



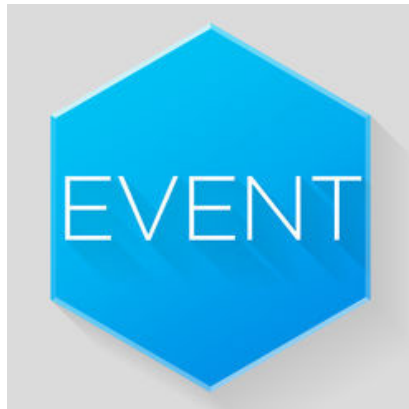
# ASIA CLEAN ENERGY FORUM 2018

Harnessing Innovation to Power the Future

4-8 June 2018

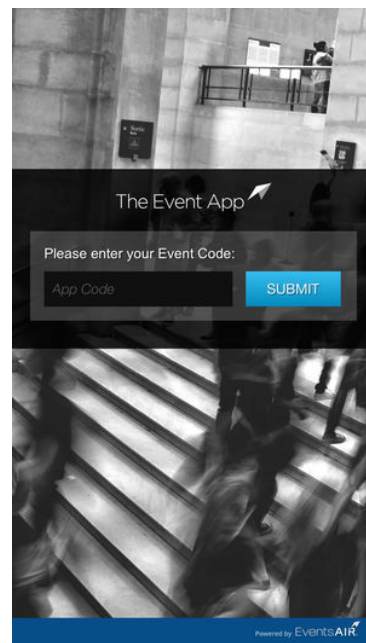
**MAIN ACEF PROGRAM, 6 and 7 June**

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# Week at A Glance

Time	MONDAY	TUESDAY	WEDNESDAY
9 a.m.–10:30 a.m.	<b>Networking and Early Check-in Day</b> <ul style="list-style-type: none"> <li>Open Networking for ACEF Participants at ADB HQ</li> <li>WIPO GREEN Technology Matchmaking</li> <li>IRENA/PFAN Asia—Asia Clean Energy Marketplace and Project Matchmaking</li> </ul>	<b>DEEP DIVE WORKSHOPS</b> <ul style="list-style-type: none"> <li>Promoting Innovations for Energy Efficiency Technologies, Finance and Business Models in Developing Asian Countries</li> <li>11th Meeting of the Asia Solar Energy Forum</li> <li>Variable Renewable Energy Grid Integration: Efficient Solutions for Transmission and Distribution Grids</li> <li>Developing Sustainable Mini-Grids</li> <li>Promoting Efficient, Clean Cooling through Technology and Policy Innovation</li> <li>Realising the Potential of Waste to Energy</li> <li>From Startup to Scale Up</li> <li>SEforALL Asia-Pacific Forum</li> <li>Deep Dive Workshop on Clean Cooking</li> </ul>	<b>OPENING PLENARY</b> <i>How Can Asia and the Pacific Leapfrog to a Low-Carbon Energy Pathway?</i> (8:30 a.m.–10:30 a.m.)
11 a.m.–12:30 p.m.			<b>Discussion Sessions</b> <ol style="list-style-type: none"> <li>Best Practices in Developing Large Commercial and Industrial EE Investments</li> <li>Policy and Regulatory Design: Perspectives from Stakeholders</li> <li>Energy Access for the Urban Poor</li> <li>Disrupt or Be Disrupted—Digital Darwinism and its Impact on Energy Systems</li> </ol>
2 p.m.–3:30 p.m.			<b>SPECIAL EVENT</b> ADB on the Ground: Driving the Energy Transition
4 p.m.–5:30 p.m.			<b>Discussion Sessions</b> <ol style="list-style-type: none"> <li>Multiple Benefits of Energy Efficiency—Focus on Air Pollution</li> <li>Business Model Innovation: Learning from Examples</li> <li>Innovative Solutions for Clean Cooking and Heating</li> <li>From Asset Ownership to Shared Economy</li> </ol>
6 p.m.	RECEPTION	RECEPTION	RECEPTION

Time	THURSDAY	FRIDAY
9:00 a.m.–10:30 a.m.	<b>Discussion Sessions</b> <ol style="list-style-type: none"> <li>Building Energy Efficiency: Focus on Cooling</li> <li>The Future, Decentralized Power Grid: Implications for Utilities and Consumers</li> <li>Meeting the Challenges and Barriers of Energy Access</li> <li>Tools and Products to Take Us to the Future</li> </ol>	<b>DEEP DIVE WORKSHOPS</b> <ul style="list-style-type: none"> <li>Opportunities and Models for Renewable Energy Project Finance</li> <li>Gigatech Solutions for Gigaton Problems: Floating Solar Practice and Potential</li> <li>Renewable Energy Auctions: A New Paradigm for Asia</li> <li>Battery Energy Storage Technology for Clean Energy</li> <li>Connecting Asian and Global Carbon Capture, Utilization and Storage (CCUS) Expertise</li> <li>Women Entrepreneurship in Clean Energy</li> <li>Scaling-up Solar PV Deployment: Implementing Projects with Assured Quality</li> <li>The Clean Energy Project Cycle and Project Development Challenges</li> </ul>
11:00 a.m.–12:30 p.m.	<b>SPECIAL EVENT</b> Knowledge Dim Sum with Clean Energy Entrepreneurs	
2:00 p.m.–3:30 p.m.	<b>Discussion Sessions</b> <ol style="list-style-type: none"> <li>Electrification of the Transport Sector</li> <li>Sustainable Urban Energy Solutions: Role of Renewables</li> <li>Transformative Technology Solutions for Energy Access</li> <li>Transforming From the Old to the New in Energy Systems</li> </ol>	
4:00 p.m.–6:00 p.m.	<b>CLOSING PLENARY</b> <i>Fostering Innovation in the Clean Energy Sector in a Time of Extreme Uncertainty</i>	

## MAIN FORUM SESSIONS—WEDNESDAY 6 JUNE

Time	Auditorium Zone			
	A	B	C	D
8:30 a.m.–10:30 a.m.	<b>OPENING PLENARY</b> <i>How Can Asia and the Pacific Leapfrog to a Low-Carbon Energy Pathway?</i>			
11 a.m.–12:30 p.m.	<b>Session 1</b> Best Practices in Developing Large Commercial and Industrial Energy Efficiency Investments in Emerging Economies	<b>Session 2</b> Government Policy and Regulatory Design: Perspectives from Different Stakeholders	<b>Session 3</b> Energy Access for the Urban Poor	<b>Session 4</b> Disrupt or Be Disrupted: Digital Darwinism and its Impact on Energy Systems
2 p.m.–3:30 p.m.	ADB on the Ground: Driving the Energy Transition			
4 p.m.–5:30 p.m.	<b>Session 5</b> Multiple Benefits of Energy Efficiency: A Focus on Air Pollution	<b>Session 6</b> Business Model Innovation: Learning from Examples	<b>Session 7</b> Innovative Solutions for Clean Cooking and Heating	<b>Session 8</b> From Asset Ownership to Shared Economy
6 p.m.	Reception/Awarding of ACEF 2018 Instagram Photo Contest			

## MAIN FORUM SESSIONS—THURSDAY, 7 JUNE

Time	Auditorium Zone			
	A	B	C	D
9 a.m.–10:30 a.m.	<b>Session 9</b> Building Energy Efficiency: A Focus on Cooling	<b>Session 10</b> The Future Decentralized Power Grid: Implications for Utilities and Consumers	<b>Session 11</b> Meeting the Challenges and Barriers of Energy Access	<b>Session 12</b> Tools and Products to Take Us to the Future
11 a.m.–12:30 p.m.	Knowledge Dim Sum with Clean Energy Entrepreneurs			
2 p.m.–3:30 p.m.	<b>Session 13</b> Electrification of the Transport Sector	<b>Session 14</b> Sustainable Urban Energy Solutions: Role of Renewables	<b>Session 15</b> Transformative Technology Solutions for Energy Access	<b>Session 16</b> Transforming from the Old to the New in Energy Systems
4 p.m.–5:30 p.m.	<b>CLOSING PLENARY</b> <i>“Public and Private Innovation in a Time of Extreme Uncertainty”</i>			

### ACEF 2018 THEMATIC TRACKS:

- Innovations in Energy Efficiency
- Innovations in Renewable Energy
- Increasing Energy Access
- Navigating the Future

## Additional ACEF Events

### Whole Week

#### White Goods Olympics

Organized by the Energy Division, Central and West Asia Department, Asian Development Bank

Location: ADB Cafeteria Hallway

This educational exhibit of the latest energy efficiency electrical appliances will show how easy it is to lower power bills with the correct mindset. Activities will include a “guess the wattage” contest for various appliances.

#### ACEF Instagram Photocontest Highlights #acef2018

The most interesting, striking and humorous entries from the first ever Asia Clean Energy Forum Instagram Photocontest will be on exhibit throughout the area. Keep an eye out!

### Wednesday 6 June

#### Canon Philippines - Creating Empowering Images: Inspiring Lives through Clean Energy

Organized by Canon Philippines and the Asia Clean Energy Forum

Time: 12:30 p.m. - 2 p.m.

Location: ADB Knowledge Hub, Library Area

Professional celebrity photographer Sara Black will share tips and techniques on how to create captivating human interest images that can help to illustrate the impact of clean energy projects and technology solutions. This talk will cover photography basics combined with skills on how to bring the most emotion out of your subject matter.

#### Drone Demonstration

Organized by the Energy Division, Central and West Asia Department, Asian Development Bank

Time: During coffee breaks and lunch breaks

Location: ADB Central Courtyard

A professional drone pilot will do 20-minute demonstrations in the *during coffee breaks and the lunch breaks*. Beyond capturing footage, this demonstration will show the potential for drones equipped with thermal imaging capabilities to track heat loss and cold leaks. There will also be a hands-on component.

### Thursday 7 June

#### Electric Vehicles Talk

Organized by the Energy Division, Central and West Asia Department, Asian Development Bank

Time: 11 a.m. to 12:30 p.m.

Location: ADB Knowledge Hub, Library Area

Transport and e-mobility experts will talk about the growing role of electric vehicles in the clean energy transition that is reshaping cities across the globe.

#### Off-Grid Impact Stories

Organized by the Energy Division, Central and West Asia Department, Asian Development Bank

Time: 12:30 p.m. to 2 p.m.

Location: ADB Knowledge Hub, Library Area

A number of speakers from developing Asian countries will discuss their small off-grid lighting initiatives and carry out a hands-on activity where participants can assemble small solar lighting kits.

## Opening Plenary

### How Can Asia and the Pacific Leapfrog to a Low-Carbon Energy Pathway?

#### Auditorium Zones A-D

8:30 a.m.–10:30 a.m.

