

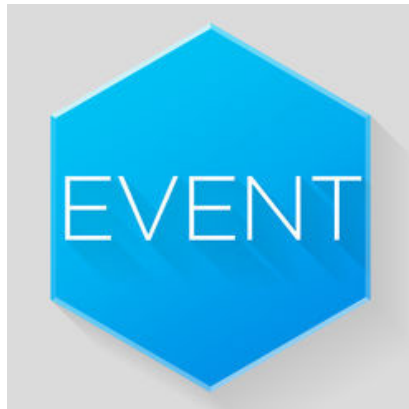


# ASIA CLEAN ENERGY FORUM 2018

Harnessing Innovation to Power the Future

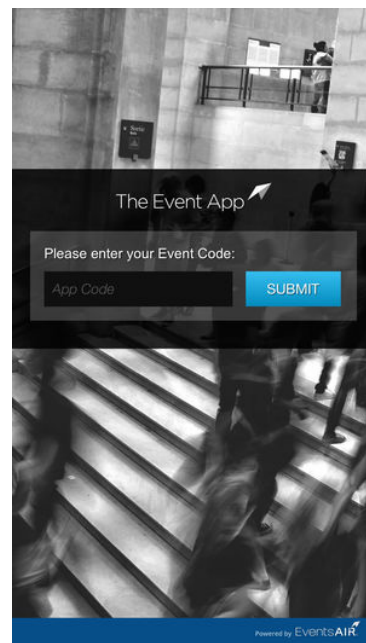
DEEP DIVE PROGRAM, 5 and 8 June

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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>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 Sustainable 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>Clean Cooking</li> </ul>	<b>OPENING PLENARY</b> “How Can Asia and the Pacific Leapfrog to a Low-Carbon Energy Pathway?” (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 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> </ul>
11 a.m.– 12:30 p.m.	<b>SPECIAL EVENT</b> Knowledge Dim Sum with Clean Energy Entrepreneurs	
2 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 p.m.–6 p.m.	<b>CLOSING PLENARY</b> “Fostering Innovation in the Clean Energy Sector in a Time of Extreme Uncertainty”	

## DEEP DIVE WORKSHOPS—TUESDAY, 5 JUNE

Auditorium Zones			
A	B	C	D
<b>Promoting Innovations for Energy Efficiency Technologies, Finance and Business Models in Developing Asian Countries</b>  (KEA & ADB)	<b>11th Meeting of the Asia Solar Energy Forum</b>  (ASEF)	<b>Grid Integration Of Variable Renewable Energy: Innovative Solutions at the Transmission and Distribution Levels</b>  (USAID, GIZ & NREL)	<b>Developing Sustainable Mini Grids</b>  (ADB)

Multifunction Halls			Auditorium Annex 2
1	2	3	
<b>Promoting Efficient, Clean Cooling through Technology and Policy Innovation</b>  (IEA, GIZ, KCEP)	<b>Realizing the Potential of Waste to Energy</b>  (ADB)	<b>From Startup to Scale Up</b>  (ADB, CalCEF, Start-Up Energy Transition)	<b>Deep Dive Workshop on Clean Cooking</b>  (ADB, GACC)
			<b>Sustainable Energy for All in the Asia-Pacific</b>  (ADB, SEforALL)

## DEEP DIVE WORKSHOPS—FRIDAY, 8 JUNE

Auditorium Zones			
A	B	C	D
<b>Opportunities and Models for Renewable Energy Project Finance</b>  (ADB, British Embassy Manila)	<b>Gigatech Solutions for Gigaton Problems: Floating Solar Practice and Potential</b>  (ADB, SEAS)	<b>Renewable Energy Auctions: A New Paradigm for Asia</b>  (USAID)	<b>Battery Technology for Clean Energy</b>  (ADB & GESA)

Multifunction Halls			
1	2	3	
<b>Connecting Asian and Global Carbon Capture Utilization and Storage (CCUS) Expertise</b>  (ADB)	<b>Women Entrepreneurship in Clean Energy</b>  (ADB, PFAN, ARE, Energia)	<b>Scaling-Up Solar PV Deployment: Implementing Projects with Assured Quality</b>  (IRENA)	



## Promoting Innovations for Energy Efficiency Technologies, Finance and Business Models in Developing Asian Countries

5 June 2018 (Tuesday), 9 a.m.–5.30 p.m.

### Background

Asia and the Pacific is on track to becoming the world's largest energy-consuming region in the next decade, exposing the region to energy security and climate change risks unless measures are taken to contain energy consumption. Energy efficiency is highly cost-effective and has the potential to be a main driver for reducing energy consumption, enhancing energy security, and addressing climate change risks. It is also a key strategy for countries to meet the climate change targets outlined in their nationally determined contributions (NDCs) as part of the 2015 Paris Agreement. Developing countries in Asia and the Pacific, while particularly vulnerable to the effects of climate change, still need to meet their own growing demand for energy to drive their economic and social development. Pursuing energy efficiency initiatives will contribute significantly to ensure that developing countries meet their energy needs and enhance their own national energy security, while balancing the need to reduce environmental risks and impact.

This Deep Dive Workshop (DDW) is being jointly organized by the Korea Energy Agency (KEA) and the Asian Development Bank (ADB). These organizations have been steadily pursuing efforts to promote energy efficiency initiatives and investments in Asia and the Pacific countries through knowledge sharing, technical advisory services, and facilitating investments in energy efficiency.

### Objective of the Workshop

This DDW will provide participants, particularly from developing countries, an opportunity to become familiar with innovations in policies, technologies, finance, and business models in the areas of both supply-side energy efficiency (SSEE) and demand-side energy efficiency (DSEE); and to explore possible applications for future investment projects as well as technical assistance.

