meet energy sector goals of increased capacity and affordability, while doing so at a scale that enables industry development and investor interest. The goal of this DDW is to introduce participants to renewable energy auctions, identify best practices from growing global experience, and provide insight into the analysis, planning, and policy considerations that support auctions as a transition from or complement to other renewable incentive schemes.

Time	Activity
9:00 a.m.	**Welcome and Overview** Welcome: USAID - *Aurelia Micko*, Deputy Director, Regional Environment Office Overview of Workshop: USAID - *Kristen Madler*, Clean Energy Coordinator
9:10 a.m.	**Overview of reverse auctions as a method to scale RE** • How do auctions fit within broader RE policy context? How do auctions compare with FITs (costs, efficacy, industry development, overall impacts)? How do countries transition from FITs to auctions? **Overview of auction design elements** • Auction demand, prequalification requirements, winner selection and sellers' liabilities *IRENA - Diala Hawila*
10:00 a.m.	**Designing an RE incentive package** • How have countries determined where and how to use FITs vs auctions for RE? **Country case study #1: South Africa** Matleng Energy Solutions - *Nelisiwe Magubane*
10:30 a.m.	**Break**
11:00 a.m.	**Country case study #2: The Brazilian Approach** Câmara de Comercialização de Energia Elétrica (Market Operator) *Alexandre Viana*
11:30 a.m.	**Case study #3: Asia Pacific RE Developer Perspective** Enel Green Power - *Gu Yoon Chung*
12:00 p.m.	Discussion and wrap up

The Transformative Role of Renewables in Southeast Asia

6 June 2017

9:00 a.m.–10:30 a.m.

Multifunction Hall 2 - New Atrium

Organizers: International Renewable Energy Agency (IRENA), ASEAN Centre for Energy (ACE)

Southeast Asia faces a 50% rise in regional energy demand within the next decade. IRENA and its partners have been working with ASEAN nations under its global renewable energy roadmap (REmap) program to explore the implications of accelerated renewable energy. REmap has shown that the region has significant untapped potential for RE deployment, which could allow the region to reach its aspirational target of having 23% of renewable energy by 2025 in its energy mix. This event will present an overview of the key themes and findings with a perspective on what can be achieved up to the year 2030.

Time	Activity
Moderated by the International Renewable Energy Agency (IRENA)	
9:00 a.m.–9:05 a.m.	**Welcome remarks** *Gurbuz Gonul*, Senior Programme Officer – Regions, IRENA
9:05 a.m.–9:20 a.m.	**The transformative role of renewables in Southeast Asia** *Nicholas Wagner & Divyam Nagpal*, Associate Programme Officers, IRENA
9:20 a.m.–9:35 a.m.	**Perspective on accelerating renewables to reach ASEAN's 23% aspirational target** *Beni Suryadi*, Manager, Policy and Research Analytics, ASEAN Centre for Energy (ACE)
9:20 a.m.–9:35 a.m.	**Indonesia's new regulation 12 and its impact of renewable development** *Ezrom Tapparan*, Program Planning Section Head of New Renewable Energy, Directorate General of New, Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources, Indonesia
9:50 a.m.–10:05 a.m.	**Thailand's Alternative Energy Development Plan and the key role of renewables** *Rungrawee Yingyuad*, Senior Professional Scientist, Department of Alternative Energy Development and Efficiency, Ministry of Energy of Thailand
10:05 a.m.–10:15 a.m.	**Renewables across the region, the key role of cooperation to accelerate renewables** *Maria-Jose Poddey*, Principal Advisor, ASEAN-German Energy Programme (AGEP), GIZ
10:15 a.m.–10:30 a.m.	**Q&A and closing the session**

DAY 2

KOREA ENERGY AGENCY

Application of Cross-Cutting Clean Energy Technologies

6 June 2017

11:00 a.m.–12:30 p.m.

Multifunction Hall 2 - New Atrium

Organizer: Korea Energy Agency

As advances in R&D of renewable energy (RE), energy efficiency (EE) and energy access technologies drive the mainstreaming of clean energy [alongside progress in international, regional and national-level policy], there is a corresponding growth in clean energy systems that create multiple, intersecting benefits. These benefits are maximized with the evolution of energy storage and system operations controls. This deep dive workshop will present cases of integrated/complementary RE, EE and energy access technologies which have been operationalized in Republic of Korea and other countries.

Time	Activity
11:00 a.m.–11:05 a.m.	**Opening Remarks** KEA Representative
11:05 a.m.–11:20 a.m.	• **Reasonable application strategies of photovoltaic system** *Seung-Ho Yoo*, Sehan University/ Solar Architecture Lab./Prof.Dr.-Ing. This presentation proposes an ecological criteria, simulation method, passive solar system and integrated PV shading devices etc. for optimization of PV systems & passive solar architecture into building envelopes based on building physics such as heat, light and acoustic to mitigate greenhouse gas.
11:20 a.m.–11:35 a.m.	• **The most cost effective technology of PV+ESS+EMS for islands** *Yu-Tack*, KIM, Korea Battery R&D Association The construction & demonstration of an economically viable multi-link ESS system in a resort in the Maldives will optimize renewable power generation. The TOC (Total Operation Center) will be implementing remote management and security system based on energy integrated management.
11:35 a.m.–11:50 a.m.	• **Eco-Friendly Water & Energy Independent Island Solution in Korea** *YS Baeg*, Senior Manager, Energy Business Development Team, LG Electronics The generation cost of electricity in an island is the biggest challenge in the utility industry as its cost is 5 times higher than in land. To satisfy two requirements of the Government of the Republic of Korea to reduce greenhouse gas emissions and minimize government subsidy, LG designed eco-friendly "Water and Energy Independent Island Solution" and illustrated it for energy independence in Ulleng-Island and Jeju Island. In this presentation, LG will share our core technology used in this case study.

11:50 a.m.–12:05 p.m.	• **Tapping Ocean/Marine Renewables for Island Micro-Grids in South East Asia: Case Studies of Hybrid Tidal Systems** *Michael Lochinvar Abundo*, Managing Director, OceanPixel Pte Ltd Singapore Marine renewable energy (MRE) resources are abundant in South East Asia (SEA). Technologies to harness ocean energy - such as tidal and wave - have been developing at a good pace, now reaching pre-commercial stages. Early markets for such technologies include island diesel displacement and co-beneficial applications (e.g. electricity, water, ice). We present case studies for Indonesia, Singapore, and the Philippines for island-based applications of tapping MRE into the generation mix of off-grid and grid-connected off-takers.
12:05 p.m. –12:20 p.m.	**New Initiative for the Promotion of Urban Energy Systems in the Asia Pacific Region** *Sommai Phon-Amnuaisuk*, Vice-President, Interntational Institute for Energy Conservation Thailand The region is facing rapid urbanization. Keeping up with sustainable energy and environment infrastructure development, while the requirements of livable cities increases, is a great challenge for all governments in the region. Sustainable urbanization in the Asia Pacific will require cross-sectoral efforts. Initiatives to stimulate favorable policies, innovations and public awareness are needed. Urban Energy Systems, encompassing district energy, smart grids, energy efficiency and renewable energy technologies, has proven to be one of the solutions in addressing these issues. In response, IIEC has initiated the establishment of the Asia Pacific Urban Energy Association and will operate on an interim basis prior to evaluation and formal incorporation in January 2018. The presentation will highlight the potential for Urban Energy Systems in addressing the energy and environmental challenges facing urbanization in the region; and the services provided by the Association.
12:20 a.m.–12:30 p.m.	**Q&A**

DAY 2

The 2nd Waste to Energy Deep Dive Workshop, Greening Livelihoods, Energy and Transport

6 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone C

Organizer: Asian Development Bank

ADB and Ricardo are co-organizing the second "Waste to Energy" workshop at ACEF 2017. This year, the DDW is focusing on cross-sectoral benefits in urban, power, heat and transport using various case studies, including relevant on-going ADB projects on WtE. Experts and participants will be engaged in dialogue and debate discussing critical factors to make WtE successful.

Time		Activity
8:30 a.m	Coffee and networking	Display posters/stands
9:00 a.m.–9:30 a.m.	Welcome and Introduction	**Introduction to Waste to Energy and the benefits to ADB Developing Member Countries DMCs** *Vijay Padmanabhan*, Technical Advisor (Urban), Asian Development Bank **Ongoing efforts on WtE worldwide and strategic importance in sustainable development and climate change** *Adam Read*, Practice Director, Waste and Resources Management, Ricardo Energy & Environment
9:15 a.m.–10:40 a.m.	Session 1 – Power, Heat and Energy	**Introduction: Kathryn Warren, Principal Consultant, Ricardo Energy and Environment** • **Case Study 1: Conventional EfW** *Jean Marc Erignoux*, CNIM • **Case Study 2: EfW for heat and power** *Philip Short*, Wheelabrator • **Case Study 3:Renescience AD** *Lars Kruse and Sundus Cordelia Ramli*, DONG Energy • **Case Study 4 – Kitchen waste to AD** *Pema Youden*, Royal University of Bhutan **Q&A**
10:40 a.m.–11:00 p.m.	Coffee break and networking	**Display posters/stands**

Time		Activity
11:00 a.m.–12:00 p.m.	Session 2 – Transport Fuels	**Introduction:** *Sujith Kollamthodi*, Practice Director, Sustainable Transport, Ricardo Energy & Environment • **Case Study 1:ACT** *Rolf Stein*, Advanced Plasma Power • **Case Study 2: Waste to biomethane** *Jonas Giuliani*, Safegas • **Case Study 3, Waste to biomethane** *Amit Tandon*, Ventana • **Case Study 4: Plastics to Diesel** *Henrik Selstam and Erik Fareid*, Waste4Fuel **Q&A**
12:10 p.m.–1230 p.m.	Debate and Q&A	**Chair:** Dr Adam Read, Practice Director, Waste and Resources Management, Ricardo Energy & Environment

DAY 2

Sustainable Energy for All Global Tracking Framework: Asia-Pacific Results and Energy Access and Gender Metrics

6 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone D

Organizers: Asian Development Bank (ADB), UN Economic and Social Commission for Asia and the Pacific (UNESCAP), ENERGIA

The Global Tracking Framework [GTF] measures how the world is progressing toward Sustainable Energy for All. The 2017 edition of the GTF will be presented at this DDW with a specific focus on the regional chapter on the Asia-Pacific. In relation to the GTF, findings of other programs concerned with effective measurement of energy access, and assessing linkages between energy access, poverty, and gender equality, will be presented; representatives of Asia-Pacific governments will share their own national/sub-national energy access planning approaches, and what has and has not worked; and an expert panel will provide further comments/inputs on how GTF and other research programs may establish mutually reinforcing mechanisms for accurately measuring progress towards appropriate and useful energy access and gender goals.

Time	Activity
9:00 a.m.– 9:15 a.m.	**Welcoming remarks and expectation setting** [ADB/ESCAP representative]
9:15 a.m.– 9:35 a.m.	**Presentation: 2017 Global Tracking Framework (GTF)** • **Background, indicators, methodology and results of GTF 2017** *Vivien Foster*, Global Lead (Energy Economics, Markets & Institutions) and Practice Manager, Energy & Extractives, World Bank
9:35 a.m.– 9:55 a.m.	• **GTF 2017 Asia-Pacific regional chapter** *Kim Roseberry*, Project Consultant, United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)
9:55 a.m.– 10:05 a.m.	**Presentation of Energy Access and Gender Research** • **ENERGIA Gender and Energy Research Programme** *Annemarije Kooijman-van Dijk (PhD)*, Programme Coordinator, Gender and Energy Research Programme, ENERGIA, hosted by Hivos
10:05 a.m.– 10:15 a.m.	• **University of Oslo and TERI on Electricity and Gender Outcomes** *Debajit Palit*, Associate Director, TERI **Q&A**
10:30 a.m.– 11:00 a.m.	**Coffee Break**

Time	Activity
11:00 a.m.– 11:50 a.m.	**Moderator:** *Yongping Zhai*, ADB (TBC) **Panel Discussion on GTF and country-level energy access initiatives** *Mohammad Hossain*, Director General, Power Cell, Power Division, Bangladesh *Li Jingming*, Director, Renewable Energy Division, Rural Energy and Environment Agency (REEA), Ministry of Agriculture, People's Republic of China *Tri Mumpuni*, Executive Director of People Centered Economic and Business Initiative (IBEKA), and Senior Advisor, Ministry of Energy and Mineral Resources, Indonesia *Ram Prasad Dhital*, Executive Director, Alternative Energy Promotion Center, Ministry of Population and Environment, Nepal
11:50 a.m.– 12:00 p.m.	**Reactions from ADB, ESCAP, World Bank, ENERGIA, Global Alliance for Clean Cookstoves**
12:00 p.m.– 12:15 p.m.	**Q&A**
12.15 p.m. – 12.30 p.m.	**Synthesis and wrap-up** [ADB/ESCAP representative]

DAY 2

Good and Decent Jobs, Skills, and Entrepreneurship for a Just Energy Transition

6 June 2017

9:00 a.m.–12:30 p.m.

Multifunction Hall 1 - New Atrium

Organizer: Asian Development Bank (ADB), International Labour Organization (ILO), Platform for Advancing Green Human Capital (PAGHC)

The clean energy transition has an enormous potential to be transformative of all other industries and to influence policies and strategies for the fourth industrial revolution. Adequate skills development for the clean energy workforce is a determinant of the success of this transition. Participants at the workshop will propose solutions to challenging questions such as: (i) what are the skills sets for the energy transition in Asia?; (ii) are there best practices for a just energy transition?; (iii) what is the fourth industrial revolution implying for skills and jobs for the energy transition? ; (iv) what skills are needed for trade and global value chains?; (v) can the private sector drive resource allocation for training and skills development?

Time	Activity
8:30 a.m.–9:00 a.m.	**Registration**
9:00 a.m.–9:20 a.m.	**Welcome** *Priyantha Wijayatunga*, Chair Asia Clean Energy Forum, Asian Development Bank *Khalid Hassan*, Director, Country Office for the Philippines, International Labour Organization *Laurence Monnoyer-Smith*, Commissioner-General for Sustainable Development, Ministry of Environment, Energy and the Seas, Government of France
	Panel of Experts **Facilitator:** Cristina Martinez, Senior Environment and Decent Work Specialist, International Labour Organization *Senator Loren Legarda*, Chairperson for Senate Committees on Climate Change and Finance, Republic of the Philippines *Yongping Zhai*, Technical Advisor Energy, Asian Development Bank *Peter du Pont*, Senior Advisor Climate Change, USAID Asia *Professor Kapila Perera*, Dean, Faculty of Engineering University of Moratuwa, Sri Lanka *Leonardo Montemayor*, Deputy General Secretary and Chairperson of the Federation of Free Farmers, Trade Union Council of the Philippines *Yin Cao*, Chief Architect, Energy Blockchain Labs, People's Republic of China
10:30 a.m.–10:45 a.m.	**Coffee break**

Time	Activity
10:45 a.m.–11:45 a.m.	**Small groups' discussions**: participants discuss in small groups the questions identified by the panel of experts and prepare key points (ideas/solutions) for the plenary. **Group dynamics:** Gwyneth Anne Palmos, National Project Coordinator, Just Transition to a Green Economy, International Labour Organization **Facilitators/Chairs:** *Khalid Hassan*, Director, Country Office for the Philippines, International Labour Organization *Yin Cao*, Chief Architect, Energy Blockchain Labs, People's Republic of China *Leonardo Montemayor*, Deputy General Secretary and Chairperson of the Federation of Free Farmers, Trade Union Council of the Philippines *Jazira Asanova*, Principal Results Management Specialist, Results Management Unit, Strategy, Policy and Review Department, Asian Development Bank *Gema Perez*, Investment Specialist, Private Sector Operations, Financial Institutions Division, Asian Development Bank
11:45 a.m.–12:20 p.m.	**Discussion of results/solutions in plenary** Facilitated by UNESCO-UNEVOC Groups present messages
12:15 p.m.–12:30 p.m.	**Closing: key messages for transmission** *Cristina Martinez*, Senior Environment and Decent Work Specialist, International Labour Organization *Priyantha Wijayatunga*, Chair Asian Clean Energy Forum, Asian Development Bank

The Future of Hydropower

6 June 2017

9:00 a.m.–12:30 p.m.