*Asia is entering into a transition period from fossil-based to low-carbon energy sources that will result in profound changes in institutions, business models, job creation and investment trends in the region. While some countries are making significant progress, many other countries are facing a range of challenges in attracting investment and supporting clean energy businesses and solutions across their economies. This plenary will feature keynote presentations from three thought leaders with experience in understanding trends and dynamics that are driving investment toward clean energy; ensuring energy development is inclusive to provide Sustainable Energy for All, and debunking the myth that a country must choose between development or environmental protection, renewable sources, and quality of life. The speakers will share their vision for a clean energy transition in Asia and the Pacific and provide inspiration for the Clean Energy Community to meet the pressing challenges of providing universal access to affordable clean, and distributed energy.*

#### Introduction

##### **Woochong Um**

Director General, Sustainable Development and Climate Change Department, Asian Development Bank

#### Welcoming Remarks

##### **Bambang Susantono**

Vice-President, Knowledge Management and Sustainable Development  
Asian Development Bank

##### **Carrie Thompson**

Deputy Assistant Administrator of the Bureau for Economic Growth, Education and Environment (E3)  
United States Agency for International Development

##### **Young-Man Woo**

Director General, Global Project Division  
Korea Energy Agency

##### **Naoyuki Yoshino**

Dean  
Asian Development Bank Institute

## Keynote Remarks followed by Panel Discussion

### **Laszlo Varro**

Chief Economist  
International Energy Agency

### **Monica Araya**

Founder and Director  
Costa Rica Limpia

### **Dipal Chandra Barua**

Cofounder  
Grameen Bank  
Founder and Chairman  
Bright Green Energy Foundation

## Moderator for Panel

### **Yongping Zhai**

Chief of Energy Sector Group  
ADB

## New Energy Leaders Awards Ceremony

Awarding by

### **Yongping Zhai**

Chief of Energy Sector Group  
Asian Development Bank



## DISCUSSION SESSIONS: THEMATIC TRACKS

### Track 1: Energy Efficiency

#### Overview of the Track

Energy efficiency must be at the heart of the clean energy transition in order to ensure a safe, healthy, reliable, affordable and sustainable energy system for our common future. Energy efficiency is the one energy resource that every country possesses in abundance and is the quickest and least costly way of addressing energy security, environmental, health and economic challenges. However, implementing energy efficiency aggressively across an economy is extremely challenging because the decisions affecting efficiency are dispersed across vast numbers of buildings and facilities and are made by a diverse group of end users, individuals, and facility managers. This track will explore the multiple benefits of energy efficiency policies and programs, highlighting key challenges and new innovations. The sessions will focus on how the stakeholders and practitioners attending ACEF can collaborate to achieve a greater pace and scale of efficiency improvements across the Asia region.

#### Track Cochairs

##### **Aiming Zhou**

Senior Energy Specialist, Energy Division, South Asia Department, ADB

##### **Melanie Slade**

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

### Track 2: Renewable Energy

#### Overview of the Track

Since 2011, more than half of capacity additions in the global power sector have been from renewables. With continued cost reductions, greater levels of technological maturity, and more stable national policy and regulatory environments, the global momentum for renewable energy continues to rise. Innovation has played, and will continue to play, a critical role in this growth. This track will cover areas of Asia's renewable energy landscape, including government policy and regulatory design, business model innovation, sustainable urban energy solutions, and the future power grid.

#### Track Cochairs

##### **Shannon Cowlin**

Senior Energy Specialist, Energy Division, Southeast Asia Department, Asian Development Bank

##### **Yong Chen**

Programme Officer, Sustainable Urban Energy, IRENA's Innovation and Technology Center (IITC)

### Track 3: Energy Access

#### Overview of the Track

While significant progress has been made in improving energy access, the objective of narrowing the gap to achieve universal energy access remains a major global challenge. According to the 2017 Global Tracking Framework Regional Assessment Report, 420 million people in the Asia-Pacific region lack access to electricity, and nearly half of the region's population are still without access to clean cooking. The sessions in this track will cover the region's energy access situation, analyze the range of barriers encountered, and highlight proven solutions in the realms of policy, regulation, technology, and financing. The discussions in this track will highlight approaches that have worked and may be replicated by energy access professionals, stakeholders, and partners across the region.

## Track Cochairs

### Fely Arriola

Access to Energy Specialist (Consultant), Energy for All Initiative, Asian Development Bank

### Debajit Palit

Associate Director & Senior Fellow, The Energy and Resources Institute, India

## Track 4: Navigating the Future

### Overview of the Track

We live in the 4th Industrial Revolution, fueled by an unprecedented level of technology and business innovation; global access to technology, natural resources, and goods and services; and social digitalization. Despite this apparent progress, developing nations and communities within them continue to experience overwhelmingly unfavorable conditions that hinder sustainable growth, health benefits, social empowerment and wealth generation.

The key imperative is to effectively address current future development needs at the necessary scale. This will entail a combination of the following ingredients:

1. Access to cost-effective, 24/7, secure and flexible infrastructure across the entire economic and social value chain (energy, water, transportation, waste, security, etc.).
2. Access to processes, tools and capabilities to support multi-sided markets promoting local, community and family microbusinesses, peer-to-peer transactive capabilities, etc.
3. Access to mobile and digital presence overcoming many of the challenges associated with the remote communities and their exclusion from market, financial and technology extension services and capabilities.

The Navigating the Future Track will (a) discuss and showcase step-change innovation that is shaping the future, while also (b) discussing and showcasing new disruptive approaches across industries, markets, and business value chains that define a “new normal”, while focusing these discussions on Asia’s dynamic energy sector.

## Track Cochairs

### David Elzinga

Senior Energy Specialist, Energy Sector Group, Asian Development Bank

### Bartosz Wojszczyk

President & CEO, Decision Point Global

### Charles Navarro

Clean Energy Investment Specialist (Consultant), Energy for All Initiative  
Asian Development Bank

## Session 1: Best Practices in Developing Large Commercial and Industrial Energy Efficiency Investments in Emerging Economies

### Auditorium A

11 a.m.–12:30 p.m.

The commercial and industrial sectors in emerging economies present significant energy-savings opportunities both through energy efficiency improvements and advanced technology applications. The multilateral development banks have made significant commitments to invest in climate financing, and ADB, for example, has committed to double its annual climate financing to \$6 billion by 2020. Out of the \$6 billion, \$4 billion will be dedicated to mitigation through scaling up support for renewable energy, energy efficiency, sustainable transport, and building smart cities. To achieve such an ambitious target, there is a pressing need for new and innovative investment approaches in energy efficiency. The presentations in this session will describe practical approaches and “measured” results in overcoming an EE barriers. They will also address strategies for designing efficiency initiatives that are replicable and scalable.

### Session Chair

#### Thomas K. Dreessen

Chairman  
EPS Capital Corp

### Presenters

#### Gokul Pandian

Head - Energy Efficiency and Climate Change,  
ICF Consulting India Private Limited

### Successful Energy Efficient Motor Rewinding and Testing Case Study

Faridabad cluster is one of the energy intensive industrial MSME clusters in India, characterized by a mixed type of industries ranging from engineering, chemical plants and foundries. The energy requirement of the cluster is dependent on electrical energy and the consumption is dominated by motors. As motors are prone to random failures, the industries in the cluster rewind motors using conventional practices, but an efficiency drop of 1% occurs every time when a motor is rewound using conventional methods. Adoption of energy efficient rewinding practices would reduce electricity usage by 30 GWh for the cluster and 270,000 GWh for the nation. The monetary gain would be \$100 million for the cluster and \$2 billion to India. The replicable potential is quick and applicable across Asia.

#### Kishore Kumar

Senior Associate  
CLASP India Office

### Roadmap for Transforming India's Energy Scenario through Appliance Energy Efficiency Program

Electricity demand in India is expected to increase to 1,566 terawatt hours (TWh) by 2021. The demand in the residential sector is projected to increase by 3 percent. Because of the projected increase the Bureau of Energy Efficiency launched the Standards & Labeling Program in 2006 to improve efficiency of appliances and transform the market. Since then, more than 1 billion household appliances have been registered across 21 categories, resulting in cumulative electricity savings of 197 TWh. The Bureau plans to save 1.105 TWh of electricity in 2021–2022. This presentation will propose a paradigm shift and a roadmap of innovative approaches such as increasing stringency, a transition from a voluntary to a mandatory phase, and adding new appliances to the program, in order to increase the savings to as much as 158 TWh in 2021–2022.

**Alexander Ablaza**

President  
Philippine Energy Efficiency Alliance

**How a New Energy Efficiency Law and Fiscal Incentives can Enable a Lion's Share of \$243 Billion in Third Party Capital Flows toward EE Technology Deployment in the Philippines**

*The Philippine Government has approved and updated an Energy Efficiency & Conservation Roadmap that aspires to ramp up the country's annual energy savings. The nonprofit Philippine Energy Efficiency Alliance estimates that \$243 billion will need to be mobilized for technology deployment across end-use sector, to shave off an aggregate 182 Mtoe through the next 22 years. Two thirds of this capital requirement will have to flow as third party investments through ESCO and PPP contracts. The Philippine Senate has recently approved a bill that would regulate energy end use and enable fiscal incentives to catalyze capital flows for self financed, debt financed and third party investments in EE projects. This presentation will share how such a policy framework could improve the commercial returns of investments in ESCO implemented projects hosted by commercial and industrial facilities, and how this could be improved to widen the reach across other economic sectors.*

**Anthony Watanabe**

Managing Director  
Asia Clean Innovations

**Driving Energy Efficiency in ASEAN's Garment Supply Chain**

*Multinational garment brands have set ambitious sustainability targets. And with so much of their production base located right here in ASEAN, Southeast Asia is where those strategies live or die. Drawing on practical lessons learned from deep dives into garment factories across ASEAN, plus numerous in-depth discussions with brands themselves, this presentation will address the important roles of all players in the energy efficiency ecosystem. Key takeaways to date: (a) as low hanging fruit get picked, EE becomes increasingly more difficult; (b) technology plays a role, but sustained EE gains will only be realized through capacity building, financing and rigorous M&E; (c) the energy management skills gap in this sector is a problem; and, (d) unlike RE, EE is not hindered by policy uncertainty.*

## Session 2: Government Policy and Regulatory Design: Perspectives from Different Stakeholders

### Auditorium B

11:00 a.m. – 12:30 p.m.

With the increased cost-competitiveness of renewable energy and widespread recognition of its benefits, the economic case for renewable energy, especially electrical power generation is now firmly established. But successful scale-up depends on how governments use policy and regulatory frameworks to reduce financing costs, reset the rules in the marketplace, and encourage investment from the private sector. This session will address a number of key questions, including: How can governments drive down the costs of purchasing renewable energy, while also ensuring the financial health of the sector? How can governments address other market conditions to ensure project bankability and drive down the cost of financing? What policy levers do governments use to address resistance from incumbent utilities who risk deep revenue losses from installation of decentralized energy systems? What key elements should be put in the policy framework for changing the dynamics from subsidy or ODA to market driven renewable energy development? How can innovative energy planning help inform policy making? The presentations in this session will address these questions from a diverse set of perspectives, followed by a dynamic discussion and debate on the key elements of policy and regulatory design.

### Session Chair

#### Shannon Cowlin

Senior Energy Specialist, Energy Division, Southeast Asia Department  
Asian Development Bank

### Presenters

#### Rishab Shrestha

Analyst  
GTM Research

#### **Solar Project Investment Viability in APAC Markets**

Historically, the installation of solar and wind projects have closely followed changes in policy and regulatory framework. Enabling policies to make project bankable is of utmost importance to secure cost-effective financing and reduce the cost of electricity. This presentation will assess the bankability of projects across key Asia-Pacific markets using criteria's such as dispatch risk, currency risk, curtailment, regulatory risk, and off-taker payment support, among others. The degree of risks associated with these criteria vary across the region and can be dealt with through various policy measures. The presentation will also discuss the policy options that are available for the government to improve the PPA bankability of the projects and the potential impact they have in reducing costs of renewables.

#### Pradeep Perera

Principal Energy Specialist  
Asian Development Bank

#### **Challenges of Integrating 175 GW of Renewable Energy in India and Policy Options**

India has set an ambitious target of 175 GW of renewable energy integration by 2022 and is making steady progress towards achieving this target. Mainstream renewable energy technologies such as wind and solar have become the cheapest source of energy. However, this influx of variable renewable energy into the power system is stressing the rest of the power system. Some of the thermal power plants are struggling with low plant factors and increased operation and maintenance costs due to a need for rapid ramping up and down. There are also transmission constraints as well as inadequate inertia and ancillary services. This has necessitated the need for redesigning the market rules and incentive framework for new generation capacity additions. The presentation will provide various policy options that can be considered to establish appropriate incentive mechanisms to achieve the overall renewable energy goal.

**Litthanoulok Laspho**

Chief of Energy Policy Division

Ministry of Energy and Mines—Department of Energy Policy and Planning, Lao PDR

***The Energy Alternatives Study for the Lao PDR: Informing Energy Planning through 2030***

*To diversify Lao PDR's energy portfolio, which historically prioritized investment in their abundant hydropower resources and more recently in coal-fired power, Lao PDR decision-makers are exploring the role that alternative energy resources could play in their future power system. This presentation will detail the goals and key outputs of the Energy Alternatives Study for the Lao PDR, a collaboration between the Lao Ministry of Energy and Mines and USAID. The study focused on developing tools, data, and analytic capabilities to inform Lao energy planning activities to 2030. The presentation will describe the approach and results of a GIS-based technical potential assessment of utility-scale renewable power generation and a levelized cost of energy analysis for electricity generating technologies.*

**Reman Chua**

Vice-President

First Gen Corporation

***Energy Revolution in the Philippines***

*While the rest of the world is moving to clean energy, here in Asia, coal plants continue to be built. What keeps Asia from taking the green road? In the Philippines, challenges include intense price competition with coal, absence of retail competition and open access, and a short-term perspective of a government ambivalent about climate change issues. The recent coal tax was a step in the right direction, but it is not enough. This presentation will give the private sector's perspective, from the first and only Philippine conglomerate who declared it would not invest in coal and committed to developing only clean energy sources. We look at the millennials and electricity consumers who demand green power, the need for Retail Competition and Open Access, and technology. We conclude with suggestions for the policy, regulatory, and financial markets.*

## Session 3: Energy Access for the Urban Poor

### Auditorium C

11:00 a.m.–12:30 p.m.

The session will highlight the energy situation (including cooking and electricity) in urban and peri-urban areas. The presentations in this session will address the key issues and many challenges faced by households and service providers in urban areas who are trying to achieve access to safer, cleaner and legal sources of energy. The presenters will discuss various approaches to addressing these issues, including innovative payment schemes, partnership models, and distribution utility-government partnerships, among others.

### Session Chair

#### Debajit Palit

Associate Director and Senior Fellow  
The Energy and Resources Institute (TERI)

### Presenters

#### Riya Kumar

India Country Representative  
Global Alliance for Clean Cookstove

#### Sukla Chandra

Managing Director India  
General Electric

### Learnings from Microgrids

Key learnings and challenges GE has had in the recent past in developing a hybrid solution for rural electrification in different countries in Africa and Southeast Asia will be discussed. The presentation will also highlight activities of the Alliance for Rural Electrification and the knowledge transfer between urban and remote electrification. The solutions are the same in both sectors, but the deployment strategies differ. The presentation will also outline GE's position on policies, funding and partnership building.

#### Khristin Hunter

Country Coordinator, Philippines  
Entrepreneurs du Monde

### PAYG Solar Solution in Urban Metro Manila

In Metro Manila, 38% of the population lives in dense areas of extreme poverty, with more than 4 million people in unsafe housing and with unreliable access to electricity. Most use kerosene lamps, candles and the like for lighting and cooking, leading to a high risk of fire. This presentation will detail how ATE Co provided more than 300 households with safe, clean, economical energy access via an innovative Pay As You Go solar kit, paired with the mobile technology of Angaza. With a customer base of 72% women, this access to light provides increased safety in vulnerable areas, in addition to providing the ability to work after dark. The presentation will also preview a new partnership with PayMaya that is expected to give customers—many of whom have never had a traditional bank account—access to mobile payment.

**Krishna Nepal**

General Manager  
Salleri Chialsa Electricity Co. Ltd. (SCECO)

**Off-Grid Electrical Utility Model to Remote Area**

*Salleri Chialsa Electricity Company Limited (SCECO) is an off-grid electric utility company which supplies electricity service to about 2000 households at Salleri and surrounding villages of Solukhumbu district (one of the remote and hilly districts) of Nepal, about 300 km away from Kathmandu. This presentation will describe SCECO's hydro power plant using a classic runoff river scheme, designed for 633 kW gross capacities with three units of turbine alternator sets. The electricity is supplied through 11kV transmission lines and distributed through 380/220 V underground cable.*

**Theresa Capellan**

President  
SunAsia Energy Philippines

**Community Solar Providing Energy Access to Urban Poor**

*The growth of the Philippine economy has pushed illegal settlers to the fringes of development. Though government housing is provided in order to make way for urban renewal projects, settlers are unable to occupy their new built homes due to lack of electricity and water services in their new settlement area. This presentation will describe how a private enterprise created a micro grid solution integrating solar, storage and grid power in the low income community to deliver clean and affordable electricity in their new settlement. The partnership created for this community initiative involving a private company, the housing cooperative, and select not-for-profit organizations served as the driving force behind the innovations where smart meters, pre-paid system, and energy management systems all work together to make the project bankable.*



## Session 4: Disrupt or Be Disrupted: Digital Darwinism and Its Impact on Energy Systems

### Auditorium D

11:00 a.m.–12:30 p.m.

During this session, industry leaders, visionaries and experts will present their ideas and experience in the context of a transformational trend called “Digital Darwinism.” Digital Darwinism is defined as the societal and technology adoption that is evolving (often leap frogging) much faster than the business, regulation/policy ecosystem. That means, historical, large technology, and business investments are becoming “obsolete” across the entire value chain (demand – supply) long before its intended end of lifetime. What is the societal, community, business, industry “cost” of NOT embracing the future? For this session, the focus will be on trends within and outside the energy sector, and highlight the risk of past and current development approaches and new approaches that are “future proof.”

### Session Chair

#### **Bartosz Wojszczyk**

President and CEO  
Decision Point Global

### Presenters

#### **Bernie Jones**

Director  
Smart Villages Research Group, UK

#### **Smart Village vs Smart City: A Decentralized Development Alternative for the 21st Century**

Reliable cheap energy can transform communities, whether rich or poor, in developing or industrialized countries and regions. Based on data and information gathered from the global network of technologists and entrepreneurs with whom we have interacted over the past 6 years (especially those based throughout Asia), this presentation will present a model for how sustainable energy can be combined with cutting edge technological innovations that are either already available or in development to provide local decentralized services and opportunities for local industry and wealth creation. Examples will be provided of these innovative technologies, especially from Asian innovators, and illustrate how they can be combined in novel and disruptive patterns.

#### **Shah Haider**

General Manager  
Chittagong Rural Electric Cooperative 3

#### **Digital Disruption of Utilities: Going Towards Green**

Digital disruption is the change that occurs when new digital technologies and business models affect the value proposition of existing goods and services – in this case, that of the energy utilities. The utility industry is being challenged by new energy businesses that are dynamic and diversified, even as it is under pressure from consumers and regulators to reduce costs and make operations more efficient. This presentation will explore how future electrical utilities will need to serve their customers. It will also review the potential of an Asian Super Grid, which could facilitate deep integration of renewable infrastructure and information and communications technologies (ICT).

#### **Thomas Chrometzka**

Director Renewable Energy  
Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

#### **New Energy Nexus Southeast Asia: Why Startups will be Changing the Energy Game in the Region**

Technology and cost are no longer the main limitation to fostering new energy solutions; rather it is the absence of innovative business, software, finance and service models that are holding back its deployment. With its deeply ingrained centralized and top-down structures, the energy sector is not able to adapt fast enough, and likely to be disrupted. Start ups are poised to bring needed innovation,

potentially disruption, in the form of enabling software solutions to the energy sector. New Energy Nexus Southeast Asia is a smart energy start-up support initiative launched by GIZ and the California Clean Energy Fund (CalCEF), which will create start-ups that can change the energy game in the region. This presentation will show first results and the ambition of this cutting edge programs as well as the mode of delivery.

**Yogendra Patwardhan**

Vice-President, Business Development - Emerging Technologies  
ABB

**Opportunities for Digitalization in the Power Sector**

*It will require creativity and robust foresight to address immediate energy sector needs while also planning for future needs in an ever evolving social and technical landscape. The latest technologies in electricity generation, assessment and planning tools such as GIS mapping and Big Data, as well as the digitalization of many existing technologies, can meet this challenge. This presentation will discuss the opportunities that digitalization brings to address emerging power sector challenges. Digitalization enables unprecedented visibility of a customer's assets and systems and the efficient harnessing of huge volumes of data. Digitalization enables the easy integration of IT and OT systems, thereby enabling operators in control centers to interpret key insights in real time and, as a result, prevent critical failures.*

## Asian Development Bank on the Ground: Driving the Energy Transition

Auditorium Zones A - D

2 p.m.–3:30 p.m.

### Opening Remarks

#### **Wencai Zhang**

Vice-President (Operations 1)  
Asian Development Bank

*Come and join a fast-paced networking event that showcases a wide variety of ADB clean energy projects and initiatives! ADB staff and their counterparts will deliver presentations to the broader clean energy community attending ACEF, with the twin aims of (a) encouraging south-to-south learning across countries and departments and (b) increasing awareness among ACEF participants about the transformative and innovative nature of ADB interventions.*

*ADB on the Ground will allow ACEF participants in this event to learn from ADB staff who are working with developing country counterparts to lead and try out new technologies, approaches, and financing mechanisms, in order to accelerate a shift to more sustainable, low-carbon energy sources and systems. The session highlights innovative and successful ADB projects that have, or have the potential to make, a deep and lasting impact across Asia.*

*This is your chance to not only learn, but also provide feedback to ADB staff and their counterparts about what could be done to improve their projects and achieve greater outcomes.*

*For this session, we will use a rotating “World Cafe” format, similar to the successful Knowledge Networking events we have held at ACEF for each of the past three years.*

*ADB on the Ground is a win-win for both ADB staff and for ACEF attendees because it promotes knowledge sharing of ADB’s best practices that are helping drive Asia’s clean energy future.*

## Session 5: Multiple Benefits of Energy Efficiency—A Focus on Air Pollution

### Auditorium A

4 p.m.–5:30 p.m.