Auditorium Zone B

Organizer: Asian Development Bank (ADB), International Hydropower Association (IHA)

Recent hydropower statistics indicate that over half of the world's current 1,000 GW installed capacity will have been or are due to undergo renovations for the purpose of upgrading and modernization. By 2050, the entire current capacity will have required modernization. Forward-looking operation and maintenance strategies are required to ensure the best outcomes under time and financial constraints. This workshop will explore the good practice in the operation, maintenance and modernization of hydropower facilities to ensure projects are both sustainable and climate resilient.

Time	Activity
9:00 a.m.–9:45 a.m.	• **Sustainability protocol –** *Richard Taylor* Q&A
9:45 a.m.–10:30 a.m.	• **Climate resilience –** *Bill Girling* Q&A
10:30 a.m.–11:00 a.m.	**Coffee break**
11:00 a.m.–12:30 p.m.	• **Future of hydropower** – Modernization, O&M, digitization- Bill Girling (11:00-11:20) – renewables working together, hybrid systems, energy storage – Bill Girling (11:20-11:40) – future of project financing, climate bonds, Hydropower Preparation Support Facility– Nick Troja (11:40- 12:00) – Q&A session (12:00-12:30)

Reducing the Costs of Achieving a Sustainable Energy Future

6 June 2017

9:00 a.m.–12:30 p.m.

Multifunction Hall 3 - New Atrium

Organizer: International Energy Agency (IEA), Copenhagen Centre on Energy Efficiency (C2E2)

If all the world's NDC pledges are added together, projections show a significant shortfall in emissions reductions needed to stabilize global temperature rise to below 2 degrees Celsius. Even though energy efficiency (EE) has such a significant role to play very few NDCs lay out specific plans for optimizing the many benefits EE can bring. But there is good news: IEA analysis also shows that the adoption of proven measures can bridge the gap without harming economic growth, starting with implementing high impact EE policies and putting cost effective EE measures in place. This workshop will explore some of the keys steps in the process of ensuring that we achieve a low carbon energy system at low cost.

Time	Activity
9:00 a.m.–10:15 a.m.	• **Projecting future demand, understanding the role of energy efficiency in high efficiency NDCs, and demand at the local level – when do we need energy, where and what resources are available?** *Facilitator: Melanie Slade*, International Energy Agency • Setting the scene – understanding the role of energy efficiency in low cost, low carbon pathways (Paul Simons, Deputy Executive Director, IEA) • Projecting demand and mapping resources - the Australian experience (Louise Vickery, IEA) • Country Analysis on INDCs and Technology Deployment Scenarios: Cambodia, Lao PDR, Myanmar (Beni Suryadi, ASEAN Centre on Energy)
10:15 a.m.–10:45 a.m.	**Coffee Break**
10:45 a.m.–11:45 a.m.	• **High impact energy efficiency policies: What are they and how far do they get us?** *Facilitator: Mark Lister*, Copenhagen Centre on Energy Efficiency o Energy Efficiency and the 2030 Sustainable Development Goals (Mark Lister) o Launch of the People's Republic of China High Impact Opportunity study (Dr. Sheng Zhou, Tsinghua University, PRC) o Launch of India High Impact Opportunity study and selected Indian initiatives (Jiwan Acharya, Asian Development Bank and Nitin Bhatt, Energy Efficiency Services Limited)
11:45 a.m.–12:30 p.m.	• **Where are the opportunities for better alignment of energy efficiency and broader decarbonization goals** • **Progress with integrating energy efficiency into energy planning at the local level (Art P. Habitan, Energy Efficiency & Conservation Division, Department of Energy Philippines)**

DAY 2

Opening Plenary

6 June 2017

Auditorium Zones A-D

2 p.m.–3:30 p.m.

Asia's energy sector is on the cusp of a major transition, as global agreements and market forces are driving the region, and indeed the world, toward a an energy future that is smarter, more inclusive, and more sustainable. The opening plenary will set the stage for the annual convening of Asia's clean energy community, exploring the current state of the clean energy sector, and what the latest trends and research reveal about the road ahead. Representatives from the Forum organizers, the Asian Development Bank (ADB), the US Agency for International Development (USAID) and the Korea Energy Agency (KEA) will welcome participants to ACEF 2017. These opening remarks will be followed by a scene-setter contributed by Sustainable Energy for All**,** sharing its analysis on the progress to date in the Asia-Pacific region towards meeting the goals of clean energy and access, and the adoption of complementary country-level policies. The session will end with keynote remarks from the International Energy Agency (IEA), that will highlight and expand on key findings from IEA's newly released report, *Energy Technology Perspectives 2017*, Participants will be briefed on on "cutting edge" clean energy technologies, their anticipated effect on regulatory and market environments**,** and the role these can play in meeting energy and climate targets, particularly for developing countries.

Introduction

Carmela D. Locsin
Director General, Sustainable Development and Climate Change Department
Asian Development Bank

Welcoming Remarks

Takehiko Nakao
President
Asian Development Bank

Jerry Bisson
Mission Director for Pakistan
United States Agency for International Development

Nam-Hoon Kang
President
Korea Energy Agency

House Rules and Forum Schedule
Priyantha Wijayatunga, Chair, Asia Clean Energy Forum 2017

Scene Setter

Vivien Foster
Representing Sustainable Energy for All
Global Tracking Framework 2017 and RISE (Regulatory Indicators for Sustainable Energy) – Global and Asia-Pacific Results

Keynote Remarks

Paul Simons
Deputy Executive Director
International Energy Agency
Key Findings from "Energy Technology Perspectives 2017"

THEMATIC TRACK SESSIONS

Track 1: Innovations in Energy Efficiency

Track Chairs

Aiming Zhou
Senior Energy Specialist, Energy Division of South Asia Department (SAEN), Asian Development Bank

Melanie Slade
Senior Program Manager, Energy Efficiency in Emerging Economies, International Energy Agency

Session 1: High Impact Energy Efficiency Policies for NDCs

Auditorium Zone A

6 June, 4 p.m.–5:30 p.m.

This session will highlight the potential for achieving the transition to low carbon energy systems at low cost by making the most of what energy efficiency has to offer. The session will also highlight both the global potential and individual country experiences.

Session Chair

Melanie Slade
Senior Program Manager, Energy Efficiency in Emerging Economies
International Energy Agency

Presenters

Yeonji Kim
Director of the Citizen's Energy Cooperation Division, Climate & Environment Headquarters
Seoul Metropolitan Government
One Less Nuclear Power Plant: Seoul Sustainable Energy Action Plan

The "One Less Nuclear Power Plant" initiative is a comprehensive energy program covering energy efficiency, renewable energy, and energy poverty reduction. It is the flagship energy policy launched in April 2012 by Seoul in its broad effort to respond to climate change and the energy crisis in the aftermath of the Fukushima nuclear accident and a nationwide rolling blackout in 2011. The main target of the One Less Nuclear Power Plant initiative was to cut energy consumption by 2 million TOE, which is equivalent to the capacity of one nuclear power plant, mainly by directly engaging citizens in energy-saving and renewable energy generation. This target was exceeded in June 2014, six months ahead of schedule, as Seoul reduced the city's energy consumption by 2.04 million TOE. This presentation will describe the design of the initiative, and the lessons learned from implementation.

James Wilde
Director, Policy and Innovation
Carbon Trust
Strengthening Approaches to Energy Efficiency Finance Across Asia

Energy efficiency is the linchpin that can keep the door to open to limiting global temperature increases to 2°C open, while saving trillions of dollars across the global economy in the process. To unlock the potential requires a large increase in finance and a re-orientation of investment. However, significant barriers continue to prevent the emergence of sustainable markets. Smart and effective public programs are essential to overcome these obstacles and to leverage private finance at scale. Over the last year, the Carbon Trust evaluated more than 30 energy efficiency programs across the world that have received more than $4 billion in public funding, and launched a new report at COP22 in Marrakech. This talk will focus on the programs evaluated across Asia (including examples in the People's Republic of China, India, Indonesia, the Philippines, Thailand, and Viet Nam) and provide insights into the key recommendations for designing and implementing future programs in the region.

Nitin Zamre
Senior Associate
ICF
Energy Efficiency Roadmap for India

The rate of adoption of energy efficiency in India has historically lagged behind the available opportunities. While India's energy intensity has fallen from 0.252 kgoe/USD in 2000 to 0.1955 kgoe/USD in 2011—a remarkable achievement--it it is unlikely to sustain this trend, given concerns about cost-effectiveness as well as near-saturation levels of efficiency uptake in some major sectors. This presentation lays out the findings of a report that prepared a comprehensive road map to further reduce the country's energy intensity by 2% annually through 2020 and by 2.5% annually through 2030. The report studied existing schemes and programs of the government, in order to understand where these initiatives fit in with respect to Nationally Appropriate Mitigation Actions (NAMA) programs. Accordingly, the report recommends three national programs, and estimates the achievable energy-saving potential cost of saved energy (CSE) for each of them.

Thusitha Sugathapala
Senior Lecturer
University of Moratuwa
Role of Energy Efficiency in Transport Sector NDCs of Sri Lanka

Sri Lanka has presented its NDCs in the transport sector with a target of reducing GHG emissions by 10% against a business-as-usual scenario. There are eleven categories of activities proposed, and these are formulated under eight strategic policy elements. The underlying policy approach to transport is to Reduce, Shift, and Improve. Energy efficiency is envisioned playing a major role in these interventions, with multiple facets, including system-efficiency, trip-efficiency and vehicle-efficiency. This presentation will describe the three-year Readiness Plan of 2017 to 2019, which will lay the groundwork for the ten-year NDC implementation period of 2020-2030. One of the significant challenges that the government faces is that the enactment of relevant policy and related legislation is hindered by a lack of baseline data and weak capacity for measurement, reporting, and verification.

Track 2: Innovations in Renewable Energy

Track Chairs

Cindy Tiangco
Senior Energy Specialist, Energy Division of Central and West Asia Department,
Asian Development Bank

Yong Chen
Regional Program Officer (Asia and the Pacific),
International Renewable Energy Association Agency

Session 2: Renewable Energy in Power System Planning: Meeting Climate and Access Objectives

Auditorium Zone B

6 June, 4 p.m.–5:30 p.m.

Energy access remains a priority for Asia and the Pacific, given that more than 600 million people in the region are still without access to modern forms of energy services. With the Paris Climate Agreement in force, the dynamics of lifting the region out of energy poverty must change in order to achieve climate targets. This session will focus on power system planning for both grid-connected power, as well as access for off-grid populations. The session will be designed to share new thinking and innovative practices in technologies and applications, business models, policy, and financing schemes to address the intertwined public policy objectives of addressing climate concerns and increasing energy access.

Session Chair

Cindy Tiangco
Energy Specialist, Energy Division, Central and West Asia Department
Asian Development Bank

Presenters

Jaquelin Cochran
Senior Energy Analyst
National Renewable Energy Laboratory
Greening the Grid: India RE Grid Integration Study

The Government of India has created a visionary target of 160 GW of installed wind and solar capacity by 2022. Using advanced weather and power system modeling, we explored operational impacts of meeting India's RE targets and identified actions that are favorable for integration. We found that based on current buildout plans, along with optimal siting of intrastate transmission and RE capacity, the power system will be able to accommodate 160 GW of variable RE and to meet expected loads with minimal RE curtailment. Changes to operational practice can reduce the cost of operating the power system and reduce curtailment, but are not essential. Improved merit order scheduling and dispatch is the largest driver to reduce costs, saving USD $920 million annually when optimized regionally. Lowering minimum operating levels of coal plants (from 70% to 40%) is the biggest driver to reduce annual RE curtailment—from 3.5% down to 0.76%.

Oliver Knight
Senior Energy Specialist
The World Bank
Solar Resource Assessment to Project Development: Maps, Model and Measurements

This presentation will draw on the World Bank Group's extensive and growing experience in renewable energy resource assessment, focusing on solar power. It will describe some of the tools and data available to governments and project

developers, including the recently-launched Global Solar Atlas, and will summarize the respective role of country mapping, model-based data outputs, and ground-based measurements from strategic planning through to site prospecting and due diligence. A cost-benefit analysis of publicly funded solar measurements will be presented alongside practical guidance on how to carry out high quality solar measurement campaigns, drawing on a series of projects funded by the Energy Sector Management Assistance Program (ESMAP). The presentation will also provide a "sneak peek" on work to update and relaunch the Global Wind Atlas.

James Hazelton
Program Manager
IT Power (Australia)
High Penetration Renewable Energy Access in the Pacific: Case Study from Tuvalu

Tuvalu consists of three reef islands and six atolls and has a total population of approximately 10,000 people. The electricity sector in Tuvalu recently underwent a significant transformation from diesel based system to an innovative, renewable energy driven system. ITP was involved with several high-penetration PV/battery/diesel hybrid projects across Tuvalu with a number of the islands now sourcing over 90% of their annual electricity needs from solar. The main island of Funafuti will also soon have a PV capacity well in excess of 100% of the midday load and will require large-scale energy storage to absorb excess PV output and provide spinning reserve for diesel generators. The new electricity system in Funafuti is designed to be able to run in "diesel-off" mode (inverter formed grid), allowing operators to save on diesel and maintenance costs of the generators.

Felix William Fuentebella
Undersecretary, Department of Energy, Philippines

Mark Christian Marollano
Senior Science Research Specialist
Department of Energy, Philippines
Greening the Grid Project: Solar and Wind Integration Study of the Luzon and Visayas Grid of the Philippines

Expanding the use of renewable energy (RE) resources is a crucial component of the Government of the Philippines' vision to attain sustainable, stable, secure, sufficient, accessible and affordable energy. This presentation will highlight the final results of a RE grid integration study for the Philippines. Developed by modeling experts from Philippines agencies, and international assistance from US Agency for International Development(USAID) and the US National Renewable Energy Laboratory, the study evaluates the operational impacts of reaching high levels of variable RE on the Philippine grid. Results indicate that the planned 2030 Luzon-Visayas interconnected electric systems could balance hourly generation and demand to achieve 30% and 50% RE penetrations. The study results are intended to assist the Government of the Philippines in forming new policies and regulations that encourage power system flexibility to support the use of indigenous RE resources.