*Air pollution a significant environmental risk, and the World Health Organization estimates that outdoor air pollution causes about 3 million premature deaths a year worldwide. Energy efficiency measures targeting outdoor and indoor air quality can have major positive impacts on global health; yet there are very few examples of air quality policies in the Asia region that rely on energy efficiency to deliver pollutant reductions. Presenters in this session will discuss what drives governments to take action, and will describe methodologies for measuring and communicating the multiple benefits of efficiency.*

### Session Chair

#### Aiming Zhou

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

### Presenters

#### Thusitha Sugathapala

Senior Lecturer  
University of Moratuwa, Sri Lanka

#### **Impacts of Energy Efficiency of Cookstoves on Indoor Air Quality: A Case Study in the Estate Sector Households of Sri Lanka**

*This presentation will review a study on the effects of use of biomass stoves for cooking and space heating in estate sector households in Sri Lanka, in relation to energy efficiency and indoor air quality (IAQ). IAQ levels were measured in 70 houses with different house configurations, kitchen locations, cookstove types, and levels of ventilation. The results show that the use of improved cookstoves results in a very high reduction of CO concentrations and also significant reduction in PM2.5 concentrations, highlighting the important role of introducing cleaner cooking fuels and technologies for both biomass saving and IAQ improvements.*

#### Ishrat Shabnam

Country Manager  
Practical Action Consulting

#### **Luminous Rickshaw: A Traditional Vehicle Turns into an Energy Efficient One**

*Although being a cultural heritage, rickshaws do not have any safety precautions such as, indicator lights. This causes a lack of visibility at night, and fatal accidents do occur. Practical Action has introduced Bijli-the Luminous rickshaw, that ensures road safety. It has been designed based on the concept of converting generated kinetic energy into power. The improvised rickshaw has head and tail lights, indicators and gears to climb ramps/uphill and go downhill easily, all operated by the kinetic energy. This presentation will review the Luminous Rickshaw pilot program.*

#### Gokul Pandian

Head, Energy Efficiency and Climate Change  
ICF Consulting India Private Limited

#### **Enhanced Communication and Outreach of Multiple Benefits of Energy Efficiency Using Integrated Planning Models**

*In November 2017, the Supreme Court of India banned the consumption of pet coke and fuel oil due to an increase in air pollution in the National Capital Region of India. This move impacted 1,000 micro, small, and medium enterprises (MSMEs) directly as well as 10,000 allied units and rendered 250,000 workers jobless. MSMEs were forced to look at other fuel options such as coal and wood. But electricity and gas are better alternatives in terms of clean air, generate higher revenues for distribution licensee, foster an improved*

investment climate, and reduce job losses. Policy advocacy in terms of an incentive or subsidy for energy efficient equipment and a special electricity tariff for the consumers is needed at the moment. This presentation will focus on the integrated planning models for decision making and communication outreach approaches that are available to the government.

**Sanjay Dube**

Vice-President, South Asia  
International Institute for Energy Conservation (IIEC)

**Reducing Air Pollution in India's Industrial Clusters Through Smart Energy Management**

UN Environment and IIEC have designed an Air Quality-Smart Energy Management Pilot to demonstrate the potential for energy efficiency—combined with renewables and load management—to significantly reduce air pollution in two Indian states. This presentation will describe how the project partners will work with local utilities and industrial facilities to implement smart energy management measures, supported largely through private financing for bundled clean energy solutions. This project will encourage the adoption of EE as a solution to air pollution in Asian cities by providing a demonstrated link between smart energy management and air quality improvements. This presentation will include a case study of how highly polluted cities can attract bundled private finance for clean energy solutions.

## Session 6: Business Model Innovation: Learning from Examples

### Auditorium B

4 p.m.–5:30 p.m.

*In some cases, business model innovation can be the key to catalyzing the growth of new technologies in the marketplace, especially when competition is increasing. For instance, leasing schemes have enabled the explosive growth in the rooftop PV market. In other cases, increasingly affordable technologies such as energy storage and digital services enable more effective use of renewable energy sources like solar PV, and create new business models, like the virtual power plant. In this session, we will discuss innovative business models, with a focus on what can be learned from them, and whether such models are transferrable and scalable (i.e. can be readily expanded to other markets and/or technologies).*

### Session Chair

#### Andrew Jeffries

Director, Energy Division, Southeast Asia Department  
Asian Development Bank

### Presenters

#### Dany Qian

Global Vice-President  
JinkoSolar

### *Raising IRR and Profitability in the Renewables Industry*

*The renewable energy sector is both rapidly changing and growing, as component and deployment costs continue to fall. Accompanying these price decreases are the materialization of complementary technologies such as smart energy solutions and storage. To further complicate the mix, there are also some major changes in the policy, such as the liberalization of energy trading in the People's Republic of China. All these different forces will disrupt the existing business models in renewables. This presentation will focus on how existing renewables companies should capitalize on the disruption and further increase both the IRR of their businesses and the projects in which they are involved in.*

#### Liu Yang

Senior Fellow  
Energy Studies Institute, National University of Singapore

### *Integrating Solar Photovoltaics and Storage into a Long-Term Energy Technology Portfolio: Business Models Innovation and Lessons from Singapore*

*Limited land space and high intermittency remain key constraints to the mass deployment of solar in Singapore. Recent technological advancements in energy storage systems and virtual power plants have opened up new opportunities for solar in this small island state. Such developments are accompanied by shifts in policies, such as the Smart Nation Program. This presentation will focus on business model innovation to reflect the values of solar PVs, storage and virtual power plants in Singapore's electricity market. The experience of policy making to support the viability of different business models will be transferable to other ASEAN countries.*

**Ronald Sastrawan**

Senior Risk Analyst  
Munich Re

**Reliable Warranty Insurance: A Key Metric of Sustainable PV Projects**

*PV module warranties from insolvent suppliers are a problem in today's solar industry. The long warranty period of 25 years, combined with today's competitive market environment, results in a high probability that PV projects will be left alone with useless warranties in the future. Therefore, in order to ensure a PV project's sustainability, it is necessary to have an insurance company back-stop the module supplier's warranty. This presentation will describe the most important aspects of insurance structures, which governments and regulators should be aware of, when designing their policy and regulatory framework. By ensuring that the correct insurance is in place, the warranty risk for PV can be mitigated adequately. The presentation will explain the meaning of dedicated and non-dedicated limits, assignability, and reliable indemnification, and also how to avoid choosing an inadequate insurance structure, which is crucial to governments and regulators when designing tender requirements.*

**Stephanie Hay**

Principal Consultant and Networks & Innovation Team Lead  
TNEI Services Limited

**Integration and Investability of Renewable Energy in "Islanded" Grids**

*This presentation will explore technical, commercial and economic considerations for the integration of renewable energy in "islanded" grids based on case studies. Power system modelling can be used to characterize grid loading and stability to quantify the impact of renewables on frequency and voltage control and identify mitigation solutions such as voltage regulation and energy storage. This presentation will describe the benefits of a pragmatic, impact assessment approach will be presented. The "investability" of renewable energy in "islanded" grids will be explored through a review of viable business models that have been deployed to provide energy access to remote communities. Key success factors and enablers for investment will be explored from both investor and beneficiary perspectives. This presentation will also assess the role that local, regional and global political economy play in enabling and unlocking such investments.*

## Session 7: Innovative Solutions for Clean Cooking and Heating

### Auditorium C

4 p.m.–5:30 p.m.

Breakthroughs across the supply chain of the clean cooking and heating sector have been emerging independently across the Asia-Pacific region. The presentations in this session will highlight and analyze proven commercial solutions, and will deconstruct how they can be adapted or replicated across developing Asia. Technologies that will be discussed include char-briquetting, gasifier cookstove, small-canister LPG, etc. Aside from clean cooking technologies, the presenters will also discuss experience and strategies for reaching significant unserved markets and provide livelihood opportunities.

### Session Chair

#### **Karuna Bajrachaya**

Nepal Market Manager  
Global Alliance for Clean Cookstoves

### Presenters

#### **Nathaniel Camat**

Vice-President  
Pascal Resources Energy, Inc.

#### **The Gaz Lite Project in the Philippines**

Only about 40% of Philippine households use LPG for cooking. The other 60% predominantly burn firewood or charcoal to cook daily. Most of these families belong to the marginalized sector and live in urban poor and rural areas. They aren't aware that using solid fuel causes detrimental effects to their health and the environment. The price of standard LPG tanks is too steep for these cash-strapped households. Distribution costs to rural communities add significantly to the retail price making cooking with cleaner LPG prohibitive in many areas. This presentation details the aims of Pascal Resources Energy Inc. to serve 1 million families by 2022 by making LPG affordable and available through its Gaz Lite technology and a scalable business model.

#### **Ashma Vaidya**

Consultant  
Ajummery Bikash Foundation

#### **Social Marketing to Promote Electric Cooking in Sub-Urban and Rural Nepal**

While about 80% of the total households in Nepal are electrified, almost 60% of the total households still rely on firewood for household cooking and heating. About 500,000 households in Nepal are receiving electricity through a decentralized network of Community Rural Electrification Entities (CREEs), functioning as electricity cooperatives. This presentation will review a cooperative effort using social marketing and a local CREE to promote electric cooking technologies in Baluwa area of Nepal. This involved establishing links with the CREE, micro financing institutions and suppliers of electric cooking technologies with last mile retailers and service providers. Early results show that this initiative has increased public awareness about, and demand for, electric cooking technologies in the area, with a potential for replication in 282 other CREEs spread across 52 districts in Nepal.



**Carlo Figà Talamanca**

CEO

Sustainable Green Fuel Enterprise (SGFE)

***It's Simply Good Value for Money***

*This presentation will explore what has allowed Sustainable Green Fuel Enterprise (SGFE) to grow 20 fold in the last 5 years. For instance, in Cambodia, people choose SGFE's char-briquettes not because of their eco-friendly aspect, but because of their quality, which is simply good value for money. SGFE is also highly appreciated for its reliable delivery service and business professionalism. Today SGFE owns the know-how to effectively replicate and franchise its business model in order to become a major sustainable biomass fuel company.*

**Christian Liedtke**

Chief Technical Advisor

GIZ Nepal

***Inducing Behavior Change and Overcoming Financing Barriers with the "Earn While You Cook" Approach***

*Often clean cooking technologies are not adopted by users because the motivation to change cooking behavior is limited, and the technology is costly. The "earn while you cook" approach—developed by Servals Automation in India—has proven to overcome these challenges. This approach is based on a gasifier cookstove that produces charcoal while burning wood, and the creation of a value chain for the produced charcoal. This allows the user to earn money while cooking by selling the charcoal, and to repay the loan for buying the cookstove in less than a year. The presentation will show the proven track-record of this approach, and describe how it is being out by a cooperative in Nepal with the support of GIZ.*

## Session 8: From Asset Ownership to Shared Economy

### Auditorium D

4 p.m.–5:30 p.m.

According to market researchers, by 2025 the majority of energy companies in the world will not own ANY infrastructure and/or generation assets. We are moving away from the era where large (traditional) corporate and/or government balance sheets are required to fund cross-industry innovation. The new energy value chain will be “transaction centric” enabled by multi-sided markets (peer-to-peer, localized, and on-demand transactions). The competitive technology landscape is no longer about traditional technology competition but rather about non-energy stakeholders entering the market with innovative new service-based solutions. In this session, speakers will focus on how to demonstrate shared-economy solutions inside and outside the energy sector, will describe how this shift is already happening and how it can support an accelerated clean energy transition.

### Session Chair

#### Charles Navarro

Clean Energy Investment Specialist (Consultant), Energy for All Initiative  
Asian Development Bank

### Presenters

#### Sebastian Groh

Managing Director  
SOLshare

#### **Solar Peer-to-Peer Grids: From an Energy Access Model to the Future for Utilities Globally**

Leveraging a base of over 4.5 million solar home systems in Bangladesh, SOLshare, acting as the Airbnb of the off-grid world, has been developing the principle of how energy can be traded with the help of IoT devices. Rural villagers are turned into prosumers sharing their excess power. This modular infrastructure approach allows grids to grow dynamically while the ownership and assets are distributed. This presentation will explain the intricacies of energy sharing in bottom up grids, and describe what can be learned from it on a broader scale addressing fellow practitioners, policy makers and investors alike. This presentation will illustrate our belief that smart, peer-to-peer grids can be the future for utilities globally.

#### Manuel Cocco

Cofounder and COO  
Vireo

#### **Vireo, the Digital Green Revolution**

Vireo has created a fintech solution to connect local green projects with global impact investors through the blockchain. This presentation will describe the creation of a shared-economy solution that can support the required accelerated clean energy transition via the realization of promising green projects. Vireo provides investment opportunities in duly vetted green assets that generate returns while supporting the real economy. Vireo is the first company offering digital assets directly linked to and based on green commodity production, accessible to both traditional and digital investors on a global scale. Vireo products will be accessible to both traditional and digital investors, and will make it possible to adjust the risk/return profile of green investments in emerging countries.

**BenJeMar-Hope Flores**

Researcher

Power Systems Analysis and Control Laboratory - Seoul National University of Science and Technology

**Smart Contracts for Smart Grid: Harnessing the Potential of Blockchain Technology for Future Energy Systems**

*This presentation will discuss how blockchain based smart contracts could enable auditable exchanges between distributed energy resources without intermediaries to broker the transactions. Reduced transaction costs in energy sales can encourage more investments for renewable power. Recent implementations done by start-ups such as Power Ledger and LO3 Energy involve developing a system that allowed peer-to-peer energy trading among neighbors forming a micro grid based on a shared system of solar panels and storage systems. Another application is incentivizing sustainable behavior such as generating solar energy in a form of a cryptocurrency such as the SolarCoin, which is 50 times more efficient than generating BitCoin. This paradigm can transform the very architecture of our future resilient grids.*

**Kazuo Matsushita**

Professor Emeritus

Kyoto University

**New Financing Sources for Small Green Power Projects**

*While large energy projects have access to standard financing, many smaller projects lack access. Banks are reluctant to lend or on-lend at high interest rates. Instead, an innovative form of financing can be used—hometown investment trust funds (HITs). HITs were created in Japan as a new source of financing for solar and wind power. The objective is to connect investors with local projects in which they have personal knowledge and interest. Investors can choose their projects and invest through the internet. Using HITs, many Japanese investors have invested small amounts in local wind and solar projects. In response, local banks have started to invest. HIT funds have since spread to Cambodia, Viet Nam, Peru, and Mongolia, and are attracting attention from Thailand and Malaysia. The presentation will explain HIT funds and provide an example of HIT financing for renewable energy in Japan. (Note: this topic will be explored further in an ACEF Deep Dive Workshop on Friday, 8 June.)*

7 JUNE

## Session 9: Building Energy Efficiency: A Focus on Cooling

### Auditorium A

9 a.m.–10:30 a.m.

Cooling homes, offices and cities sustainably and affordably is one of the biggest challenges facing Asia, as its population aspires to more comfortable living and working conditions. Demand for space cooling is growing fast and will result in a significant increase in global energy consumption (and greenhouse gas emissions) unless effective policies and efficient technologies are adopted quickly and efficiently. While many discussions start with the goal of reducing the energy used for cooling equipment, long-term, systemic benefits can also be achieved through strategies that reduce the need for space cooling while still increasing comfort and health benefits. Both opportunities enable multiple benefits such as lower energy bills, fewer electricity capacity constraints and less use of climate-warming refrigerants. This session will explore strategies for space cooling and opportunities for reducing its impact on Asia's energy system.

### Session Chair

#### Melanie Slade

Senior Programme Manager, Energy Efficiency in Emerging Economies  
International Energy Agency

### Presenters

#### Yogaanandh Tanggaraju

Technical Director  
Danish Energy Efficiency Partners

### Innovative Case for Energy Efficiency: Energy Performance Contracting

Building energy efficiency is strongly linked to control systems, and auxiliary equipment to support proper, efficient cooling of building space. This presentation will discuss the application of energy performance contracting (EPC) to space cooling in buildings. EPC is a form of guaranteed energy savings contract, which enables consumers to realize the technology for space cooling they want and the savings they need. Through EPC contracts, building owners can establish a new baseline and a new benchmark, to help them effectively manage what they spend on space cooling.

#### Aldrin Calderon

Associate Director for Energy and Sustainability  
Ayala Property Management Corporation

### A Sustainable 3-Pronged Approach in Energy Management Program Implementation for Office Space Cooling

Identified as the main driver of electricity consumption in offices, space cooling plays a significant role in providing comfort in every office operations. On the average, air-conditioning systems account for more than two thirds (67%) of total building consumption. This presentation will illustrate how Ayala Property Management Corporation set and met a first-year goal to reduce 3.8M kg CO<sub>2</sub> equivalent of greenhouse gas emissions among its managed properties with the implementation of a sustainable 3-pronged approach: rolling out best practices, engineering intervention, and organic R&D for cutting edge technologies. This work to improve the efficiency and management of air conditioning energy use in buildings has translated into 21 Philippine Department of Energy Efficiency Awards and 1 ASEAN Award for Energy Management in 2017.

**Krishna Amancherla**

Advisory Practice, International Consultant

**Cut Peak Electricity Demand and GHG Emissions through Innovative Energy Storage!**

Energy storage changes the way buildings are cooled, saving money and reducing GHG emissions. Energy storage works with refrigeration equipment to produce cold water or ice, which is then stored in a tank and used to cool buildings during peak hours. This enables the shifting of cooling operations to off-peak hours, cutting peak electricity demand for utilities and reducing GHG emissions. Examples of real installations with quantitative analysis will be used to show how utilities and buildings benefit from using load leveling strategies. This presentation will build a persuasive case showing why energy storage is an integral part of UNEP's Global District Energy in Cities Initiative, which is being advocated across Asia.

**Arjun Gupta**

Founder &amp; CEO

Smart Joules Pvt. Ltd.

**Cost-Effective AI + IoT to Dynamically Optimize Variable Energy Systems**

DeJoule, the technology platform of Smart Joules, captures critical operating parameters of central cooling systems in real time, continuously dissects this data to identify sub-optimal operating practices, and drives energy efficient performance by automatically adjusting critical set points based on a menu of optimization algorithms. This cost-effective and smart technology has generated between 15% and 30% annual energy savings in multiple large existing hospitals in India, and is ready for accelerated adoption throughout the developing world where previous building management systems have been unaffordable and ineffective in saving energy. The presentation will include a detailed techno-commercial case study of the deployment of DeJoule in a national energy award-winning Indian hospital, with the aim of encouraging replication of the approach across the region.

## Session 10: The Future Decentralized Power Grid: Implications for Utilities and Consumers

### Auditorium B

9 a.m.–10:30 a.m.

*The share of renewable electricity in the power mix is growing, and much of this is decentralized, in contrast to existing centralized fossil generation capacity. It is inevitable that the structure of the power industry and the nature and role of power producers will fundamentally change, along with the growing penetration of disruptive technology. As this happens, decentralized and variable renewable energy systems, will be coupled with innovative energy storage technologies, greater integration of digitalized devices to support more optimized energy management, creative business models, and flexible markets. As the future power grid becomes more decentralized, diverse and distributed, what are the implications of this transformation for utilities and energy consumers individually as well as community based? The presentations in this session will explore the future roles of utilities and consumers and discuss strategies they can use to prepare for an uncertain and very different future.*

### Session Chair

#### Jennifer Leisch

USAID-NREL Partnership Manager, Office of Global Climate Change  
USAID

### Presenters

#### Venu Nuguri

Senior Group Vice-President, Power Grids Division, South Asia, Middle East and Africa  
ABB

### Power Systems of the Future: Grid Edge Technologies

*As disruptive elements are shaping the evolving who we are experiencing a paradigm shift. The lines between those who generate power and those that consume it are blurring. Feed-in and take-out points will increase rapidly leading to more complexity of the grid. This presentation will introduce the grid edge technologies ecosystem that enables these new opportunities. Due to increasing bi-directional power and information flows, grid operators need to respond to a complex and distributed network. The future grid will be augmented by an ecosystem of distributed energy capabilities, digital solutions and services. This presentation will further explain the new opportunities for digital solutions and services at the edge of the grid, which is an important pre-requisite for the efficient, flexible operation in the context of the energy transition.*

#### Anjal Niraula

General Manager  
Gham Power

### Solar-Based Productive End-Use Services to Help Farmers Increase Yield

*This presentation will describe Gham Power's online project development tool which enables farmers to improve their yield by using data-driven approaches to select optimal solar-powered agro-processing systems (water pumps, grinding mill, and cold storage). The tool also generates investment reports that banks/investors can review to fund the purchase of the PV system and the appliance. It is mainly meant to help off-grid rural farmers in developing countries as it makes agro-processing solutions more mobile since the source of power can be made available exactly where appliances are needed. It also makes the financing of the systems much more efficient and less risky by enabling mobile payments and remote monitoring.*

**Tim Watkins**

Lead Application Engineer  
Schweitzer Engineering Laboratories

**Decentralized Power Grids: Successfully Integrating Distributed Generation and Cyber Security Challenges**

*A decentralized power grid lends itself to the integration of a variety of renewable generation sources. Off-grid power generation and microgrids increase the rate of electrification in rural areas. This presentation will look at future challenges of a decentralized power grid with respect to the successful management of distributed generation, such as microgrid islanding and grid restoration. Another challenge is cyber security. The power industry has for many years speculated about the hypothetical impact of a cyber-attack on a power system, and then it happened in 2015 in Ukraine and has happened elsewhere since. With the dawn of more decentralized power systems, and cyber vulnerabilities, how can these modern-day challenges be addressed? Where should we look for answers?*

**Hugo Lucas Porta**

Head of Energy Department  
Factor

**Renewable Energy Tenders and Community [em] power [ment]**

*This presentation will discuss how community-driven renewable energy projects (CDREP) offer an unrealized opportunity for shared benefits and improving livelihoods in developing countries. While CDREP are on the rise in many countries – particularly in Europe and North America, numerous barriers still limit these initiatives. The main challenges include regulations and support schemes, lack of finance and finance mechanisms, lack of local skills, social misconception of renewables, and social objection to specific projects. The presentation will discuss the political, social and legal context that can help or hinder the development of CDREP.*

**P. Tharindu De Silva**

Design Engineer  
Lanka Electricity Company (Private) Limited

**Stakeholder Analysis and Success Story of Solar Rooftop Admission Development in Sri Lanka**

*The traditional utility business model of merely selling electricity is rapidly changing as society demands more sustainable models. In 2010, the utilities of Sri Lanka initiated a net metering scheme to admit solar rooftop systems to the network as a pilot initiative to adapt to this changing environment and to create a socioeconomic value addition to its business. In 2016, the government introduced two additional schemes that enable prosumers to sell their excess generation back to the grid. Lanka Electricity Company (LECO), in partnership with state bank, introduced a loan scheme to promote the PV rooftops resulting in a high increase of solar take up. This presentation will discuss the success story of these initiatives, stakeholder behavior network infrastructure impacts, technical limitations, challenges, and how utilities were benefited.*

## Session 11: Meeting the Challenges and Barriers of Energy Access

### Auditorium C

9 a.m.–10:30 a.m.