Dharshana Muthumuni
Managing Director
Manitoba Hydro HVDC Research Center
High Penetration of Renewable Resources and its Impact on Power System Stability and Security

Modern transmission level of wind and solar photovoltaic (PV) generation is interfaced to the grid through power electronic converters. The characteristics of such generators are much different from conventional plants where synchronous machines are directly connected to the electric grid. The kinetic energy associated with rotating masses of conventional generating units acts to provide inertial support to the power system. The inertial support of the conventional generators results from the natural response of the machine and does not depend on activation of protection and control functions. In contrast, power-electronic-based wind and solar PV generators do not provide the same levels of inertia as the conventional generators. This can have a significant impact on system frequency stability when renewable penetration in a region becomes significant. A recent study under an Asian Development Bank technical assistance investigated the stability impact of integrating up to 300 megawatts of wind power to the Sri Lankan grid. The study considered a number of potential future generation options, transmission upgrade options and load levels over 15 year planning period. A recent system wide outage experienced in South Australia has further highlighted the impact of high renewable resource penetration on system stability. At the time when the events occurred, the amount of conventional generation in the South Australian network was relatively low. A rapid frequency drop was observed following the tripping of a heavily loaded double-circuit transmission line. The under frequency load shedding schemes did not have sufficient time to respond before the system collapsed. The key findings from the Sri Lankan study and the observations from the South Australian blackout will be outlined during this presentation.

Track 3: Increasing Energy Access

Track Chairs

Jiwan Acharya
Senior Energy Specialist, Energy Division, South Asia Department
Asian Development Bank

Soma Dutta
Programme Coordinator, Women's Economic Empowerment Programme,
ENERGIA

Session 3: National Energy Access Policies and Plans: Government-Led Efforts

Auditorium Zone C

6 June, 4 p.m.–5:30 p.m.

National governments have a key role to play in extending clean energy to their populations as a basic right to development. This session will showcase how governments can play a catalytic role in expanding energy access through effective policies, regulations, and programs.

Session Chair

Jiwan Acharya
Senior Energy Specialist
Asian Development Bank

Presenters

Abrar Ahmad
Program Management Specialist
USAID/Pakistan
Energy Access Policies: Financing and Sustainability

Access to modern energy services is a powerful enabler for economic and social development. Developing country governments have an important role in delivering basic energy service to their citizens. The Government of Pakistan launched programs for increasing energy access to villages through power distribution companies and the Alternative Energy Development Board (AEDB). This presentation will review these plans and discuss issues faced during their implementation and lessons learned. Provincial governments are also working on increasing energy access through renewable energy projects. Their major issues in executing these plans are financing, the capacity to operate and maintain projects, and sustainability. This presentation will also discuss various models for mobilizing finance (government and non-governmental), building human capacity, and integrating energy access with other development sectors.

Mike Crosetti
Director
Castlerock Consulting
Planning for Universal Electricity Access in Eastern Indonesia

The Government of Indonesia aims to achieve near-universal electricity access nationally within the next few years. Eastern Indonesia remains characterized by the lowest electrification ratios in the country, and hence has been prioritized by the government for electrification efforts. This presentation describes the bottom-up approach that has been used to develop provincial-level plans for this region and the corresponding results. This encompasses the use of publicly available satellite imagery for rooftop tagging, the aggregation of households into settlements for low voltage reticulation, and the optimization process that determines the least-cost technology for serving each settlement from candidates of grid extension, renewable

mini-grids and individual household PV systems. The presentation will highlight challenges and solutions in conducting this analysis, as well as the overall investment requirements identified by the analysis.

Ranishka Wimalasena
Senior Project Officer (Energy), Sri Lanka Resident Mission
Asian Development Bank
Rural Household Connection Credit Scheme

Sri Lanka embarked on a journey to achieve 100% electrification by the end of 2016, and nearly achieved the target with the electrification rate reaching 99%. However, an estimated 34,000 households still do not enjoy the supply of uninterrupted electricity from the national grid. The main obstacle is the initial investment to receive the electricity connection. The rural household connection project accomplishes this challenge by providing a credit facility for the poor households to ease the upfront financial requirement. This initiative will help to achieve the target of 100% electrification; because of its innovativeness and the practicability of the implementation. As of now, more than 52,000 connections have been provided. There are lessons which can be used for development of similar schemes in other countries. The project has also brought significant improvements in of the social well-being of poor communities.

Ram Prasad Dhital
Executive Director
Alternative Energy Promotion Center

Li Jingming
Director, Division of Renewable Energy, Rural Energy and Environment Agency
Ministry of Agriculture, People's Republic of China
Interpretation of Policy and Plan for Rural Energy Development in China

This presentation will introduce the related laws, policies, plans and standards of in rural energy promoting and development of the People's Republic of China as well as its great achievement, mainly focus on the biogas and improved stoves. The presentation will also give an analysis of the advantages and disadvantages of the Chinese stronger promotion policy system, and some suggestions. The presentation would like to emphasize that the government support and policy input are very necessary and important in promoting rural energy construction, especially for developing countries.

Bui Duy Thanh
Senior Energy Economist, Energy Division, Southeast Asia Department
Asian Development Bank
Assisting Myanmar in Achieving Universal Electrification – The Solar PV Mini-grid Solution

Myanmar's current nation-wide electrification rate is currently 34%, and the Government aims to achieve universal electrification by 2030. The presentation describes an approach that utilizes available solar energy to provide electricity to rural populations through village -based mini-grids. It discusses the elements that constitute a viable business model based on a pilot solar PV project, and draws lessons for scaling up solar PV mini-grids in Myanmar.

Track 4: Charting the Future of Clean Energy in Asia

Track Chairs

Dan Millison
Manager
Transcendergy L.L.C.

Wei-Nee Chen
Chief Corporate Officer,
Sustainable Energy Development Authority, Malaysia

Session 4: Managing the Energy Transition

Auditorium Zone D

6 June, 4 p.m.–5:30 p.m.

The reality of climate change and the need to increase a country's energy autonomy and security have driven countries to initiate an energy transition from fossil fuel based to sustainable energy based resources. Germany's Energiewende (energy transition), is one of the earliest and most visible pioneering efforts: a country with huge coal reserves and reliable nuclear power is forging ahead to dramatically increase the share of renewable energy in their energy mix. This session will bring together officials and experts from countries that have started the energy transition, to discuss the interventions and policies that are effective, and how these policies can be adapted to help developing countries to promote their clean energy agenda in their country.

Session Chair

Wei-nee Chen
Chief Corporate Officer
Sustainable Energy Development Authority, Malaysia

Presenters

Kazunari Fukui
Marketing Operations - GE Power
General Electric Company
The Major Transformations in the Energy Ecosystem

Multiple technologies, fuels and industries work in concert across the energy ecosystem to provide energy in the form and quantity required, with desired reliability, at the lowest possible cost. The energy ecosystem is undergoing unprecedented changes driven by advancements in technology, growing concern for the environment, changing consumer behavior, new policies, changes in fuel availability and pricing, and resource constraints. This presentation address nine major transformations that are occurring across the energy ecosystem. The majority of these transformations are at or near the point of consumption and have rippling effects upstream. This presentation will describe the challenges and opportunities each creates, and highlight instances and cases in Asia where a specific transformation is most significant.

Hongpeng Liu
Director, Energy Division
UN Economic and Social Commission for Asia and the Pacific (UNESCAP)
Energy Transition for Sustainable Development in the Asia-Pacific

The UN Economic and Social Commission for Asia and the Pacific (ESCAP) is the regional development arm of the United Nations for the Asia-Pacific region. ESCAP promotes energy transition in the region by providing an intergovernmental platform, technical assistance and capacity building to member countries. ESCAP defines energy transition as the accelerated change

in energy systems in order to ensure access to affordable, reliable, and modern energy for all, with global climate change and other challenges addressed appropriately. Regional cooperation would be the primary mean for achieving such a change in a shorter time frame and in a more cost-effective manner. The presentation will overview key trends and factors that are driving energy transition and introduce a "menu" of options which are available for countries to transform their energy systems. Various national actions on energy transition will be identified that could be reinforced by regional energy cooperation.

Hwang Hyeong Jun
Partner
Yulchon
The Republic of Korea's Way of fighting Climate Change with Clean Energy

The Republic of Korea is an energy-intensive economy, ranked about tenth-highest in terms of energy consumption. The Republic of Korea's carbon emissions have also increased significantly during the past 20 years, making the Republic of Korea one of the countries with the fastest growth of carbon emissions. In relation to climate change, the Republic of Korea is also one of the first countries to embrace the "green growth" agenda. Following the global financial crisis in 2008, the Republic of Korea's stimulus package was widely seen as the "greenest" with up to 69% of the spending on "green" projects (such as renewable energy, energy efficiency, smart grids). The stimulus package was followed by the 2010 Framework Act on Low Carbon Green Growth, creating the legislative framework for mid- and long-term emissions reduction targets, cap-and-trade, a carbon tax, carbon labelling, carbon disclosure and the expansion of renewable energy. In May of 2012, the Republic of Korea made a further step forward with the passage of the Act on the Allocation and Trading of Greenhouse Gas Emissions Permits. This national cap-and-trade scheme began in 2015. In this context, this session will explore how the Republic of Korea's clean energy policies are designed and implemented as a primary means of combating climate change, focusing on Renewable Portfolio Standards, Energy Storage Systems, smart grids and hydropower and electronic cars.

Imran Ahmed
Program Management Specialist (Energy)
USAID Pakistan
Integrating Increasing Shares of Variable Renewable Energy Pakistan Power Grid

Utilities today face challenges in managing variability resulting from the integration of renewable energy sources such as solar and wind generation in their power systems. New policies are needed to allow utilities to procure ancillary services for system stability along with new infrastructure and enhanced operational capacity. This presentation will cover how wind/solar hybrid generation in Pakistan can reduce variability and improve the utilization factor of grid connections. The presentation will briefly introduce a USAID/Pakistan-funded transmission line project to connect 680 MW of private sector wind projects under construction in the southern wind corridor of Pakistan and will also touch upon a USAID-funded study on how early forecasting capability (hour ahead forecasting) and short dispatch cycles (15 minutes) can reduce the need for reserves in Pakistan national power grid.

Nilmini Silva-Send
Assistant Director/Adjunct Professor, Energy Policy Initiatives Center
University of San Diego
Electric Vehicles on the Rise while Decarbonizing the Grid in California: Successful Policies for Developing Countries Everywhere

California, though not a country, is well placed to transition to a low carbon economy in the electricity and transportation sectors. 50% of Zero Emission Vehicle (ZEV) sales in the US in 2015 were in California, where ZEVs enjoy consistent policy support. The latest goal is for 1.5 million ZEVs on the road by 2025 and incentives are provided by federal, state, regional and many local entities. More ZEVs will increase electricity loads. However, California law mandates 50% renewable electricity by 2030, and some cities are implementing a 100% renewable electricity mandate. Therefore, transportation electrification is not expected to increase GHG emissions and less gasoline on roads means immediate local co-benefits from reduced N2O, SO2 and particulates. This presentation will focus on California policies on transportation electrification and increased renewable electricity, policies adaptable to developing countries and smoggy cities to further clean energy and its benefits."

7 June 2017

Plenary Session: Challenges in Mainstreaming Renewables into the Power Grid

Auditorium Zones A-D

7 June, 9 a.m.–10:30 a.m.

This plenary session will address a key area of concern for electric utility planners and engineers, as well energy policymakers and regulators, project developers, construction firms, renewable equipment providers, and bankers and investors in the energy sector: how can we successfully manage the "Clean Energy Transition" across Asia. With continued cost reductions for renewable energy technologies, due to manufacturing improvements and driven by competitive approaches to procurement, and with countries on the hook to meet ambitious RE goals and targets, the structure of power sectors, and the viability of utility business models, are in flux. This session will address key aspects of the energy transition, including the role of renewable fuels vis-a-vis fossil fuels in global and regional markets during the transition period; how renewable energy technologies may evolve and change the power sector landscape; the principles and practice of integrating large-scale variable renewable energy into the grid; and the need for Asian utilities to reexamine and reinvent their business models, and the imperative of making hydropower truly sustainable in a high-renewables world.

Opening Remarks

Bambang Susantono
Vice-President for Knowledge Management and Sustainable Development
Asian Development Bank

Keynote Remarks

Sun Xiansheng
Secretary General
International Energy Forum
Energy Outlook: The Role of Renewables vs. Fossil Resources in the Power Sector During the Next 5-10 Years

Panel Discussion

Moderator

Yongping Zhai
Technical Advisor (Energy)
Sustainable Development and Climate Change Department
Asian Development Bank

Panelists

Jaquelin Cochran
Manager of Markets & Policy Analysis Group, Strategic Energy Analysis Center
National Renewable Energy Laboratory
"Large-Scale Integration of Variable Renewable Energy: US and International Lessons Learned"

Niels Ehlers
Head of Concepts and System Strategy
50Hertz (Germany)
"How a German Regional Transmission System Operator Manages a Grid with 50% Renewable Energy Output: What It Takes to Maintain a Stable Grid"

Bartosz Wojszczyk
President & CEO
Decision Point Global
"How Disruptive Technologies Will Shape the Power Grid in Ways That We May Not Currently Envision"

Somesh Kumar
Leader, Power and Utilities
Ernst & Young, India
"Perspectives on Developments in Renewable Energy and Grid Technologies Will Affect Asian Utility Business Models."

Richard Taylor
CEO
International Hydropower Association
"The Challenge and Imperative of Making Hydropower Sustainable in a High-Renewables World"

Sun Xiansheng
Secretary General
International Energy Forum

Session 5: How Can Digitalization Improve the Efficiency of Our Government Energy Efficiency Programs and Our Businesses?

Auditorium Zone A

7 June, 11 a.m.–12:30 p.m.

Implementing an effective energy efficiency standards and labelling program for appliances or an energy management program for industry can be challenging for governments. This session will explore the opportunities that digitalization brings to make programs more effective at lower costs. For example, a universal QR code would be a great tool for regulators and smaller countries with lower budgets both for compliance purposes and to provide high-quality information to consumers. Equally, today's reduced costs of sub-metering allow businesses the opportunity to collect disaggregated, real-time data on energy consumption allowing them to reap the benefits of better managing their consumption and, where required, reporting it to government.

Session Chair

Anthony Jude
Former Director, Energy Division, South Asia Department
Asian Development Bank

Presenters

Archana Walia
Director, India Programs
CLASP
Role of Digitization in Energy Efficiency Programs

Digital technologies are central to 21st century low-emission energy systems. It plays a major role in delivering effective solutions and enabling policymakers to meet the energy efficiency targets. The components of digitization for appliance efficiency program can range from basic tools such as development of product registries, web portals to more advanced ones such as mobile-based

applications and QR codes. This presentation will cover the role of cutting-edge technologies such as web crawlers, tools like real-time energy monitoring systems for understanding appliance usage patterns and consumer behaviors. It will also delineate how these technologies helps to enhance the effectiveness of program implementation and bring about regional and global harmonization. Given the rising popularity of smart technologies, access to data at low cost and the transformative impact they have across markets, there is significant opportunity for outreach and informed choices to consumers for market."