The presentations in this session will feature project examples highlighting a range of specific challenges and barriers (spanning policy, regulation, technology, and finance) that affect the implementation of energy access initiatives. The presenters will explore how these barriers have been addressed to enable projects to succeed in providing affordable energy access in a sustainable manner.

### Session Chair

#### Sujata Gupta

Director, Energy Division, East Asia Department  
Asian Development Bank

### Presenters

#### Porferio R. Jabla, Jr.

Board Member  
Yamog Renewable Energy Development Group, Inc.

#### **Accelerating Energy Access in Off-Grid Communities in Rural Mindanao: Knowledge Transfer from Indonesia to the Philippines**

Rural populations on the island of Mindanao face marginalization in the face of inequitable economic and separatist movements. In this difficult context, over the last 20 years the Yamog Renewable Energy Development Group, Inc. has pioneered community-managed minigrids for energy access. This presentation will discuss the core of its work: an approach to energy access that integrates watershed strengthening, local government partnership, and community governance of the technology, ensuring long lived minigrid projects. Having implemented more than 40 micro hydro and solar PV projects, Yamog now focuses on scaling its work with the establishment of the Renewable & Sustainable Energy Technologies (ReSET) Center in Mindanao, with the goal to accelerate minigrids deployment for energy access, by developing the skills of local youth and by synergizing the various energy access practitioners on the island.

#### Andre Susanto

Founder  
PT Inovasi Dinamika Pratama

#### **Success Stories from Indonesia's Government Funded Rural Microgrids**

Since 2012, the Indonesian government has funded, tendered and commissioned almost 600 solar PV and micro hydro systems across Indonesia's remote communities. The asset ownership lies with the provincial government which appoints a community entity at a village administrative level to operate them. Surprisingly to many people, the majority of these sites are still operational even with unsophisticated operation and maintenance schedule and minimal monitoring and evaluation of their performance. Examples of how the systems are managed by the community members, including tariff collection, will be provided in this presentation.

#### Menaka Rajaguru

Assistant Director  
Department of External Resources, Ministry of National Policies and Economic Affairs, Sri Lanka

#### **A Forward March towards an Energy Empowered Nation – A Case Study in Sri Lanka**

This presentation will discuss how Sri Lanka has achieved 100% electrification in the country, which has further triggered rapid development in rural areas and created new opportunities for investment. The presentation will explore the consistently applied national policy for providing electricity access to everyone, adaptation of innovative policies, strategies and the government's moves to ensure



adequate investments through various financial modalities. Having identifying diverse challenges in rural electrification; financial difficulties of the citizen, geographical barriers etc., the government took various approaches including extending electricity supply to premises of the households up to 50m, establishing a credit line for last-mile service connection to low-income households and recovering the loan in installments through a monthly electricity bill.

**Mini Govindan**

Fellow

The Energy and Resources Institute (TERI)

**Breaking the Shackles: The Case of a Women-Run Energy Programme from Rural Bihar, India**

Microfinance programs for women hold great promise, not only for accelerating universal energy access but for gender and social inclusion. This presentation will review a study conducted in rural Bihar, India, which analyzed the JEEViKA-TERI Programme, which created opportunities for women to be able to take decisions and own distributed renewable energy systems for lighting and cooking. The program not only helped to address material deprivation in energy-poor communities, but also created a sense of security, status and recognition for women in an otherwise socio-economically underdeveloped patriarchal society.

**Sohail Hasnie**Principal Energy Specialist, Energy Division, Central and West Asia Department  
Asian Development Bank**Electricity-in-a-box—An Example of Technology Leapfrogging for Access to Energy**

Cheap solar power and high density Lithium-ion battery technology is giving us an alternative technology solution to connect millions of people who do not have access to modern forms of lighting. This presentation will explain ADB's concept design, and its pilot and scale up plans for off-grid solar using super-efficient 12 Volt DC appliances, solar panels and Lithium-ion battery. A full specification for the electricity-in-box solution will be made available to audience. Along the side of the presentation, the electricity-in-box solution will be available for demonstration.

## Session 12: Tools and Products to Take Us to the Future

### Auditorium D

9 a.m.–10:30 a.m.

*It will require creativity and robust foresight to addressing immediate energy sector needs while also planning for future needs in an ever-evolving social and technical landscape. The latest technologies in electricity generation, assessment and planning tools such as GIS mapping and Big Data as well as the digitalization of many existing technologies can meet this challenge. The focus for this session will be on entrepreneurs, companies and service providers who can highlight technologies that can deliver a step change in energy system services. Presenters will discuss the benefits to, and impacts on, incumbent companies (and organizations) that are currently meeting these needs.*

### Session Chair

#### **Priyantha Wijayatunga**

Director, Energy Division, South Asia Regional Department  
Asian Development Bank

### Presenters

#### **Paul Bertheau**

Geographer  
Reiner Lemoine Institut

#### **Geospatial Data and Mapping - Advancing the Knowledge of Off-Grid Electrification in Myanmar**

*Achieving electricity access for all remains a significant challenge for developing economies. In the context of rural electricity access, it is becoming clear that both the private and public sector must work together. As such, both policy makers and practitioners face the challenge of identifying priority regions for off-grid electrification. In a project with Nexant, INTEGRATION, and Suntac Technologies which was funded by ADB, Reiner Lemoine Institut (RLI) conducted a novel geospatial analysis of Myanmar's dry region, revealing the potential and specific sites for renewable energy based minigrids. The geospatial analysis methodology focuses on identifying "good investment opportunities" (best-invest vs. least-cost), and presents this in an intuitive web map, enabling stakeholder analysis and adoption. This presentation will focus on the power of geospatial analysis for rural electrification planning and will include suggestions for scaling up the approach across Myanmar.*

#### **Yuvaraj Dinesh Babu**

Team Leader - The World Bank Rooftop Solar TA Program  
Ernst & Young

#### **Blockchain - Smart Disruption for Clean Energy Deployment**

*Deployment of "blockchain" in clean power generation offers immense potential to profoundly enhance cost effective transactions in an environment where improvements in operational efficiency and reliability are increasingly important. Use cases for blockchain are already emerging in the clean energy sector given its anticipated positive impact of various forms of generation mix and technologies on the utilities. With India positively marching towards implementing its ambitious 175 Renewable Energy target besides 100 Smart Cities, 35 million Smart Meters, and 28.2 GW Solar Agricultural Pumps Programs, a host of practicable disruptive solutions are needed for its faster and timely uptake. The presentation will cover blockchain basics for the clean energy sector, prevalent global use cases and proposed applications of blockchain technologies in aiding the successful accomplishment of India's clean energy missions.*

**Richard McIndoe**

Executive Chairman  
Edge Electrons

**Smart Voltage Regulation and Power Quality Equipment for Networks and Consumers**

Edge Electrons develops smart voltage regulation and power quality equipment for networks and consumers. Increasingly renewables are causing major problems in grid management. This presentation will introduce Edge's globally patented digital technologies which enable utilities to monitor, control and maintain power quality across the Low Voltage network. Edge's eSaver voltage regulator is low cost, simple to install, and reduces domestic energy consumption ~10%. It requires no behavioural change and is fully communications enabled, which allows clear validation of customer energy and CO<sub>2</sub> savings. High-frequency, real-time communications also enables networks to vary voltage at the point-of-load to control peak electricity demand. Edge's eSensor further enables end-use digitization as a low cost, fully communications-enabled transformer monitoring device, improving data analytics and control across the LV transformer network.

**Walter Merida**

Director  
Clean Energy Research Centre, University of British Columbia

**Toward Low or Zero Carbon Energy Systems: Clean, Connected and Safe Transportation**

The University of British Columbia is the first Canadian university with a sustainability policy, and all its operations are driven by this policy, from procurement, construction and contracting processes, to research, education and innovation programs. As a result, greenhouse gas emissions have been reduced by 33% from a 2007 baseline. This presentation will describe an illustrative project from this initiative: a multi-storey parking garage that will host solar PV generators, a hydrogen refueling station powered by solid-state electrolysis, and advanced electric and fuel cell vehicle services. Beyond passive recharging and refueling transactions, these connected assets will become active participants in energy management schemes and new business models. They will link energy, transportation and smart city design into future energy system architectures.

**Syed Munir Khasru**

Chairman  
The Institute for Policy, Advocacy and Governance (IPAG)

**The Fourth Industrial Revolution and the Future of Energy: Opportunities and Challenges**

The advent of the Fourth Industrial Revolution (FIR) has been catalyzing rapid reform across all sectors, industries and economies. Energy is one of the leading sectors expected to be significantly impacted by advanced technology and process changes. The Fourth Industrial Revolution is significantly impacting all segments of the energy sector value chain. This presentation focus on opportunities and challenges in renewable power production, smart grid management, demand-side management, AI (artificial intelligence) applications and the use of Big Data for the energy sector.

**Hemant Nandanpawar**

Senior Direct - Advisory Services (GPS - IDP Practice)  
Ernst & Young LLP

**Blockchain: Smart Disruption for Clean Energy Deployment**

# Knowledge Dim Sum with Clean Energy Entrepreneurs

## Auditorium Zones A-D

11 a.m.–12:30 p.m.