Marian Van Pelt
Vice-President
ICF
CLEER: Tools to Assess Energy, GHG, and Cost Savings from Energy Efficiency Programs

Robust tools for measurement and verification of energy efficiency projects can be difficult to find. The USAID Clean Energy Emission Reduction (CLEER) Tool is a user-friendly calculator based on internationally accepted methodologies that enables users across the world to calculate emissions reduced or avoided from energy efficiency and other clean energy activities. The tool also calculates energy savings and associated cost savings. CLEER is free and publicly available, and increasingly gaining use across USAID and other agencies. This session will provide an overview of what the tool does, how it works, and the new features that have recently been added, including energy and cost savings calculations. The presentation will also provide statistics on tool usage and user feedback, as well as the documented climate impacts that energy efficiency projects are known to be having.

Edward Vine
Affiliate
Lawrence Berkeley National Laboratory
Evaluation of National Energy Efficiency Programs in Asia: Lessons Learned from the US

Countries in Asia are expected to implement more energy efficiency programs in the coming years. The evaluation of these programs will rely on evaluation methods that have been developed in the United States (US). This presentation highlights the methods used in a recent evaluation of the US Department of Energy's Better Buildings Neighborhood Program, an innovative initiative to explore the potential for different marketing strategies and program designs to sell building energy upgrades that result in significant energy savings and economic stimulus. An impact evaluation investigated the program's direct impacts in terms of energy savings, emissions reductions, economic stimulus, and job creation. A market effects assessment investigated ways the program brought about changes in the building retrofit market to favor energy efficiency. A process evaluation investigated the experience of the grantees to identify successful practices to guide future programmatic efforts to spur building efficiency.

Park Kyung Soon
Deputy Director
Korea Energy Agency (KEA)
Introduction of Energy Data Analysis Center (EDAC)

As the need for building energy management is growing in importance, the priority placed on Building Energy Data is also growing. To meet growing demands for energy data analysis in buildings, the Korea Energy Agency established the Energy Data Analysis Center (EDAC) in 2015. EDAC analyzes building energy data, by capitalizing on information and communication technologies and by effectively integrating data into and throughout buildings. Through remote connections, EDAC collects building data (e.g., on building energy management systems and energy storage systems), and analyzes the energy consumption profile and equipment energy efficiency. The presentation will introduce the EDAC and its role in building energy management, from design to operation.

Session 6: Business Models and Job Creation from Renewable Power Deployment

Auditorium Zone B

7 June, 11 a.m.–12:30 p.m.

Benefitting from the rapidly improved cost-competitiveness, many renewable energy technologies for electrification, most notably solar photovoltaic (PV), present a compelling business option for private sectors in various market segments.

The paradigm is shifting gradually from policy-driven to being market-driven in a growing number of countries. This session will provide insight into the role of the private sector and opportunities for job creation as part of renewable deployment plans in developing member countries (DMCs). It is hoped to develop linkages to a broader discussion on green skills for renewable energy.

Session Chair

Jeffrey Humber
Senior Energy Advisor
USAID Office of Afghanistan and Pakistan Affairs

Presenters

Ravini Karunarathne
Engineer
Sri Lanka Sustainable Energy Authority
Creating Employment in Rooftop Solar PV Market through Recent Policy Interventions in Sri Lanka

Recently, Sri Lanka implemented two additional net-metering schemes that enable consumers to sell electricity generated by rooftop solar PV systems to the grid. This program titled "Battle for Solar Energy" focuses on value delivered to consumers, by creating an enabling environment for natural market growth. While solar PV industry has grown rapidly in Sri Lanka, with widespread public acceptance, the number of service provider companies increased from 100 to 270, creating 3,600 direct and 1,500 indirect jobs. The sudden surge in human resource requirements was met within the current professional/tertiary education setup. Engineers, marketers, technicians, etc. were quickly absorbed into companies after short training courses. Since natural market forces are at play, the role of the policymaker has evolved from "facilitator" to "regulator". This new role will ensure safe and quality service delivery to the public, reduce overall power generation costs, and develop human resources towards similar opportunities in emerging global markets.

Bharath Jairaj
Senior Associate
World Resources Institute
How Can the Renewable Energy Sector Provide Quality Jobs for Poverty Reduction?

To date, a number of studies have assessed the impacts of the consumption side of renewable energy (RE), focusing, for example, on the impacts of RE on education, income generating activities, productivity, and health. However, evidence regarding the impacts of RE on creation of employment and new enterprises that can be a means to reduce poverty remains weak. Further, limited attention has been given to the types of skills and employment opportunities that can be created along the supply chain of RE development. This presentation covers new research that seeks to fill this gap by looking at the opportunities for poverty reduction through employment generation along the RE supply chain. The aim is to understand what is needed to adequately develop RE programs and policies that lead to these kinds of livelihood opportunities that reduce poverty. The presentation will include an initial set of recommendations focused on how the RE sector can provide new and higher quality employment for low-income workers.

Ilya Chernyakhovskiy
Energy Analyst, Strategic Energy Analysis Center
National Renewable Energy Laboratory
International Jobs and Economic Development Impacts (I-JEDI) Model

Renewable energy is no longer just an environmental win; it is a clear driver for economic growth. But robust tools are necessary to properly communicate the economic impacts of renewable energy innovations and to help government officials and project developers make informed decisions. This presentation will demonstrate the International Job and Economic Development Impact tool (I-JEDI). I-JEDI supports practitioners and policymakers in estimating the economic impacts of renewable energy development around the world. Currently, the tools estimates economic impacts associated with solar PV, land-based wind, geothermal, and biomass technologies. With full data sets currently developed for the Philippines, South Africa, Mexico, Colombia, and Zambia, I-JEDI is already producing global results. This presentation will demonstrate the utility of this tool while describing concrete examples where the I-JEDI application can have immediate benefits in developing countries worldwide.

Dedy Haning
Project Coordinator, Sumba Iconic Island
Hivos Southeast Asia
School Renewable Energy Application to Improve Education in Sumba

Eighty percent of the 750 elementary schools in Sumba Island in Indonesia are not connected to the electric grid. This hinders educational opportunities and limits the use of government-provided electronic devices. In addition, many students live in homes with no lighting or lighting provided by costly and polluting kerosene lamps, which leads to limited at-home studying opportunities. To address these problems, Hivos in 2014 piloted two 1.5 KWp solar PV units and charging stations in two schools in Kataka, East Sumba. Hivos also set up a renewable energy service company (RESCO) to collect payments and to provide O&M. Schools pay fees to the RESCO from their operational budget, and earn a commission from leasing the lanterns and provision of services of charging phones, laptops, and printing. The outcomes improve teaching quality and administration, reduce teachers absenteeism, and improve the effectiveness of night classes in helping students prepare for national examinations. The project expanded to another 25 schools in 2016 and strengthened the overall capacity of the RESCO.

Afnan Hannan
Co-Founder/Engineer
Okra Solar
Pay As You Go Isn't Disruptive (Yet) - The Real Potential of Pay As You Go Technology

In the last decade, the communications industry leapfrogged the need for land lines, bringing wireless connectivity to about 98% of the world's population, and creating hundreds of thousands of jobs. Currently solar stands to be approximately five times cheaper than diesel and up to one-hundred times cheaper than dangerous kerosene, yet off-grid solar has a market penetration of less than 2%. Pay-as-you-go technology is disrupting the market, having already drawn 90% of total industry investment over the last 3 years. But current pay-as-you-go solar home systems simply cannot sustain the growing energy needs of off-grid populations in developing member countries (DMCs). Pay-as-you-go is still in it's infancy of disruption. It enables any financing activity to take place remotely and on credit, opening doors for pay-as-you-go with appliances, maintenance, peer-to-peer sharing, and even customer-owned grids.

Session 7: Addressing Urban Energy Issues

Auditorium Zone C

7 June, 11 a.m.–12:30 p.m.

Rapid urban growth in developing countries is creating an ever-increasing demand for energy services, including services such as legal, safe, and affordable electricity and access to clean energy for cooking. According to United Nations estimates, about 33% of the population in developing countries lives in slums. By 2050, up to 65% of Asia's population is expected to live in cities. Improved energy access has the potential to improve socio-economic status and employment opportunities of urban poor. This session will highlight innovative solutions tackling energy access issues for urban poor including electricity and cooking.

Session Chair

Christopher La Fargue
Climate Change Team Lead
USAID Asia

Presenters

Sarah Alexander
Advisor
SELCO Foundation
Energy Solutions for Temporary Migrant Communities in Urban India

In India, 35% of its population is classified as urban poor. A model of an Integrated Energy Centre (IEC) conceptualized by SELCO Foundation uses energy as a catalyst for socio-economic uplifting in informal settlements. Located within these

settlements, the centre provides community and individual services such as central refrigeration, healthcare (e.g., vaccines/ checkups), training for livelihoods, learning centers for children, and portable lights. The dwellers face constant threat of evictions, living as temporary citizens and daily wage laborers, and the center looks at pay-per-use services as one solution. Since 2011, 26 IECs have become operational, offering 22 different services to the communities, and 4 types of operational models in 2 states in India. The concept draws from and builds upon models of technology utilization, business applications, delivery of essential services, new methods of social inclusion--aspects critical to lessen the technology, financial, and social divide for the urban poor.

Asna Towfiq
Bangladesh Market Manager
The Global Alliance for Clean Cookstoves
Times Have Changed, Change Your Stove: Using Behavior Change Communication to Drive Consumer Demand for Improved Biomass Stoves

With support from UK Aid, the Global Alliance for Clean Cookstoves implemented a "Behavior Change Communication" (BCC) pilot project in 2016 in Bangladesh that promoted the purchase of improved household stoves in urban Dhaka and Khulna. The BCC project took an innovative and categorical building approach which is new for the cookstove sector focusing on the promotion of an overall category of improved stoves, instead of a specific brand. The results of the project added to the limited evidence-base of what works to drive stove purchases and can be used by stakeholders including manufacturers, NGOs, and government to design more effective projects in the future. This presentation will share important lessons from the project on how stakeholders can effectively collaborate on the ground to achieve results. Project learnings are being incorporated into the strategy of a larger-scale BCC campaign to be launched in Bangladesh later in 2017.

Charu Chadha
GSMA
Digitising Urban Energy Access

This presentation will describe how mobile technology can fundamentally change distribution including, metering, billing and customer engagement for energy services (electricity and cooking). Drawing from global xamples, the presentation will touch touch upon the: use of mobile technology across the value chain, considerations while rolling out mobile enabled solutions, and early results from global deployments. The presentation will focus on the adoption of technology solutions by urban utilities and service providers for efficient and optimized processes. The objective behind driving adoption is better governance, professional service delivery, and ultimately, improved access for the underserved.

Bénigne du Parc
Country Coordinator - Philippines
Entrepreneurs du Monde
ATE Co: Equipping Manila Slums with Solar Kits through an Innovative Rent-to-Own Business Model

Manila is reported 100% electrified, but in reality the access to energy is still a challenge for many slum dwellers. ATE Co program is developing an innovative business model to support ultra poor urban households in acquiring high quality solar kits. Its implementation relies on a combination of rent-to-own, pay-as-you-go and cash collection, with a strong training component and an efficient customer service.

Session 8: The Food-Energy-Water-Resilience: Nexus Part I Scorched Earth or an Abundant Harvest?

Auditorium Zone D

7 June, 11 a.m.–12:30 p.m.

Speakers in this session will discuss the challenges and opportunities of enhancing energy sector climate resilience, through the lens of the food-energy-water nexus. What are the short- and long-term climate risks to the energy sector in Asian countries, in particular at the food-energy-water nexus? How can changing water needs of the energy sector be better managed, particularly during the low-carbon transition? What are the potential synergies in pursuing clean energy and resilience, and how can both public and private financing be enhanced for projects with mitigation and adaptation co-benefits?

Co-Moderators

Caroline Lee
Energy Policy Analyst,
International Energy Agency

Frédéric Asseline
Principal Climate Change Specialist Principal Climate Change Specialist (Climate Finance), Climate Change & Disaster Risk Management Division, Sustainable Development and Climate Change Department
Asian Development Bank

Scene-setting Remarks

Paul Simons
Deputy Executive Director
International Energy Agency

Gil-Hong Kim
Senior Director concurrently Chief Sector Officer, Sector Advisory Service Cluster
Asian Development Bank

Presenters

Divyam Nagpal
Associate Programme Officer – Policy
IRENA
Impact of Renewable Energy Deployment on Water-Intensity of Power Generation

Access to water is increasingly a risk for energy security. Power sector development strategies that reduce water-intensity of power generation while advancing climate goals are increasingly necessary. Under its work stream on the water-energy nexus, IRENA conducts quantitative analyses at a country and regional-level on the impact of renewables on water use in the power sector. Recent analysis on the People's Republic of China, for example, has shown that by 2030, renewables and improved cooling technologies could reduce water-intensity by 42% and emissions-intensity by 37%. This presentation will share findings from IRENA's analyses, along with insights on the types of cross-sector policy making needed to realize multiple benefits and manage potential trade-offs.

Pradeep Perera
Principal Energy Specialist, Energy Division, South Asia Department
Asian Development Bank
Water Energy Nexus: The Case of China

As the People's Republic of China grapples with the challenges of shifting its energy sector to a low-carbon trajectory to meet its international commitments to reduce the carbon intensity and to "peak" its carbon emissions, it also needs to make appropriate energy supply choices in a manner that does not adversely affect its water security. Certain energy supply options such as

hydropower, shale gas, open-loop-cooling of thermal and nuclear power plants can have significant implications on water security. At the same time, decision-makers making choices in water supply need to be cognizant of energy consumption, since desalination, groundwater extraction, and long distance water transfers require substantial amounts of energy. This presentation will highlight the diverse and difficult trade-offs that need to be in the water energy nexus,and will elaborate on how this complex problem can be addressed in the context of China.

Jamie Michael Kern
Senior Fellow, Office of International Affairs,
US Department of Energy
Sharing Technology for Energy Production, Water Savings, and Climate Resilience of Hydropower Plants: Better Practices for Policy, Planning, and Operations

With over a century of hydropower experience, the United States has developed a wealth of tools and best practices to optimize the long-term performance—financial, environmental, and social—of existing and new hydropower plants. These tools directly benefit policy-makers, planners, investors, lenders, utilities, and dam operators. This presentation will describe how intergovernmental collaboration efforts in Southeast Asia are implementing two such US-developed resilience tools to 1) fine-tune plant operations to conserve water and maximize output of clean hydropower at no cost, and 2) identify and mitigate the greatest climate change-related risks to existing and proposed hydropower assets.

Session 9: Multiple Benefits and Drivers of Energy Efficiency

Auditorium Zone A

7 June, 2 p.m.–3:30 p.m.

Most governments are not motivated by energy efficiency in its own right, but rather by the social, economic, and environmental benefits it brings. This session will highlight some of the benefits that drive governments to take action, as well as methodologies for measuring and communicating the multiple benefits of efficiency.

Session Chair

Melanie Slade
Senior Program Manager, Energy Efficiency in Emerging Economies
International Energy Agency

Presenters

Mark Lister
Head
Copenhagen Centre on Energy Efficiency
Matching Private Sector Energy Efficiency Experts and Providers with Public Sector Demands for Assistance

As the Global Energy Efficiency Hub of Sustainable Energy for All, the Copenhagen Centre on Energy Efficiency connects aspiring countries, cities and districts with technology, service and finance providers who can convert their ambition into policies, funded projects and real results. The Copenhagen Centre has developed a model for matching demand for energy efficiency assistance with supply, in the process creating quicker pathways to finance and activate projects that can deliver real benefits on the ground. The Centre is well connected into energy efficiency practitioner networks and is placed to play a central and practical coordinating role in a few targeted high-impact locations, which can be replicated elsewhere. This presentation will run through selected examples of our work to accelerate energy efficiency, and explain more about our offer to government jurisdictions that are interested in progressing energy efficiency implementation actions.