## Opening Remarks

### Diwakar Gupta

Vice-President, Private Sector and Cofinancing Operations  
Asian Development Bank

*Out with the old and rusty, and in with the brand new and innovative! During this fast-paced and dynamic 90-minute session, ACEF participants will have the opportunity to network with 24 different entrepreneurs and start-ups that are developing new business and delivery models and turning the energy world on its head. Participants will rotate from table to table every 12 minutes in the “world cafe” format which ACEF has been using for its popular Knowledge Networking sessions over the past three years. At the beginning of each round, entrepreneurs will pitch their innovative and game-changing clean energy technology and business models that aim to disrupt or reshape the future of energy.*

*Examples of areas covered include blockchain for microgrids, energy storage for smart-grids, power appliances for the agricultural sector, and cutting edge solar and wind energy technologies. ACEF participants can sample a taste from each of the tables, just as one does when ordering a variety of Dim Sum offerings. This is not just an ordinary session, so participants should come with their eyes wide open, ready to engage with these entrepreneurs, and start-ups and find out which company may be a match, potential partner, or collaborator as we navigate together toward Asia’s cleaner energy future!*

## Menu and Table Numbers

Table No.	Name	Company	Overview
1	Ruslan Rakymbay	Primus Power Kazakhstan (Kazakhstan)	Long-duration, fade-free energy storage solutions for smart grids.
2	Ke Lu	ZBestpower (China)	Flow battery technology and energy storage-based solutions.
3	Somboon Lertsuwanaroj	Impact Solar Limited (Thailand)	Private solar rooftops in Thailand and a range of renewable energy projects in Asia and the Pacific.
4	Aniruddha Sharma	Carbon Clean Solutions (United Kingdom)	Pioneering technology that allows for safe, efficient capture and recovery of CO <sub>2</sub> emissions.
5	Roli Gupta	Oorjan Cleantech Pvt. Ltd. (India)	Provide solar energy for homes and businesses through low interest loans and mobile app monitoring.
6	Rui Beon	BeOn Energy (Portugal)	Provide European quality microinverters that bring simplicity and elegance to solar.
7	Rudy Roy	HST Solar (United States)	Leverage computing power to reduce the design and engineering costs for large solar projects while optimizing outcomes.
8	Marcelle Huizenga	Sparkmeter (United States)	Comprehensive low-cost metering solutions from rural micro-grids to existing urban central grid utilities and underserved markets.
9	Alex Au	Nextracker (United States)	Design, manufacture, build, and service single-axis solar trackers for power plants of the future both big and small.

Table No.	Name	Company	Overview
10	Thomas Bräck	Meva Energy (Sweden)	Develop and offer biomass gasification technology for low-cost decentralized biogas production for industries.
11	Arjun Gupta	Smart Joules (India)	Make saving energy easy and profitable by eliminating waste in operations.
12	Louis Jolivet	Okra Solar (Cambodia)	Provide accessible and affordable energy to those living in off grid areas around the world via smart, modular, mesh grid technology.
13	Matthew Basinger	Electric Vine Industries (Indonesia)	Deliver smart-metered, pre-paid electricity via a unique physical footprint that is highly scalable and expandable.
14	Anjal Niraula	Gham Power (Nepal)	Power appliances that help increase agricultural income (mill, water pump, dairy, telecom, cyber, petrol pump, ATM).
15	Kheav Thida	Solar Green Energy Co., Ltd. (Cambodia)	Provide high quality solar energy products and services (solar panels, inverters, batteries, charge controllers, pumping motors, light bulbs, and other components).
16	Chunguang Wang	EQuota Energy (China)	Full life-cycle services covering data analytics, energy optimization, carbon services.
17	Hussain Akbarally	Windforce Pvt Ltd. (Sri Lanka)	Construct state-of-the-art wind power plants that meet international standards guaranteed to provide uninterrupted flows of energy.
18	Quynh Trang Nguyen	Hoa Phong E&C Development and Investment Joint Stock Company (Viet Nam)	Active in the fields of technology, renewable energy, and environmental protection. The main products are Maximum Power Point Tracking Charge and Battery Balancer for solar power systems.
19	Min Chan Win	Myanmar Eco Solutions & EAM Myanmar (Myanmar)	Promote and distribute renewable energy systems of all sizes in the Myanmar market through a commercially viable process for investors and developers.
20	Leandro Leviste	Solar Philippines (Philippines)	Southeast Asia's largest solar company and integrated developer, investor, manufacturer, and EPC.
21	Yi Liu	Energy Internet Research Institute (China)	Mission is to utilize clean energy technologies, information technologies and new business models to make energy production cleaner, energy transmission more flexible, effective, and market-oriented. Focus areas are: energy storage; electric vehicles; hydrogen power; and smart buildings.
22	Mark Miles	MMCI Solar (United States)	Solar thermal collector design that utilizes air to transport heat which eliminates the use of copper in construction of the panel, and stainless steel piping to transport heat.
23	Kaikai Yang	Energolabs (China)	Cutting-edge quantum blockchain platform, that measures and regulates clean energy produced within local microgrids that empowers consumers.
24	Jackie Yap	HiGi Energy (Philippines)	Convert invasive and fast-growing water hyacinth into solid biofuel for barbecuing, industrial heating and eventually power generation application.

## Session 13: Electrification of the Transport Sector

### Auditorium A

2 p.m.–3:30 p.m.

A clean, efficient, and effective transport system is critical to economic growth and to the health and welfare of inhabitants of fast-growing urban areas. Following the Paris Climate Agreement in December 2015, a long-term political signal was sent to decarbonize the transport sector. More than three-quarters of national climate plans (nationally determined contributions, or NDCs) explicitly identify transport as a mitigation priority. As technology improves, and global transport systems become increasingly electrified, energy efficiency policies in the sector are needed to minimize rising electricity demand and to limit the impact on energy security. Several countries in Asia are setting ambitious targets for the transport sector; however, in this fast-changing market, most policymakers are unsure of what are the most suitable approaches and strategies, and how to integrate these with energy efficiency policies. New and innovative technologies such as electric vehicles have the potential to reduce emissions and alleviate variability in energy supply if implemented with energy efficiency measures. The presentations in this session will cover innovative policies and strategies, identify the challenges and opportunities supported by relevant case studies, and provide key insights and recommendations for policymakers and business leaders.

### Session Chair

#### James Leather

Chief of Transport Sector Group  
Asian Development Bank

### Presenters

#### Leonardo Paoli

Analyst  
International Energy Agency

#### Global EV Outlook 2018

Under the Electric Vehicles Initiative, the International Energy Agency tracks global developments in the electric vehicle markets, and conducts projections towards 2030. This presentation will discuss IEA's Global EV Outlook which describes trends in uptake of electric vehicles, charging infrastructure, grid interaction and CO<sub>2</sub> emissions. The report also includes a special focus on battery developments for electric mobility and feasibility of electric bus deployment. The results include both a quantified overview of trends in deployment, investment and technologies, and provides a wide range of policy recommendations.

#### Robin Hughes

Chairman  
Clean Vehicle Solutions (Asia) Limited

#### Developing a Sustainable Electric Vehicle (EV) Business Model in Emerging Markets

We are all aware of the accelerating growth of the EV market. Original Equipment Manufacturers (OEMs) plan to phase out diesel engines in the next decade, and many individual countries plan to phase out fossil fuel vehicles by 2040. Adopting EV as a sustainable mobility solution is challenging, especially in stressed and polluting countries where “Green & Clean Fuel” policies have a checkered history. EV in emerging markets requires focused planning and execution. Where are EVs best used? Does the market have scale to justify government support? Is there infrastructure in place without compromising domestic “grid” supply? Can we guarantee EV owner affordability? This presentation will demonstrate that these challenges can be met through coordinated partnerships involving all those in the commercial business cycle.

**Reji Kumar Pillai**

President  
India Smart Grid Forum

**Implementation Plan for Electrification of Public Transportation for an Indian Metropolitan City**

Typically, the electrification impact study for EV rollout is done after the routes, vehicles and chargers have been duly selected. This reactionary step often leads to additional grid capex costs and/or higher tariffs. Further, if the location is not optimized, the charging infrastructure owner/operator, is often subjected to poor utilization of charger assets compounded by punitive demand and electricity charges. This often increases the overall cost of any EV project. To compensate for this deficit, the industry seeks buyer incentives and concessional electricity tariff from the government. However, if all the above planning parameters were taken as a single optimization objective and iterated to find the lowest total cost solution, the overall costs could be dramatically lowered. This presentation will discuss that approach.

**Balawant Joshi**

Managing Director  
Idam Infrastructure Advisory Private Limited

**Designing an Optimum Feebate Structure for Light Duty Vehicles (<3500 Kg) in India**

The Government of India is aggressively and extensively promoting electric-mobility. Feebates, a market-based policy employing 'polluter pays principle', in conjunction with strict vehicle performance standards, can be an effective strategy to drive this transition. However, the Indian Corporate Average Fuel Consumption (CAFC) norms for light-duty vehicles under 3,500 kg do not offer any incentives to exceed the benchmark or to transition to newer technologies. An effective feebate structure should be revenue neutral and should be linear. This presentation will propose a mathematical function to determine optimum feebate structure for light-duty vehicles (LDVs), which can be implemented using a simple excel based tool, and using publicly available vehicle registration data. The presentation shall discuss the pros and cons of both a linear and stepped feebate functions, as well as the levels of incentives and penalties.

## Session 14: Sustainable Urban Energy Solutions: Role of Renewables

### Auditorium B

2 p.m.–3:30 p.m.

With the projected urbanization of Asia over the next three decades, the energy systems in these growing cities need to be transformed, in order to avoid locking the urban energy infrastructure into a carbon intensive scenario for many decades. Without changes to how urban environments provide services, energy use in these areas will experience massive growth, along with global emissions of greenhouse gases and local air pollution. The use of renewables also contributes to urban resilience, as has been demonstrated through the use of a range of technologies including solar PV, geothermal for heating, heat pumps, electric vehicles, and energy storage. Presentations in this session will describe the relationship between renewables, energy efficiency, infrastructure development, and urban transportation, and how renewables can, and will, be an important part of the solution in delivering climate resilience and sustainability for cities. They will also stimulate discussion about what lessons Asia can learn from other regions.

### Session Chair

#### Yong Chen

Programme Officer – Sustainable Urban Energy  
IRENA

### Presenters

#### Recca Liem

Principal  
ENEA Consulting

### **Renewables-Based Microgrids: An Emerging Urban Energy Solution for Developing Asia**

Cities and urban areas will need to use different, new energy solutions in tandem to meet their growing electricity demands for electricity in a sustainable manner. One potent combination of such technologies that has been gaining attention is microgrids: generation assets, battery storage plus energy management systems, with clearly defined electrical boundaries, able to operate independently from the grid. Traditionally, the microgrids are based on diesel-engines and primarily used for strategic assets, like military defense, and airports. With the technology advancement and decreasing costs of renewables and batteries, microgrids become more accessible for urban applications. This presentation will examine how embedding renewables in microgrids could enhance the affordability, reliability of supply and reduce global emissions, explore cases studies, and summarize the solutions can be particularly interesting for developing Asia, where the reliability from grid supply remains to be improved.

#### Kevin Treco

Associate Director, Programmes and Innovation  
Carbon Trust

### **Megacities: Transitions to Clean Energy Solutions**

By 2050, up to 65% of Asia's population is expected to live in cities. The strain placed on major cities by rapid urban growth is immense and the implications clear: efforts are needed to support Asia's further economic and social development, while reducing its use of carbon intensive energy. This presentation will highlight findings from a recent report by the Carbon Trust and the Inter-American Development Bank on developing clean energy solutions in Latin America's major cities. Drawing on experiences working with city governments in Malaysia in particular, this presentation will discuss how some of the lessons learned and recommendations from this report may be transferred to the rest of Asia. Six building blocks were identified for action: policy, governance, project prioritization, stakeholder engagement, finance and resilience.