Michael Reid
Managing Director
The Keyline Group
The Challenge of Evaluating Multiple Impacts of Energy Efficiency: Early Lessons from Australia

Implementing a multiple impacts approach in evaluating energy efficiency is inherently uncomfortable. It forces a view of the whole, reveals competing commitments and cuts across the mindset of silos. Over the past three years, there have been a number of projects in Victoria and New South Wales, Australia, seeking to identify and develop high-level indicators that can be used by Government, Business and Community to monitor transformational change caused by their activities. While it has been helpful to refine tools and metrics, it has also been essential to engage in a wider story of social, economic, and environmental development and take participants outside "business as usual" practices. In order to succeed,it is critical to enhance the capacity of those involved to capture the multiple impacts they seek. This presentation will describe early attempts to operationalise the indicators within "real world" settings, and to articulate both barriers and enablers to successful implementation and evaluation of multiple impacts approaches.

Steffen Scudlo
Project Manager
Siemens AG, EM DES PDE
Why Distributed Energy Systems Are Becoming More Popular in Remote Areas, City Districts and Industrial Facilities

Distributed energy systems are typically used to provide energy in remote areas where grid connections are unavailable or are very weak. Local power generation plants are in place to provide a reasonable energy supply in such areas. Why should there be a need for distributed energy systems in city districts or industrial facilities? City districts for example want to increase their reliability in case of nature catastrophes like hurricanes and tornados. If the transmission grid fails, they can go off-grid. Local distributed energy systems take over and provide sufficient energy to all consumers within this temporary off-grid network. Industries have different driver for distributed energy systems. Depending on their production processes, companies may need not only electricity but thermal energy as well. This demand can be supported complementary to the grid, or completely by the company's own co-generation facilities.

Apurva Chaturvedi
Senior Clean Energy Specialist
USAID-India
Market Transformation for Superefficient Air Conditioners in India

Growing energy use and peak demand from air conditioning is a concern for Indian policymakers and utilities. Driven by economic growth, urbanization, and higher standards of living, air conditioners are expected to drive peak demand from 75 GW presently to 150 GW by 2030. With currently available technology, efficient air conditioning can save over 60 percent of energy consumed currently. Recognizing this opportunity, Energy Efficiency Services Limited (EESL) has launched a program for growing the market for super-efficient inverter air conditioners in India. It is hinged on encouraging end-users to adopt the highest efficiency models by lowering product retail prices through bulk procurement. USAID has been supporting the program design, which includes performance parameters of super-efficient ACs, demand aggregation and product disbursement strategies, and plans for program implementation. This program has the potential to save over 2,900 GWh of electricity by 2030.

Session 10: The Emergence of Solar Rooftop PV in Developing Asia

Auditorium Zone B

7 June, 2 p.m.–3:30 p.m.

This session will build on recent dramatic developments in the deployment and financing of solar rooftop PV in Developing Asia. While the policy and regulatory frameworks for solar rooftop PV are well established elsewhere, there are significant technical and regulatory barriers that are blocking major potential investments in solar rooftop PV in countries across Developing Asia. This session will highlight examples of experience with different approaches to scaling up solar rooftop PV being planned and implemented in the Asia region.

Session Chair

Aiming Zhou
Senior Energy Specialist, Energy Division, South Asia Department
Asian Development Bank

Presenters

Ronnie Khanna
Deputy Chief of Party - Renewable Energy, USAID PACE-D TA Program
Nexant Inc.
The Need for Institutional Capacity Building for Developing Solar Rooftop Markets: Experience of the USAID PACE-D TA Program in India

In order for India to achieve its target of 40 GW solar rooftop by 2022, it is critical to develop an appropriate market ecosystem, especially since solar rooftop PV is new to India. There is a need for a concerted effort by key stakeholders (consumers, investors, EPC's, utilities) who often lack appropriate institutional capacity. In its work on solar rooftop PV in India, the USAID PACE-D Program has identified two critical areas for ecosystem development: (a) market priming through large consumers and (b) interconnection through utilities. Institutional capacity-building support provided by the program has helped to create appropriate policies and interconnection frameworks for three states, leading to an increase in one year of more than 70 MW of solar rooftop PV installations. The approach is now being scaled up across eight new states. The program has built institutional capacity of two state-owned enterprises: Indian Railways and Indian Oil Corporation Limited for procurement of 156 MW of solar rooftop PV. These interventions have created market pull and are generating interest amongst stakeholders. The presentation will describe the key lessons learned from the program, and the implications for developing an effective and sustainable approach to promoting rooftop solar PV in Developing Asia.

Iban Vendrell
Program Leader Renewables, Asia Pacific
Mott MacDonald
Benchmarking of Generation Costs and a Successful Approach to Developing Solar PV Rooftop Projects in Asia

The technological progress of solar PV rooftop projects in Asian countries has recently increased sharply as a result of cost price reduction through the competitive market of global equipment supply, as well as from successful development of ground-mounted projects. Land area issues and upcoming incentive policies also support the penetration of more PV rooftop projects. However, in its experience with PV rooftop projects in Asia Mott MacDonald's has found that certain technical, financial and regulatory challenges pose risks to developers and financial institutes. This presentation will describe analysis of the levelized cost of electricity within the PV rooftop market in key selected Asian countries and how such analysis will inform national-level plans for future investment. The presentation will also provide recommendations and mitigation measures for identified risks that serve as an indicative guide to assist in the successful development of more Asian PV rooftop projects.

Boonrod Yaowapruek
Investment Mobilization Lead
Abt Associates
Lesson Learned of Various Approaches in Scaling Up Solar Rooftop in Asia

The rise of distributed PV creates challenges and opportunities for various stakeholders. When properly planned, distributed PV can help to reduce peak demand and potentially become a new source of revenues and/or savings for utilities. However, when left unplanned, distributed PV can represent an unreliable supply of electricity that requires large investments to integrate into the larger grid system. To manage these challenges, it is necessary to understand the impact of distributed PV on the system; how to integrate distributed PV within the regulatory parameters of countries and states; how to reinforce the grid to integrate these resources; how to take advantage of electricity that distributed PV can supply; and, lastly, how to investigate growth opportunities arising from distributed PV deployment. This presentation will share hands-on experiences and lessons learned from designing, implementing and evaluating distributed PV programs in India, Thailand and the United States. It will highlight examples of approaches to scaling up solar rooftop in these countries.

Waqas Idrees
Senior Associate-Energy Programs
Hagler Bailly Pakistan (Pvt.) Ltd.
Determining the Potential for Solar Rooftop PV in Unplanned Neighborhoods Using Geo-spatial Techniques: A Case study from Pakistan

Since the early 2000s, Pakistan has seen an increase in unplanned neighborhoods due to rapid urbanization. This has burdened the electrical infrastructure due to massive electrical theft and increased loads on the grid, which have resulted in an increased energy deficit. With an ever-growing population and significant solar resource availability throughout the whole year in Pakistan, the present research aims to (1) identify available rooftop area for PV deployment in an unplanned neighborhood of Islamabad; (2) analyze problems like shading, building dimensions and location; and (3) develop an energy forecasting model for solar rooftop PV. Geographic Information Systems (GIS) and object-based image recognition was used to estimate the extract area of the rooftops, and a roof area-population relationship was used to determine the rooftop area for the entire neighborhood. The overall findings suggest that, based on solar PV panel efficiency, solar rooftop PV can generate as high as 105% the peak power demand of the neighborhood.

Harsha Wickramasinghe
Deputy Director General
Sri Lanka Sustainable Energy Authority
Different Market Development Approaches for a Market with Pronounced Tariff Differentials in Solar PV Rooftop Industry in Sri Lanka

A net-metering scheme that has been active in Sri Lanka since 2010 has managed only to skim the higher volume residential customers due to differential tariffs paid by customers based on monthly usage volume. Several market developments approaches have been used to increase the market size of the industry. The approaches were designed using a spreadsheet based tool identified as the viability matrix. The viability matrix managed to picture the entire electricity user population in a single window, and allowed policy makers to make informed decisions within a short time. The different approaches encouraged the vendors to respond to various market segments through tailor-made solutions, realizing large scale reductions in system cost. The process has created avenues for market innovation and has set a self-motivated industry on a path of discoveries.

Session 11: Leveraging Finance to Deliver Energy Access for the Last Mile

Auditorium Zone C

7 June, 2 p.m.–3:30 p.m.

The delivery of energy access services at the "last mile" is fraught with a range of challenges, each unique to its location. One of the primary challenges of achieving energy access goals is how to scale up financing for the last mile. This session will discuss the challenge of mobilizing financing, including attracting private capital and innovative mechanisms to ensure its appropriate delivery and use, as well as engaging local communities in solving the energy access conundrum for the last mile, and addressing issues of poverty, gender and social inclusion.

Session Chair

Hongpeng Liu
Director, Energy Division
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

Presenters

Koen Peters
Executive Director
Global Off-Grid Lighting Association
Off-grid Solar Electrification: Business Models and Success Stories from Around the World

This presentation will provide insights into how off-grid solar electrification markets are developing across various regions. Off-grid solar household electrification has emerged as a successful market sector from basically a standing start in 2011. Millions of households now benefit from solar lanterns providing light and power for mobile phones. Hundreds of thousands of households now have solar systems that also provide services such as powering fans, radio's, televisions and even refrigerators. Across the globe, many businesses now contribute significantly to fulfilling demands of the more than 2 billion people that remain unserved or underserved by conventional electricity utilities. But the status of off-grid markets vary considerably, and depend on the context of each country, the business models, and the success of individual businesses. East-Africa, India and Bangladesh have added the biggest numbers of households, but with very different market dynamics.

Yuvaraj Dinesh Babu Nithyanandam
Chief of Party
Nexant
Successful Innovative Financing for Scaling Energy Lending by Indian MFIs

The USAID Partnership to Advance Clean Energy - Deployment (PACE-D) is a bilateral program between the US and India. The program has an initiative that aims to increase the number of households with access to clean and modern energy products through enhanced availability of microfinance. The program has provided technical assistance to 7 MFIs and achieved great success over the past 2 years. More than 260,000 households gained access to clean and modern energy products and services, of which over 230,000 were financed by MFIs, resulting in 1.3 million beneficiaries across India. Also, more than US$9.1 million has been lent by the MFIs in their growing clean energy portfolios, and an additional $7.3 million in private sector investment has been leveraged. This presentation will highlight the critical role that MFIs play in last-mile energy access, illustrate program experiences including business models, impacts and key lessons learned, and discuss further potential for scaling up financing for the last mile.

Adriana Karpinska
Renewable Energy Fellow
Pact Myanmar
Transforming Rural Myanmar through Increased Access to Clean, Reliable Energy - Ahlin Yaung Fund

Since 2014, Pact has been developing renewable energy and financing solutions, leading to the roll-out of the country's first community energy access fund, the Ahlin Yaung ("light" in Myanmar language) Fund. Using village-level consumer data on spending, and building on Pact's extensive community coverage, Pact has now brought quality affordable energy to 105,000 beneficiaries in central Myanmar, primarily through solar home systems, by lowering the financial barrier of high upfront costs for rural customers. With essentially 100% repayment, Pact uses the revolving funds to expand to new regions and townships. The Fund itself incentivizes community ownership by returning interest generated to the village for further development needs. Recognizing the transformative power of energy that can support increased income-generating activities, Pact has made a strategic commitment to expand our efforts to incubate mini-grid market solutions through community-financing models.

Dipal Barua
Founder and Chairman
Bright Green Energy Foundation
Financing Energy Access for the Last Mile: Bangladesh Experience

Bangladesh has provided energy access to more than 4.5 million rural off-grid, energy-starved households (serving 25 million people) through the installation of solar home systems. This was achieved by making the systems affordable, through a monthly, installment-based innovative financial model pegged at the price of kerosene. This approach can be replicated in any energy-starved developing country in the world.

Piyush Mathur
Chief Executive Officer
Simpa Networks
Financial Innovation for Unlocking Domestic Commercial Capital

To achieve universal energy access, it is imperative that we create a local financing ecosystem that can support the sector in scaling up. This is key to make the sector sustainable and also to mitigating the currency risk that often hinders scalable financing. For this, we must engage mainstream financial institutions like commercial banks, finance companies, and ultra high-net-worth individuals to gain initial exposure to this sector, understand the business models, and watch the risks so that they can price opportunities for repeatable financing. This presentation will show how one ADB-funded Energy Access company, Simpa Networks, developed financing structures and has succeeded in unlocking capital from local banks and finance companies in India, providing a template for the entire global energy access sector. The presentation will also provide ideas on how other investor classes like ultra high-net-worth individuals can be engaged to commercially solve a social problem.

Session 12: Technology Innovation: Part I—Feng Shui and the Hydrogen Economy

Auditorium Zone D

7 June, 2 p.m.–3:30 p.m.

The clean energy future will be built largely on traditional solar and wind energy resources. Where these mainstream technologies may not be applicable, there are abundant untapped resources from the earth and the sea. Low-temperature geothermal resources are widely available for energy services other than electricity. Concentrating solar power is also evolving to service a variety of energy applications. Marine energy systems, floating solar, and hydrogen technologies are on the verge of potentially rapid growth. This session will provide a status report on these technologies.

Session Chair

Dan Millison
Manager
Transcendergy L.L.C.

Presenters

Alan Kneisz
Director - Business Development
Hydrogenics
The Hydrogen Shift in Asia: Practical Applications to Maximize Renewable Energy with Hydrogen

Hydrogen and Fuel Cells are quickly being adopted in Asia Pacific. Hydrogen as energy storage has flexibility for applications and is being adopted in many AP countries like Thailand, the Republic of Korea, the People's Republic of China and Japan. While there is a revolution in Fuel Cell transportation with Japan and the People's Republic of China deploying thousands of fuel cell vehicles already while using excess renewable energy (Wind and Solar) for the Hydrogen production for fueling. Developing Asia can use Hydrogen as a storage for remote power instead of highly polluting batteries.

Vaidotas Kirsys
Environmental Advisor Managing Director
Swimsol GmbH
SolarSea by Swimsol – PV Systems that Float at Sea

In the tropics, solar power is the renewable energy of choice. But on many islands and in some coastal regions, space for solar panels is limited. A recent technological advancement makes it possible to utilize the vast surface of the oceans to harness virtually unlimited solar power. Having been developed by the company Swimsol, the SolarSea concept was first introduced in the Maldives. It can be used in sheltered bays around the world and makes large solar systems possible without consuming valuable area on land. This presentation will share findings from previous projects and present an outlook for taking solar energy offshore of densely populated areas in Southeast Asia.

Stephane Tromilin
Task team leader
AFD (French Development Agency)
Tidal Energy Projects in Indonesia: Supporting the Emergence of First Tidal Farms in Indonesia

In 2016, with support from the French Development Agency (AFD), the Indonesian Ministry of Energy and PLN, the Indonesian electricity utility, initiated an initiative that will launch a call for projects to develop the first sizeable tidal energy projects in Indonesia. The initiative is structured in 3 phases: (i) selecting sites that present an interesting technical and economic potential, (ii) performing acoustic Doppler current profiler measurement campaigns on these sites, and (iii) conducting the call for projects. In order to select sites, an analysis was conducted to gather all the existing published data on technical potential (current speeds) and cross-check them with local electricity demand, generation cost, and grid capacity. Out of the 15 sites initially selected, 10 are under investigation through current modelization. Final sites selection is expected to be finalized by the end of the first semester 2017.

Christian Gertig
Principal Engineer – Solar
OST Energy
CSP Perspectives in Asia Pacific

Concentrated Solar Power (CSP) has suffered from a downturn after the plummeting of the Spanish market and due to the competition from solar PV. However, the industry is experiencing renewed interest, as the People's Republic of China announced the first 20 demonstration projects to receive a Feed-In Tariff. Jointly with an already established supply chain for CSP components, the People's Republic of China has the potential to revive the industry and drive down costs. This presentation will examine the Chinese CSP market and puts it into perspective with the global CSP landscape. It will evaluate the potential for CSP deployment in other markets in the Asia-Pacific region, based on available solar resources and other criteria. Finally, it will present an outlook for the CSP market, including trends and developments in the industry, and a likely mid-term pathway of market development for CSP.

Lin Lu
Energy Specialist, Energy Division, East Asia Department
Asian Development Bank
The "Other Geothermal" Energy

Low-grade geothermal resources have enormous potential for district heating, industrial process heat, and other applications. The potential has been systematically overlooked in developing Asia, partly due to lack of knowledge and partly due to a focus on geothermal resources for electricity generation only. This presentation will describe recent experience with ground-source heat pumps and deep-well geothermal district heating in East Asia, with a view toward future replication and scale up, as well as other applications.

Knowledge Networking Session

Auditorium Zones A-D

7 June, 4 p.m.–5:30 p.m.

The Knowledge Networking session is a platform for practitioners to present the very latest innovations and stand-out initiatives. During this fast-paced and highly engaging event, participants will rotate between different tables every 10 minutes to learn about game-changing ideas, practical applications for new clean energy technologies, innovative new business models in the clean energy space, successful clean energy investment funds and strategies, and many more cutting-edge topics.

Apsara Katugaha, Sri Lanka Sustainable Energy Authority, *Biomass Energy Development Areas (BEDA) for Retaining Renewable Energy Share in Primary Energy Supply in Sri Lanka*

Apurva Chaturvedi, USAID India, *Towards Net Zero - Energy Efficiency Building Code Update for India*

Ayu Abdullah, Energy Action Partners, *Minigrid Collaborative Planning Tool*

Bansari Saha, ICF, *Analyzing Job and Public Health Benefits from Clean Energy Policy Choices in Bangladesh*

Bernie Jones, Smart Villages Initiative Smart Villages, *Making the Transition from Energy Access to Holistic Development Sustainable*

Beth Adler, USAID Credit Development Authority

Bill Meade, USAID Indonesia Clean Energy Development Project, *Shifting Sands – Regulatory Challenges to Renewable Energy Project Development in Indonesia*

Boonrod Yaowapruek, Abt Associates, *How Developing Asia Can Make the Most of Distributed Solar PV (DPV) Deployment*

DG Hans Friederich, INBAR,Bamboo as a Source of Renewable, *Sustainable Energy for Developing Countries in Asia*

Ganyfer Dorado, Alterna Verde Corporation, *Breaking the Norms: Efficient and Effective Waste-to-Energy Biogas Systems in the Philippines*

Hemant Nandanpawar, Ernst & Young, *Is Large Scale Integration of Renewables into the Grid Possible in Emerging Economies That Have Funding Challenges?*

Igor Skryabin, Australian National University, *Energy Technology Assessment to Enable Uptake of Renewables*

Ingo Puhl, South Pole Group, *Using Blockchain Technology to Accelerate Investment in Distributed Energy/Access for All: Use Cases for a Meter-Linked Payment Platform to Manage Performance, Intra-System Trading and Refinancing*

John Bruce Wells, Deloitte, *Catalyzing Renewable Energy Deployment through Pure Air Zones*

Kamani Jayasekera, Ceylon Electricity Board, *Challenges of Power System Planning in the Grid Integration of Solar Power in Hambantota, Sri Lanka*

Lachana Shresthacharya, Centre For Rural Technology, Nepal, *Women-centric Distribution System for Improved Cookstoves (ICS) Evolving in Nepal*

Matthias Gelber, *How to Make Energy Efficiency More Outstanding*

Muditha Karunathilake, RMA / SLEMA, *Establishing Electricity Transmission and Distribution Loss Targets for Sri Lanka*

Ryan Hogarth, Oxford Policy Management, *Nested barriers to Low-carbon Infrastructure Investment*

Vinod Kumar, Ernst & Young LLP, *Adoption of VPPs Globally and in India*

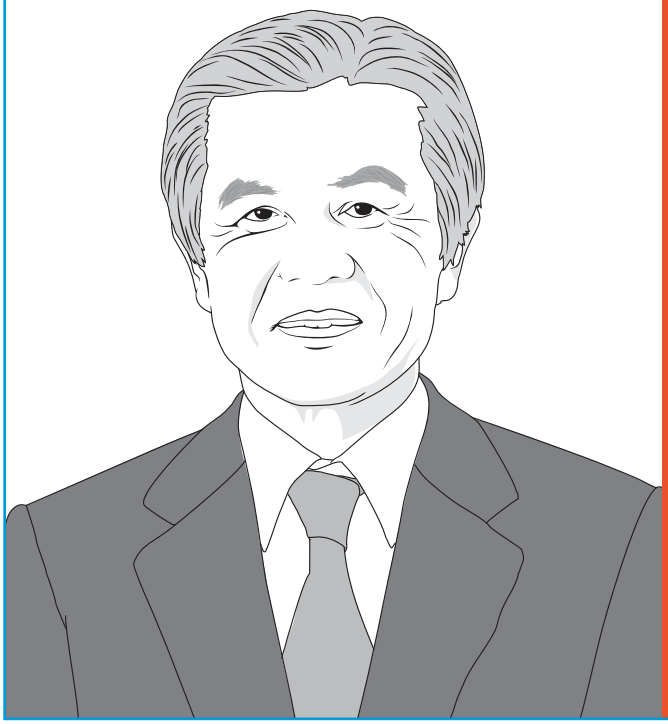
Subarna Kapali, Ajummery Bikas Foundation, *Private Sector-Led Social Marketing of Renewable Energy*

Toby Sirseth, Foundation Renewable, *Substantially New Options on Marine Harvesting of Electricity & Hydrogen, Offshore Aquaculture and Freshwater Production Including Oxygenation of World's Oceans*

Umesh Bhutoria, E-Cube Energy, *Shared Economy in Energy Efficiency Markets & Central Data Repositories*

Vikram Mulye, Gamesa, *Potential and Significance of Wind Solar Hybrid (WiSH) Energy Systems*

Won-Jung Yoon, Korea District Heating Corp. (KDHC), *The Concept and the Effect of the Integrated Operation Center*



Beyond the Limits to Growth:
New Ideas for Sustainability from Japan

HIROSHI KOMIYAMA

Chairman, Mitsubishi Research Institute, Inc.;
President of the Platinum Society Network;
and 28th President of the University of Tokyo

Catch him live at ADB

8 June 2017

10 a.m.–11:15 a.m., Multifunction Halls 1 and 2

8 June 2017

Session 13: Sustainable Fiscal Instruments

Auditorium Zone A

8 June, 8:20 a.m.–9:50 a.m.

Countries across the world have been able to support energy efficiency and conservation objectives through various fiscal instruments. These include dedicated energy efficiency funds, or revolving funds supported by taxes, tax incentives and import-duty reductions for energy-efficient equipment. This session will explore different types of fiscal instruments, how they can be used to achieve energy efficiency objectives in Developing Asia, and why they have, or have not, worked.

Session Chair

Andrew Jeffries
Director, Energy Division, Southeast Asia Department
Asian Development Bank

Presenters

K J C Vinod Kumar
Manager
Ernst & Young
Energy Efficiency Insurance: Global and Indian Scenario

This presentation will describe the emerging role of Energy Efficiency Insurance Products in financing energy efficiency, and how they work. Investments in the energy efficiency sector face barriers such as uncertainty of receiving projected energy savings, technical incompetence to verify project specifications, and the prospect of disputes with an energy service company (ESCO) over achieved savings. An Energy Efficiency Insurance Product is a formal insurance contract between an insurance company and an ESCO that aims to boost the confidence of the investor and the building ownerin the financial viability of energy efficiency measures. It is purchased to back the energy savings guarantees offered by the ESCOs, and it aims to mitigating the financial risk faced by building owners and investors in case the energy efficiency solutions fail to produce the expected savings. Under the insurance contract, the insurance company, for a premium in the range of 2%–6% of the guaranteed energy savings over the term of the policy (usually 5-10 years), agrees to pay any shortfall of savings below a pre-agreed baseline.

Narayankumar Sreekumar
Associate Fellow
The Energy and Resources Institute (TERI)
Promotion of Energy Efficient Air Conditioners in India- Case study from State of Tamil Nadu

Availability and accessibility of adequate electricity infrastructure is necessary for ensuring continued economic development in any country and India is no exception. In this context, conservation and efficient use of energy is of paramount importance. With rising living standards and rapid continuing growth in residential housing, TamilNadu witnessed a tremendous demand growth in domestic sector which is primarily attributed by space conditioning load owing to the hot and humid climate prevailing throughout the state. In this context, a study was conducted to design an implementable scheme to promote energy efficient air conditioners in TamilNadu. Through market and consumer level survey, consumption pattern, level of awareness and barriers in the promotion of energy efficient appliances among consumers were identified. Based on these inputs, institutional mechanism, financial models and communication strategy for promoting energy efficient air conditioners in the state were formulated.

Session 14: Innovations for End-use Sectors: Cooking, Hot Water and Heating, and Industry

Auditorium Zone B

8 June, 8:20 a.m.–9:50 a.m.

Renewables energy applications for the end-use sectors are generally less developed than those for the power sectors. This session will highlight experiences from three continents on the use of renewable energy technologies in specific end-use applications, spanning experiences residential uses to commercial and industrial settings, for cooking, heating, cooling and transport.

Session Chair

Priyantha Wijayatunga
Director, Energy Division, South Asia Department
Asian Development Bank

Presenters

Ishtiaq Chisti
Chief Consultant
Ishtiaq Chisti Consultants
Powering End Use Using Renewable Energy

The demand for renewable energy to power activities that are commonplace and essential in Bangladesh is huge and continues to grow. The major drivers are economics and replacement of human labor with automation. An added incentive is the desire to "go green" when the end user is made aware of the impacts of climate change. This presentation will highlight the work of the renewable department of the United International University (UIU) in Dhaka. The renewable applications of end-use products and services are numerous, and the UIU researches have undertaken several projects that present unique opportunities. The presentation will discuss results from a variety of projects including a solar-powered boat, solar-power rickshaws, solar cooking stoves, a 15-kW solar mini grid, challenges of a cold storage facility in a remote location using solar power, and cost-effectiveness of battery storage."

Nicholas Wagner
Associate Programme Officer, Renewable Energy Roadmaps
IRENA
Deep-Decarbonization of the End-Use Sectors: The Role of Renewable Energy

The Paris Agreement aims to keep the global temperature rise to "well below" 2°C. The term "global energy transition" has emerged as the buzzword signifying accelerated transition to a low carbon future and deep decarbonization efforts in energy. Much of the focus has been on decarbonizing the power sector. However, a large challenge in reducing emissions lies in the end-use sectors of heating and cooling in buildings and industry, as well as in transportation. Emissions from these sectors must drop 60% by 2050 compared to today's level according to a recent study by IRENA. Innovation in new technologies, energy service models, interlinking of the various energy sectors, and digitalization of our energy system will be crucial. This session will highlight findings from a recent decarbonization study carried out by IRENA looking at this challenge, and will build on an analysis IRENA has done for countries in Southeast Asia.

Gyandendra Raj Sharma
Livelihood Expert
Centre for Rural Technology, Nepal
Productive Uses of Energy in Women-Led Enterprises

Rural Nepal is facing an outflow of male citizens abroad for earning opportunities. Thus, women entrepreneurship is key to achieving the sustainable development goal (SDG) on gender equality and women empowerment. Despite the situation, women-led energy enterprises are few in number, and face many challenges. Inability to take business decisions and lack of cognitive awareness and skills are among major factors hindering their success. The approach of the WEE-Nepal Project is to

groom energy entrepreneurs through various knowledge building and skill trainings with loan and market linkages. The project also provides intensive business mentoring to help companies build their businesses by fostering their cognitive awareness and capacity to ensure the efficient and productive uses of energy.

Michael Oke
Executive Director
Michael Adedotun Oke Foundation
The Overview of the Use of Solar Energy in a Typical Farm in Gaube Kuje area

In the farming communities of the Federal Capital Territory, there is a strong demand for electrical power for mechanical purposes. Generation of electrical power by coal power plants or nuclear power plants will result in environmental pollution, which will damage agricultural activities that include irrigation, harvest and post-harvesting labor, preservation and drying of crops. Access to modern electricity will help average farmers increase their standard of living, especially during the off seasons where there is not enough rain to support agricultural activities and provide income. This presentation will focus on the promotion of solar energy in the agricultural sectors and explain the different domestic uses of the energy generated in the Federal Capital Territory, Abuja, Nigeria. During visits to the farms in the Kuje area council of the Federal Capital Territory, energy was generated through the sun to provide electricity to households. In addition, the electricity generated from solar sources was also used to power the mechanical process of creating boreholes that are necessary for various irrigational purposes in the agricultural farms.

Session 15: Energy Access Leaders and Voices from the Grassroots

Auditorium Zone C

8 June, 8:20 a.m.–9:50 a.m.

The session, which is jointly organized by ADB, Private Financing Advisory Network - Asia (PFAN - Asia), and ENERGIA, will showcase real life experiences of four (4) women energy entrepreneurs from the grassroots. The selection has been made through a call for nominations for women-led businesses, followed by evaluation by a jury. The selected entrepreneurs have been invited (together with a representative from their parent organization) to attend and present at ACEF. At the same time, the parent organization is receiving mentoring support through the PFAN network, in order to help them develop business plans and secure funding for their businesses and initiatives.

Session Chair

Soma Dutta
Programme Coordinator
ENERGIA

MK Balaji
Chief of Party
PFAN Asia

Presenters

Kamala Dhakal
President
Aastha Engineering Solution Pvt.Ltd.
Post Harvest Technology and Food Management

The project, with an estimated cost of $2.744 million and a project life of 5 years, aims to establish a drying unit for 252 cash crops in 21 districts in Nepal. Each drying unit will consist of 10 solar conduction dryers that will dry out fruits and vegetables (cardamom, ginger, turmeric, green tea, etc.) to enable farmers to preserve and sell the products for a higher price. Collection, distribution and selling centers will be established at the local and regional levels with the main center located in Kathmandu. The technology to be used is the solar conduction dryer, an innovative technology introduced by Kamala and her team in collaboration with Science for Society Pvt. Ltd., India. The project will be able to generate local employment opportunities in rural Nepal while at the same time promote the utilization of innovative RE technologies. The project is especially designed

to empower women by providing them with entrepreneurship opportunities at the local level. It will likewise establish a food processing industry that will be able to sell and promote products from Nepal in the global market.