**Nadhilah Shani**

Technical Officer  
ASEAN Centre for Energy

**ASEAN Policies Pathway in Untapping RE in Transport Sector through Electric Vehicle**

Primary energy demand in ASEAN is projected to double by 2025, with transport taking a big part of it after the industrial sector, due to urbanization trend and the growing economy. Increasing energy demand in the transport sector will also create more environmental challenges into ASEAN since it will lead to a projected 35% increase in CO<sub>2</sub> emission by 2025. With the strong commitment to tackling climate challenges through renewable energy in the region, ASEAN is exploring the option of following the global trend of promoting EVs in the transport sector. The question arises as to how ready ASEAN is to shift the transport sector toward electric mobility, considering the different stages of the economies across the 10 ASEAN member countries. This presentation will answer the question by identifying the main drivers and barriers for ASEAN in implementing EVs in the region, and will recommend actions needed to accelerate EVs with a suitable localized approach for ASEAN.

**Kyle Datta**

Partner  
Ulupono Foundation

**Renewables and Resilience**

The lessons of super storms in Puerto Rico and Hurricane Sandy in New York, taught utilities about the importance of resilience as a design criteria in the era of climate change. As utility systems set goals of rapid renewable penetration, there has been much research and investigation on how to preserve reliability as the penetration of intermittent renewables increases. However, there has been very little work on the role of renewables in increasing system resilience—the ability to withstand and recover from a large scale disruption to the grid. This presentation will share insights into how renewables performed in Puerto Rico, the lessons for resilience from the storm, and how renewables and more advanced grid architecture, including microgrids, and defense in depth are being used to rebuild Puerto Rico's electrical system. Similarly, in Hawaii, the grid modernization effort and push to accelerate renewables is also being used as an opportunity to address system resilience. There are significant implications to other tropical and island power grids.

**Haukur Hardarson**

Chairman  
Arctic Green Energy Corporation

**The “Other” Geothermal Energy**

Low-grade geothermal resources have enormous potential for district heating, industrial process heat, and other applications. Such potential has been systematically overlooked in developing Asia, partly due to lack of knowledge and partly due to a narrow focus on geothermal for electricity generation. But awareness is finally growing, thanks to a better understanding of resources, smarter policies, and cross-border transfers of advanced technology. Arctic Green Energy (AGE), a global geothermal leader from Iceland, is spearheading Asia's geothermal revolution. The presentation will describe how AGE's joint-venture with Sinopec Group is helping to transform the role of geothermal energy in the heating sector of the People's Republic of China (PRC). It will also share AGE's vision for sustainable, affordable geothermal energy in new markets including Mongolia, Kazakhstan, and other Asian developing countries.

## Session 15: Transformative Technology Solutions for Energy Access

### Auditorium C

2 p.m.–3:30 p.m.

*This session will showcase how innovative technologies have been employed to improve energy access. The presentations in this session will highlight the major issues regarding energy access and the potential application of innovative technologies to address these challenges. A number of types of interventions will be discussed, such as but not limited to blockchain technology, DC micro-grids, interconnection of micro-hydro project clusters, and the internet of things for solar home systems, etc.*

### Session Chair

#### Dipal Barua

Cofounder  
Grameen Bank

### Presentations

#### Jiwan Kumar Mallik

Mini Grid Interconnection Expert  
Alternative Energy Promotion Center

#### **Grid Interconnection of Micro Hydropower: An Experience Sharing from Nepal**

*Improved socio-economic conditions have led to rapid overloading of micro hydro projects (MHPs) in Nepal. To address this, the Alternative Energy Promotion Center (AEPC-RERL) has worked on the interconnection of multiple MHPs, targeting improved reliability, load sharing, and availability of power to run bigger loads during off-peak hours—ultimately leading to wider socio-economic benefits through productive end uses of energy access. If the national grid is extended into these areas, the interconnected MHP clusters can easily be interconnected to the national grid. Using an iterative approach that AEPC-RERL has developed in interconnected three clusters of MHPs, this presentation will discuss the financial and economic analyses of deployed interconnected MHPs. The presentation will also explain the need for a synchronizing electronics solution that would allow each MHP of a cluster to sell to the national grid on an equal basis.*

#### Jaideep Bansal

Energy Access Leader  
GHE

#### **Direct Current (DC) Microgrids and Tourism to Empower Remote Rural Communities**

*There are more than 400 million people living in darkness in the remote mountain and island regions of the world, with negligible access to energy, education, livelihood and medical facilities. DC micro grids with low voltage levels are a viable solution for these off-grid communities due to zero risk of an electric shock hazard, when the nearest medical center is 2–3 days away. The solution is affordable, compact and sustainable and is easily maintained by the indigenous local community themselves. This presentation will discuss examples of successful microgrid projects that have allowed communities to move out of poverty, and enabled and empowered local economies.*

#### Yang Kaikai

Cofounder and COO  
Energolabs

#### **Using Blockchain to Further Energy Access through Decentralized Autonomous Energy (DAE) Communities**

*Energolabs is using blockchain technology for peer-to-peer energy trading in non-grid connected areas to enable microgrids to meet community demand for electricity using renewable energy sources. The potential of blockchain for management and analysis of these microgrids and their data is huge; however it is often hindered by existing local policies and regulations, infrastructure, education levels, and network levels in the area. This presentation will discuss Energolabs' experiences in implementing different business models*

and infrastructure models such as leasing of equipment for a down payment to create prosumers as a subscription package, virtual net metering and virtual storage sharing economy, using space assets to provide communication network in these areas to integrate IoT and blockchain technology, and different peer-to-peer user scenarios based on geographical layout.

**Bishal Thapa**

Managing Director  
Saral Urja Nepal

**Aashish Chalise**

CEO  
Saral Urja Nepal

**Scaling Up Distributed Micro Utilities**

*With Nepal's emerging political-economy decentralization, federalism has opened new opportunities for distributed micro-utilities. The government has announced plans for every rural municipality to have at least 500 kW of distributed renewable energy, and there are 750 such municipalities. This joint presentation will discuss the experiences of Saral Urja at the forefront of developing rural distributed RE systems – micro utilities, and their keys to success in the model, and potential for its scale up.*

## Session 16: Transforming from the Old to the New in Energy Systems

### Auditorium D

2 p.m.–3:30 p.m.

*The “economies of scale” paradigm that guided development of existing electricity systems, refineries and transportation systems was based on a rational technical and economic framework. Comparisons between digital economies and asset heavy-infrastructure often oversimplify the rate of change possible in energy systems. This creates uncertainty in planning energy systems, where there is an inherent conflict and “messiness” arising between stakeholders in the sphere of technology, business and policy. To manage this uncertainty, it will require flexible planning that can evolve alongside technology and business model innovation. Imagining the future might be easy... but getting there will be the challenge! For this session, the focus will be on speakers who can articulate the challenges of transitioning to “NEW” energy systems and solutions that are adapted from, or evolve from, conventional past and current approaches and thinking.*

### Session Chair

#### Farid Ahmed Khan

Senior Energy Specialist  
Islamic Development Bank

### Presenters

#### R. K. Srivastava

General Manager  
Power Grid Corporation of India Ltd.

### *The Role of Power Transmission in Combating Climate Change: Powergrid’s Perspective*

*This presentation will describe the steps taken by Power Grid Corporation of India, Ltd. a transmission and distribution company, to combat the effects of global warming and climate change. One example includes the creation of high capacity transmission network “NER-NR HVDC Interconnector” for importing 6,000 MW of low carbon hydropower from India’s North Eastern Region to the Northern Region which is dominated by carbon intensive coal based thermal power. This network virtually eliminated the CO<sub>2</sub> generated by thermal generation used to meet the energy demand of the Northern Region. Other initiatives include the development of high capacity “Green Energy Corridors” to evacuate about 20,000 MW of renewable energy.*

#### Hongpeng Liu

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

### *Energy Transition Pathways for the 2030 Agenda in Asia and the Pacific*

*This presentation will go to the heart of the challenges of the energy transition and propose a new paradigm of energy system planning. Its insights are derived from recent studies by ESCAP featuring current status and outlook for the energy transition in Asia and the Pacific. The presentation will propose options for accelerating the achievement of universal access, a substantial increase in renewable energy and the doubling of the rate of energy efficiency. The menu of options includes evidence-based policy pathways and planning tools, technology options including digital technologies and Big Data as well as cooperation for finance and investment. The presentation invites the private sector and policy makers to come together and have an informed debate on the design of the energy transition in the region considering its economic, social and environmental benefits for all.*

**Pramod Jain**

President  
Innovative Wind Energy, Inc.

**Digital Business Models for the Future Electric Utilities**

*Within the next decade, the cost of dispatchable renewable energy will achieve cost parity with conventional power plants. When this occurs at a larger scale, there is likely to be a significant amount of defection by the most profitable customers to self-generation or other forms for community-based generation. This would cause the collapse of the current business model of utilities. This presentation will answer the question: when utility-scale RE+storage is below wholesale price of energy, and smaller-scale RE+storage is below retail price of energy, then what type of business models would be sustainable for utilities? New digital business models are currently evolving in the US and the EU that are a mashup of cryptocurrency based trading platforms, trading models in which utility owns the exchange in which consumer and producers trade, and several other innovative options. This presentation will explore such alternatives and describe a digital roadmap for utilities.*

**Traver Kennedy**

Chairman and CEO  
Joi Scientific Operations Pte. Ltd.

**Closing the 100-Year Gap: Electricity in Every Home**

*More than 100 years after the first power cables were laid down, 1.2 billion people around the globe still have no access to electricity. Many of these people live in the poor neighborhoods that have sprouted around megacities in the developing world, which fall outside the design and reach of the grid that supports these cities. To take electricity to the level of 100% access, we need a distributed source of power that can operate independently of the electric grid. This presentation will describe new technology advances that are coming to market that can reliably produce electricity and heat on-site 24/7, such as those using the hydrogen in water, to help close electricity's last mile.*

## Closing Plenary: Fostering Innovation in the Clean Energy Sector in a Time of Extreme Uncertainty

*Auditorium A-D*

4 p.m.–6 p.m.

### Key Messages from ACEF 2018

**David Elzinga and Peter du Pont**

ACEF 2018 Cochairs

### Panel Discussion

#### Moderator

**Ashok Bhargava**

Director, Energy Division, Central and West Asia Department  
Asian Development Bank

#### Panelists

**Rana Adib**

Executive Secretary  
Renewable Energy Policy Network for the 21st Century (REN 21)

**Danny Kennedy**

Managing Director, California Clean Energy Fund  
Cofounder, Sungevity and Powerhouse”

**Chunguang (Charlotte) Wang**

Founder & CEO  
EQuota Energy Technology (Shanghai) Co., Ltd.

**Aniruddha Sharma**

Cofounder & CEO  
Carbon Clean Solutions

### Special Keynote from the Asian Development Bank

**Takehiko Nakao**

President  
Asian Development Bank

## Keynote Speeches

### **Haukur Hardarson**

Chairman and Founder  
Arctic Green Energy Corporation

### **Roli Gupta**

Founder and CEO  
Oorjan India

### **Leandro Leviste**

Founder and CEO  
Solar Philippines

## Raffle for iPad give-aways