Akansha Singh
Entrepreneur
Swayambhu Innovative Solutions Pvt. Ltd.
Decentralized Community Bio-gas Plant

The project, with an estimated cost of USD 47,000 and a project life of more than 40 years, aims to engage, promote and support un-electrified villages and small and marginal farmer's communities in Bihar, India by installing biogas digesters that will provide them with low cost electricity for electrification and irrigation and also producing low-cost organic fertilizer and natural pesticide. It is envisioned that the project will be able to electrify at least 10,000 households per year and provide assistance to more than 5,000 farmers with the help of this low-cost, clean energy solution. It is also hoped that vehicles such as tractors used on farms and vehicles used for public transport will run on biogas.

Naly Yang
Director
Naly Agriculture Pty Ltd
Cooking Fuel Alternative and Livelihood Development

The project, with an estimated cost of $55.2 million and a project life of 20 years, will involve the production and supply of alternative cooking fuel made of paddy husk in the Champasak Province of the Lao People's Democratic Republic. In addition, the project will involve the creation of rice farmer networks and agribusiness involving noodle production, animal feed manufacturing and bio-fertilizer processing which will greatly benefit the farmers in the area. Specifically, the project will produce high-quality charcoal from paddy husk. The husk-to-charcoal solution will be more economically efficient and commercially viable, as the rice husk can be obtained at little or no cost. By the end of the project, it is envisioned that 60% of cooking fuel needs in the province will be met. The project will promote social and economic development through the development of commercial activities that will create employment opportunities, while increasing knowledge and capacity that will benefit rural farming communities in the province.

Kalpana Rai
Improved Cookstoves Entrepreneur
Kalpana Kitchen Wares and General Store
Promoting Women-led Enterprises for Energy Access

Women in the rural areas of Nepal lack capacity and knowledge related to entrepreneurship. Access to clean cooking solutions is limited in these rural areas. The project, with an estimated cost of USD 539,000 and a project life of 3 years, aims to bring women into the value chain of improved cookstoves (ICS) as entrepreneurs, with the aim of increasing access for rural people to improved cooking solutions. It has a target of promoting 300 women entrepreneurs in the ICS business. The project's skills and entrepreneurship training includes business mentoring support. It will also facilitate a link up with local financial institutions, if needed, as well as awareness raising activities. This project is the first of its kind in Nepal that aims to establish women as ICS entrepreneurs and this is crucial for the sustainability of the supply of ICS in remote rural communities of Nepal.

Session 16: The Food-Energy-Water-Resilience Nexus: Part II – Gigatech Solutions for Gigaton Problems

Auditorium Zone D

8 June, 8:20 a.m.–9:50 a.m.

The interrelationships of food-energy-water- and resilience cannot be overlooked, given the fact that most developing countries that are experiencing huge energy demand growth potential also water stressed. We can envision a world with 100% clean energy, but that will not matter if we cannot feed 9 billion people. Gigatech solutions for gigaton problems that will discussed in this session include: climate-proof drinking water via atmospheric water generation, urban and vertical farming for industrial-scale organic food production, 3-D printing of sustainable building materials from seawater, and financing options for these disruptive systems.

Session Chair

Gil-Hong Kim
Senior Director concurrently Chief Sector Officer, Sustainable Energy and Climate Change Department
Asian Development Bank

Presenters

Stella Liu
Fulbright Scholar
IBM / UC Irvine
Lessons Learned from Growing Food in 100% Urbanized Singapore

Despite being a city-state, Singapore was ranked #3 in food security by the Global Food Security Index. The country has been able to accomplish this feat while importing over 90% of its food. While this strategy has been successful, climate change poses risks to the country's food supply. This reality has pushed the topic of local food production to the forefront of Singapore's civic sphere. As a result, there has been an increase in agro-parks and urban farms. This talk will cover the policy enablers that helped grow this movement and focus on two successful farms, Panasonic and Sky Greens, and examine their business model, technologies and lessons learned. Sky Greens, the world's first hydraulic driven vertical farm, is 10 times more productive than traditional farming and efficiently re-uses rainwater to grow its crops. Panasonic, an indoor LED vegetable farm, produces vegetables twice as fast as traditional farming, with a lower carbon footprint.

Ralph Becker
CEO
Urban Greens
Accessible Indoor Urban Hydroponic Farming - Solution for The Megalopolis?

Our farmlands are pushed to the limits by population growth but more people move away from the countryside to seek a more promising life in the ever-expanding megacities. When asked, we advocate for a more sustainable world as a growing middle class is developed, but we look away from the carbon footprint of our daily lifestyles and its impact on the planet. We face big challenges in the areas of food, water, and energy. Hydroponics keeps us from wasting precious water on inefficient conventional farming methods, while reducing the energy and other resources required to bring farm products to the table. Hydroponics can cut a third of all energy used and the resulting carbon footprint associated with in fertilizing and transporting food and food related products. Accessible indoor urban hydroponics for the middle class and below is a key to solve the energy and food crisis we are facing globally.

Cody Friesen
Founder and CEO
Zero Mass Water
Zero Mass Water: 21st Century Innovation at the Energy – Water Nexus

When resources are scarce—as they are now, and becoming even scarcer - "silo thinking" is no longer an option. We must manage energy, water and food as a system to ensure that we can provide these basic needs sustainably and resiliently. In a world where the global population is headed to 9 billion in this century, the question is clear: how will we deliver these resources to all in a fair and equitable manner? The solution to ensuring access to basic human needs such as safe drinking water requires democratizing access, by transferring access and ownership directly to the consumer and customer. This democratization is now possible through off-grid, climate-proof, renewable safe drinking water." Zero Mass Water will discuss its experience providing secure access to safe drinking water for under-served consumers in a variety of climatic regions, its experience indicates that a scalable solution is readily available and affordable.

Scott Countryman
Managing Director
The Coral Triangle Conservancy, Inc.
Sustainable Building Materials Grown in Seawater

A process for electrolytic deposition of calcium carbonate (CaCO3) from seawater was pioneered in the late 1970s by Wolf Hilbertz, whose original idea was to make sustainable building materials. The process is derived from cathodic protection

systems used on offshore oil and gas platforms. The science is well understood, and the technology has been deployed on numerous artificial reef projects. However, there has been no systematic attempt anywhere in the world to develop a commercial system for sustainable building materials. Based on current market prices for limestone and limestone-based construction materials, commercial production appears to be viable. This is one of the only technological prospects for sustainable building materials production with infinite scalability, and ecosystem and climate resilience co-benefits: electric reefs have proven to be resistant to bleaching and acidification. The presentation will include a description of experiences from an ongoing project in the Philippines.

Russell deLucia
Principal Founder & Innovation Director
S3IDF
S3IDF's Perspectives on the Clean Energy Future: Focus on 21st Century Interlocking Crises

S3IDF demonstrates and disseminates an alternative market-based development paradigm that leverages development and philanthropic capital for sustainable poverty alleviation, where clean energy is an integral part. Our work addresses one or more of the 21st century nexus of crises: i) food security, ii) water security; iii) employment creation, iv) environmental resilience. Solutions often require pairing electricity and electricity-enabled technologies (drip irrigation, small potable water reverse osmosis) and new/emerging small- and utility-scale commercial electricity storage. More is needed from players in the clean energy sector who deploy development and/or philanthropic capital, including new/modified thinking about the economic versus social impact calculus for investments and programs.

Session 17: Market-Based Instruments

Auditorium Zone A

8 June, 11:30 a.m.–1 p.m.

Governments around the world are keen to reduce the costs of energy efficiency programs and create an environment where the private sector invests in energy efficiency. Many mechanisms such as tendering schemes, energy efficiency obligations, white certificates, ESCO models etc., have been successfully used in different countries. This session will explore which of these mechanisms work well, under what circumstances, and why.

Session Chair

Todd Sorenson
Deputy Mission Director
USAID Asia

Presenters

Nimashi Fernando
Executive
Sri Lanka Sustainable Energy Authority
Phasing Out Inefficient Refrigerators in the Sri Lanka Market

A five year Demand Side Management Programme was formulated in Sri Lank with the aim to decrease national energy consumption of the country by 1,895 GWh by 2020, which equals 10% of consumption in 2010. Phasing out inefficient refrigerators will contribute nearly 10% of this goal (161 GWh). Refrigerators account for 50% of monthly electricity consumption in a typical Sri Lankan household. Approximately, 2.5 million households consume between 60 – 180 kWh/month. Refrigerators of 190 liters and 240 liters are popular capacities among these customers. If 100,000 refrigerators were replaced annually, for five years, 169 GWh could be saved. Replacement will take place through vendors and bank/financing institutes. A customer can purchase a refrigerator of his preference, and the value will be deducted from the electricity bill for five years. Only refrigerators that conform to the Minimum Energy Performance Standards will be considered, and the standard is 30% more efficient than current refrigerators.

Gokul Pandian
Head - Energy Efficiency
ICF Consulting India Pvt Ltd
India's Market Based Scheme for Industries: A Critical Review

To meet the growing energy demand and to mitigate the carbon emissions from the Industrial sector, India designed a unique market-based scheme for large industries called Perform Achieve & Trade (PAT). Under PAT, mandatory Specific Energy Consumption (SEC) reduction targets were assigned to selected industries named as Designated Consumers (DC). The DCs need to achieve their targets within a span of 3 years. Over-achievers of the targets will be issued Energy Saving Sertificates (ESCerts) equivalent to the amount of additional savings. The underachievers of the targets may purchase ESCerts from the overachievers. The government of India has issued ESCerts for PAT cycle 1, and they have also rolled out targets for PAT cycle 2. This presentation will provide a critical review of the trading market, future market scenarios, and a way forward for PAT cycle 2.

Alexander Ablaza
Technical Advisor
ADB-OPPP/SERD Transaction Advisory Team, Melaka Road Lighting Project
Mobilizing Private Capital for Energy Efficiency through PPP Structures: ADB's PPP Transaction Support for the State of Melaka's Large-scale LED Street Lighting Project, Malaysia

Amid a global imperative to scale-up private capital flows to energy efficiency (EE) projects, including those in the public sector, innovative financial mechanisms are needed to remove persistent financing and investment barriers in developing countries. Supported by the collaborative efforts of the Melaka State Government, the Office of Public-Private Partnerships of ADB and the Southeast Asia Department of ADB, a PPP vehicle is being structured specifically for the replacement of an estimated 107,525 high-pressure sodium street lighting luminaires with a smarter LED system. ADB's transaction advisory assistance has confirmed how significant LED energy savings, maintenance and other co-benefits can be employed alongside other financial solutions to bridge viability gaps due to energy subsidies in Malaysia. This Melaka PPP model which will build a virtual 10MW peaking plant should inspire replication across other Asia-Pacific markets as an alternative financing modality for public sector EE.

Muhammad Saleem
Additional Director
State Bank of Pakistan
Role of Central Banks in Promoting Clean Energy: A Case of Green Banking Guidelines

The State Bank of Pakistan took the challenge to underscore the role of banks and DFIs as responsible corporate citizens and inculcate a paradigm shift in its business practices regarding green investments, by introducing Green Banking Guidelines. These guidelines include (a) Risk Management (Increasing financial stability by guiding banks/ DFIs to manage exposure of their financing portfolios to environmental risks); Business Facilitation (encouraging banks/ DFIs to develop the "green" market by actively exploring emerging business opportunities to finance clean energy and resource efficiency projects); and Own Impact Reduction (inducing banks to consider re-engineering their internal operations and procedures to reduce their own impact on environment and society). The Green Banking Guidelines present a holistic approach for Pakistan's banking sector to adapt to the changing environment, take necessary precautionary measures, and prepare for the upward potential of green business avenues.

Jiwan Acharya
Senior Energy Specialist
Asian Development Bank
Reaching Out to Millions in a Short Time—Experiences of Energy Efficiency Services Limited in India

The Government of India has recognized the need to achieve more sustainable low-carbon growth and has taken bold steps toward that end, including establishing the National Mission for Enhanced Energy Efficiency (NMEEE) as one of the eight missions under India's National Action Plan on Climate Change. ADB has approved a $200 million project for Energy Efficiency Services Limited in India, a joint venture between four public sector bodies that will use the ADB funds, alongside another $200 million of its own to implement the project and also get further established as the super energy service company (super ESCO) which is essential to demonstrate a viable business model to transforming the market through energy-efficient technologies. EESL experience on developing and implementing strong monitoring and verification system, strong repair and maintenance system built in, outreach campaign to reach out to millions and contribute to meeting India's commitment to reduce GHG emissions as per Nationally Determined Contributions for UNFCCC. The experiences and lessons learned could be replicated in other countries as well.

Session 18: New Generation of Renewable Energy Policies

Auditorium Zone B

8 June, 11:30 a.m.–1 p.m.

The new era of renewable energy development, in which the cost of renewables is reaching "grid parity", calls for a rethink of renewable energy policies and regulatory frameworks. Countries are rapidly moving away from feed-in-tariffs and testing different approaches such as reverse auctions and simple net metering policies. Innovative frameworks and relevant schemes need to not only reflect the paradigm change in RE, but more importantly guide the further development and cost-effective deployment of renewable energy applications. This session will showcase experience and knowledge arising from the changing policy regimes and market conditions across the globe.

Session Chair

Olly Norojono
Director, Transport, Energy and Natural Resources Division, Pacific Department
Asian Development Bank

Presenters

Aretha Aprilia
Lead - Community Renewable Energy
CDM Smith
Off-grid Renewable Energy Policies in Indonesia

In Indonesia, 2,015 villages will remain un-electrified by 2019. Ministerial Decree No. 38/2016 aimed to help expedite electricity development in remote villages. Subsequently the Ministerial Regulation No. 12/2017 on New and Renewable Energy (RE) aimed to regulate tariffs for electricity generated from RE. However, it potentially hampers investment in RE, as the government does not yet provide incentives. Challenges of rural off-grid RE include the high costs of mobilizing equipment to remote sites, battery replacement, O&M, and personnel (and questions as to whether revenues from electricity sales alone may cover these costs). Possible strategies for the government are: 1) prioritization of villages to be electrified, by considering the existing or potential businesses/SMEs in the village that may provide another stream of revenue for the community to cover O&M and personnel costs, 2) development of an access road for prioritized villages to enable mobilization of equipment to the site, 3) and preparation of incentives mechanisms.

Hugo Lucas Porta
Head of Energy Department
Factor
Renewable Energy Tenders and Community [em]Power[ment]

This presentation will desribe the process of tendering for hybridization of diesel-based mini grids with solar PV in Mali, Madagascar, and Philippines, carried out in 2016. Financed by the German Cooperation Agency (GIZ) within the Renewable Energy Project Development Programme (PDP), the project included development and implementation of training on tendering design for renewable energy. In addition, technical assistance was provided to governments and key actors (in Mali, Madagascar, the Philippines, and Myanmar) in setting the right regulatory framework for tendering electricity supply in isolated areas through PV-diesel mini-grids.

William Green
Senior Advisor
Multiconsult ASA, Norway
The Return of Carbon Finance for Renewable Energy Projects : When? What? How? Really?

At its height in 2007, the Clean Development Mechanism of the Kyoto Protocol attracted approximately $15 billion of private and public funds for the purchase of carbon credits (CERs), many of them from renewable energy projects in Asia. The subsequent collapse in CER prices crippled not only the market, but also the confidence of investors, project developers and

policy makers. The CDM limps on but will be superseded by a new international mechanism for emissions trading & cooperation established under the Paris Climate Agreement (Articles 6.2 & 6.4). Details remain sparse and are subject to negotiation. At the same time, national and sub-national emission trading systems are evolving fast in Asia. Several of them allow targets to be met with project-based credits but again, the rules and economics are unclear. This paper asks: When will carbon finance for renewable energy projects return? What form will it take? How will it work? Do we need it? And do we even want it?

Molly Hurley-Depret
Storyteller and Policy Manager
Smart Villages Initiative
Smart Villages: Global Insights into Climate-Smart Energy for Villages in Asia

Novel technology and business models are being applied internationally for energy access, with innovations in productive use to drive rural development. Approaches differ, however, and regions have distinct areas of focus and strengths. There is insufficient cross-fertilization of experience and transfer of technology and ideas. Since 2013, the Smart Villages Initiative has run 40 consultative workshops across Asia, Africa, and Latin America, gathering insights from 1000 entrepreneurs, innovators, NGOs, communities and other grassroots actors as well as funders and policymakers, to uncover opportunities and challenges to energy access and energy-catalyzed rural development around the world. This presentation will summarize the most innovative technologies and business models for off-grid energy access and productive uses in Asia, and will present key findings and recommendations for ensuring they succeed. It also highlights innovative findings, models and technologies from other regions that could be profitably transferred and applied in Asia."

Bansari Saha
Technical Specialist
ICF
Planning for Energy System Resilience to Ensure Energy Access and GHG Mitigation: A Focus on Hydropower

This presentation will highlight how the climate resilience of energy plants and systems are integral for ensuring both reliable energy access and GHG mitigation, and will also underscore how investments in renewables can build in resilience. Emphasis will be placed on the challenges of anticipating, planning for, and adapting to variable hydro resources as a result of climate change in order to avoid potential increased investment in higher (fossil fuel) emitting energy resources and to maintain service reliability. It will also introduce tools and processes to help energy planners and investors manage climate risks at both the national power system planning level, and at the project level—including application of a hydropower screening tool to assess climate risks to performance of plants located in five Southeast Asian countries.

Session 19: The Energy Access Nexus: The Multiplier Effects of Energy Access to Meet Community Needs

Auditorium Zone C

8 June, 11:30 a.m.–1 p.m.

Energy services are a crucial input to supporting the provision of basic needs such as food, a comfortable living temperature, lighting, piped water, essential health care, educational aids, communication and transport. They also are a necessary input for income generation through powering agriculture, industries and mining. This session will focus on the "nexus" issues surrounding energy access and how best to utilize energy services to catalyze overall development and poverty reduction in sectors such as agriculture, and food processing, as well as for community services such as health, education, public institutions, and infrastructure.

Session Chair

Akanksha Chaurey
CEO
ITP India

Presenters

Anjal Niraula
General Manager
Gham Power
Data Driven Approach to Developing Solar-Based Productive End Use Services

Governments all over the world have spent millions on solar-based productive end use services (water pumping solutions + milling + chilling) to help rural farmers generate revenue and move up the energy ladder. However, the impact of such solutions have not been fully realized, primarily because governments and developers do not have sufficient data regarding the requirement of the farmers which allows them to design and deploy a system with the right size. Furthermore, once deployed, they cannot measure the utilization of such systems and potential yield resulting from farmers having access to water. The solution providers also lack sufficient understanding of user behaviour and also lack access to local agricultural data to help provide the solutions that balance the cost of these productive end-use services with the potential increase in revenue for the end user. This presentation will describe an approach that involves using existing data sets to develop a project development platform that enables project developers help design a project accurately. Also, through the deployment of smart meters, Gham Power plans to collect field data that helps developers understand user habits and their implication in project feasibility.

Dann Diez
Executive Director
Sustainable Energy and Enterprise Development for Communities—Innovations and Sustainable Energy Solutions for All

Seed4com, a non-profit organization promotes renewable energy (RE) to "last mile" communities and communities prone to disaster risks in the Philippines. Seed4.com works with collaborative partners from academia, industries, and civil society organizations to increase access to clean energy for all last mile communities. For the past three years, the Seed4.com's Energy for All Program, which is sustained through collaborative partnerships from all over the country, have deployed RE systems for home lighting and for productive uses. The lessons learned derived in deploying the RE systems (e.g., solar and wind systems ranging from 50 W to 5 kW) is to incorporate internet communications and technology for education and productive use for sustainable livelihoods.

Katarina Hasbani
Board Member
Alliance for Rural Electrification
Designing Productive Use of Renewable Energy Projects that Lead to Multiplier Effects in Rural Communities

While off-grid renewable energies are used for consumption purposes such as lighting, access to information, comfort and entertainment, it is not sufficient to trigger socio-economic developments in rural areas: Additional growth can be achieved by integrating the local populations into income generation. This is possible by implementation of sustainable business models with RET solutions. The Alliance for Rural Electrification (ARE) therefore promotes productive use of renewable energy in Asia, a multi-level approach which is sustainable in three ways: Economically as it leads to local business' profit; Socially as it leads to empowerment, as well as health and economic benefits for locals; (a) economically, as it leads to local business' profit; (b) socially, as it leads to empowerment, as well as health and economic benefits for locals; and (c) environmentally, as the use of renewable energy limits climate change impacts. The presentation will include information about and comparison of PURE approach in an Asian and Sub-African context, lessons learned, as well as case studies from ARE members.

Bernie Jones
Project Leader
Smart Villages Initiative
Smart Villages - Energy as a Catalyst to Holistic Rural Development

Providing access to electricity is not enough to achieve meaningful development and the SDGs. Combining energy access and innovative technology and promoting their productive use, has the potential to bring key community services and socio-economic development into remote rural areas. The services which are likely to be of most immediate benefit to communities across Asia are healthcare and education, and given the dominant livelihood of rural communities remains agriculture, harnessing energy for value-addition and enhanced productivity is the most obvious productive use. This presentation will explore the key findings and recommendations from all the Smart Villages nexus investigations in Asia, and present some of the most successful technologies and policies. We will also draw comparisons between our findings in Asia and elsewhere in the world, and make some recommendations for the "less obvious" energy nexus issues, such as migration, transport, rural connectivity, banking, and democratic engagement.

Ravikumar Kandasamy
Deputy Director (Rural Energy & Infrastructure)
Mahatma Gandhi Institute for Rural Industrialization
Solar Garment—Business Model and Current Status

Tharkha (manual spinning wheel) is used in rural India for cloth production with Mahatma Gandhi's vision for a self-reliant village economy. This sector is facing problems of non-availability of labor due to low wages and human drudgery. MGIRI is accelerating the process of rural industrialization in India and addressed the problems through innovative usage of solar technologies in the decentralized production of garments. It developed and tested solar technologies that are involved in garment production (solar powered charkha, loom etc). Under the Indo-German Energy Programme and in collaboration with MGIRI and GIZ, India has done a feasibility study and proposed several business models (3 individual models and 4 composite models) focusing on employment generation, empowerment and gender equality, drudgery, and profitability. This presentation will discuss the business model study and the current status.

Session 20: Technology Innovation: Part II The 4th Industrial Revolution: A New Paradigm for Energy

Auditorium Zone D

8 June, 11:30 a.m.–1 p.m.

The 4th industrial revolution is fusion of technologies characterized by velocity, scope, and systems impact, and is evolving at an exponential rather than a linear pace. Traditional energy businesses and services are being disrupted by integration of digital and telecommunications technologies to re-create energy services as an internet of things. Advanced energy storage will facilitate further disruption and the paradigm shift. The session will explore novel energy storage solutions, and digital disruption of the energy sector.

Session Chair

David Elzinga
Senior Energy Specialist, Sustainable Development and Climate Change Department
Asian Development Bank

Presenters

Zeng Ming
Professor/ Vice Director and the Secretary-General for the Expert Committee of Energy Internet in China
Energy Research Association
Energy Internet Technologies for Low-Carbon Transition

The large-scale use of traditional fossil energy has been causing the problems of environmental pollution and climate warming. Furthermore, the development and utilization of renewable energy has been also facing problems of cost, technology, market mechanisms and other aspects. How should we establish a systematic approach at the aspects of technology, production, consumption, and other aspects of the energy system, and change the way in which energy is used fundamentally? The Energy Net came into being, which is not a short-term remedy of the energy system, but promotes the revolution of energy production, consumption and structure, leads the international energy structure adjustment and ensures win-win cooperation. The Energy Net will promote China's energy revolution and help establish a new energy supply system.

Thomas Chrometzka
Director, Renewable Energy
GIZ Thailand
When Blockchain meets Energy!

Blockchain is the new buzzword. Typically associated with crypto-currency, blockchain technology is gaining momentum in sectors such as energy, climate, and development. Where the Internet is a platform to exchange information, blockchain enables safe exchange of value in a digital environment. Blockchain is a game-changer, cutting out the middle-men from any kind of

transaction. Crypto-currencies are only the beginning. What is more significant: are block-chain's characteristics blur the known borders between cryptographic protocols, digital currencies, financial assets, and, for example, carbon credits. Blockchain's disruptive potential lies in the areas where these borders disintegrate. As blockchain is still in its infancy, tech startups all over the world are starting to build blockchain code and applications that some consider more disruptive than the Internet. This presentation will look at the impact of blockchain approaches in energy, climate, and development, providing concrete examples.

Gregory Long
Director
Fluidic Energy
The Future of Energy Storage: Complete Replacement or Minor Reduction of Fossil Fuel Reliance?

Cracking the code of cost-efficient energy storage has been deemed by many to be the next "holy grail" for entrepreneurial spirits and companies alike. With a growing competition within this sphere, the question that often arises is the length to which efficient energy storage systems can go to replace the world's reliance on traditional fossil fuels, or whether it will merely serve as a secondary option. Fluidic Energy believes in the former. Incentivizing adaptation by offering the lowest cost possible per kilowatt hour makes it an increasingly attractive option to consider, while R&D labs across the world work towards widening the range of suitable applications. With financially backing from the IFC and ADB, Fluidic seeks to provide electrification to the remotest of people across the world. This presentation will describe Fluidic Energy's work and thinking in the area of energy storage.

Chih-Ting Lo
Principal
EELO Solutions
Reuse

Some closed surface open pit and underground mines can be ideal pump storage facilities to complement increasingly cheaper renewable energy that is intermittent and does not always match the electricity demand profile. Based on the void volume, elevation change, and on-site and nearby transmission capacity, there can be many technically feasible options. Further, utilizing closed mines may significantly reduce capital expenditure, in some cases by more than 30%, from the costs related to construction and civil work that is otherwise required for a green field development. This presentation reviews criteria and synergies for closed or abandoned mine sites and pump storage facilities, highlights ongoing case studies and global trends, and intends to start a dialogue on similar opportunities in Asia.

Closing Plenary Session

8 June, 2:30 p.m.–4:30 p.m.

Reflections from the Community

Each year during the design of ACEF, the chairs of the Thematic Tracks curate a set of sessions that cover key and emerging issues of their sectoral areas: energy efficiency, renewable energy, energy access, and future trends and issues. This panel discussion provides an opportunity for the Track Chairs to share their observations and reflections based on discussions during the sessions, from related Deep Dive Workshops earlier in the week, and in the hallways and receptions. What are the new and innovative ideas and approaches that emerged? What are the most entrenched issues and problems in the view of the presenters, as well as the audience, during discussions? What key issues and opportunities should the Asia Clean Energy Community keep its eyes on as we forge into the future? What are important messages for ADB, USAID, KEA, and the many other donors working in the energy sector?

Moderator

Ashok Bhargava
Director, Energy Division, East Asia Department
Asian Development Bank

Panelists

Innovations in Energy Efficiency
Aiming Zhou, Asian Development Bank
Melanie Slade, International Energy Agency

Innovations in Renewable Energy
Cindy Tiangco, Asian Development Bank
Gurbuz Gonul, International Renewable Energy Agency (IRENA)

Increasing Energy Access
Jiwan Acharya, Asian Development Bank
Soma Dutta, ENERGIA

Charting the Future of Clean Energy in Asia
Dan Millison, Asian Development Bank
Wei-nee Chen, Sustainable Energy Development Authority of Malaysia (SEDA)Keynote Address

Closing Keynote Addresses

As we wrap up this 12th edition of the Asia Clean Energy Forum, we seek to provide vision and inspiration to the community of thought leaders and practitioners that take time out of their busy schedules to attend the event. While there have been many impressive changes and developments in the sector over the past decade—in terms of energy access, investment and finance, business models, and implementation of clean energy programs-- these developments do not approach the scale and pace needed to transform the sector and meet energy access and security needs while addressing the serious threat posed by climate change. Our closing keynote speakers will draw on their experience and lessons learned to provide a call to arms for the Asia clean energy community.

Ajaita Shah
Founder and CEO
Frontier Markets
Women, Consumer Feedback, Distribution and Partnerships: Key Insights from India on Achieving Scale

Laure Vinçotte
Managing Director
ENGIE Rassembleurs d'Energies SAS

Ingo Puhl
Director for Strategy, Co-founder and Member
The South Pole Group

Raffle Draw for 10 iPads

Closing Remarks

Wencai Zhang
Vice-President (Operations 1)
Asian Development Bank


LECTURE THEATER 1
LECTURE THEATER 2
MULTIFUNCTION
1
2
3
PODIUM
BRIEFING THEATER 1
CAFETERIA
AUDITORIUM ANNEX 1
AUDITORIUM ANNEX 2
LIBRARY
LEARNING RESOURCE CENTER 1
k HUB
CAFETERIA LOBBY
LEARNING RESOURCE CENTER 2
AUDITORIUM ZONE A
AUDITORIUM ZONE B
AUDITORIUM ZONE C
AUDITORIUM ZONE D
COURTYARD
LEARNING RESOURCE CENTER 3
CONSULTANT'S HOTELING
MAIN LOBBY
BRIEFING THEATER 2
CONFERENCE ROOM
CONFERENCE VENUE
REST ROOM
ELEVATOR
EMERGENCY EXIT
DIRECTION GOING TO THE MULTIFUNCTION HALL

Asia Clean Energy Forum 2017

The Future is Here: Achieving Universal Access and Climate Targets

The Asia Clean Energy Forum is the region's premier knowledge-sharing event on clean energy. It attracts a diverse group of stakeholders including governments, national and multinational banks, carbon and clean energy investment funds, project developers and service providers, academics and civil society, and development partners and other international organizations. The forum provides a dynamic platform for crosscutting debates and discussions on clean energy development and financing, climate change, energy access and security, and governance in the energy sector.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to a large share of the world's poor. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

FORUM CONTACTS

Priyantha Wijayatunga
Chair
pwijayatunga@adb.org

Peter du Pont
Co-Chair
pdupont@usaid.gov

For more information, please visit

www.asiacleanenergyforum.org

ASIAN DEVELOPMENT BANK
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org