### Agenda

8:30 a.m.–9 a.m.	Registration
9 a.m. – 9:20 a.m.	<p><b>Keynotes:</b></p> <p><i>B. M. S. Batagoda</i>, Secretary, Ministry of Power and Renewable Energy, Sri Lanka</p> <p><i>Rahamat Mohammad Ullah Dastaqir</i>, Additional Secretary, Power Division, Ministry of Power, Energy and Mineral Resources, Bangladesh</p>

*continued on next page*

9:20 a.m. – 10:40 a.m.	<p><b>Session 1: Advancing Energy Efficiency in the Policy Arena: Where are we now?</b></p> <p><b>Moderator:</b> <i>Pil-Bae Song</i>, Asian Development Bank</p> <p><b>Session Description:</b> Speakers will discuss progress achieved in getting energy efficiency into the policy agenda of developed and developing countries, including examples of high impact policies and measures that can be adapted by other countries.</p> <p><b>Proposed Speakers:</b></p> <p><b>Bangladesh:</b> <i>Zobair Siddique</i>, Member (Energy Efficiency), Sustainable and Renewable Energy Development Authority (SREDA)</p> <p><b>India:</b> <i>Venkatesh Dwivedi</i>, Chief Operating Officer, Energy Efficiency Service Limited (EESL)</p> <p><b>Japan:</b> PADECO, Co. Ltd.</p> <p><b>Republic of Korea:</b> Korea Energy Agency</p> <p><b>Sri Lanka:</b> Sustainable Energy Authority</p>
10:40 a.m.–11:00 a.m.	Coffee and tea break
11:00 a.m.–12:30 p.m.	<p><b>Session 2: Innovations in Energy Efficiency Technologies - I</b></p> <p><b>Moderator:</b> <i>Aiming Zhou</i>, Asian Development Bank</p> <p><b>Session Description:</b> Speakers will discuss recent developments and innovations in technologies related to supply-side energy efficiency in generation, transmission, and distribution of power including experiences in applying advanced technologies. An open discussion on how these SSEE technologies can work for the needs and potential investment projects of developing countries will follow.</p> <p><b>Proposed Speakers:</b></p> <p><b>High efficiency transformers/cables (High Tension Low Sag Conductor):</b> <i>Luke Ogoshi</i>, Tokyo Rope Manufacturing, Japan</p> <p><b>Smart Grid:</b> <i>Youngseag Baeg</i>, Senior Manager, LG Electronics, Republic of Korea</p> <p><b>Trigeneration:</b> Fromme International Consulting, Germany</p> <p><b>Micro Combined Heat and Power:</b> Delta Energy &amp; Environment, UK</p> <p><b>Economic Dispatch:</b> ETAP, Unites States</p> <p><b>Demand Response:</b> <i>Seongchel Kim</i>, CEO, Paran Energy, Republic of Korea</p> <p><b>Open Forum: How SSEE Technologies Can Work for You</b> - Facilitator</p>
12:30 p.m. – 2 p.m.	Lunch
2 p.m. – 3:30 p.m.	<p><b>Session 3: Innovations in Energy Efficiency Technologies - II</b></p> <p><b>Moderator:</b> Korea Energy Agency (tbc)</p> <p><b>Session Description:</b> Speakers will discuss recent development and innovations in demand-side energy efficiency technologies, including opportunities and challenges in incorporating these into investment projects. An open discussion on how these DSEE technologies can work for the needs and potential investment projects of developing countries will follow.</p> <p><b>Proposed Speakers:</b></p> <p><b>Building/Factory Energy Management Systems:</b> <i>Minkyung Kim</i>, Senior Manager, KT, Republic of Korea</p> <p><b>Cooling/Heating:</b> <i>Philipp Munzinger</i>, Project Manager, GIZ Proklimar, Germany</p> <p><b>Energy Storage System:</b> <i>Youtak Kim</i>, Manager, Korea Battery Industry Association, Republic of Korea</p> <p><b>Energy Efficiency through Blockchain Supported Behavior Change:</b> <i>Matthias Gelber</i>, ECO Environmental Chief Officer, NEWERA Energy, Singapore</p> <p><b>Waste-to-Energy:</b> <i>Junhyuk Yoo</i>, Director, EY-Korea, Republic of Korea</p> <p><b>Smart Metering:</b> <i>Kookwon Youn</i>, Director, Nuri Telecom Corp., Republic of Korea</p> <p><b>Open Forum: How DSEE Technologies Can Work for You</b> - Facilitator</p>
3:30 p.m. – 4 p.m.	Coffee and tea break



4 p.m. – 5:30 p.m.	<p><b>Session 4: Making it Happen: Financing Options and Business Models</b></p> <p><b>Moderator: Jivan Acharya, Asian Development Bank</b></p> <p><b>Session Description:</b> Speakers will discuss trends in financing energy efficiency initiatives for developing countries; as well as business models that have worked in both developed and developing countries in promoting the deployment of energy efficient technologies. An open discussion on how these business models and financing schemes can be utilized by developing countries in implementing energy efficiency initiatives will follow.</p> <p><b>Proposed Speakers:</b> <i>Pradeep Perera</i>, Principal Energy Specialist, ADB: Innovative Financing Mechanism for Energy Efficiency in Indian Context <i>Farid Khan</i>, Senior Energy Specialist, Islamic Development Bank: IDB Partnership with Industrial Development Bank of Turkey to Support Energy Efficiency Enhancement Initiatives <i>Rahul Agnihotri</i>, Senior Manager, Meghraj Capital Advisors Pvt. Ltd, India: Retrofitting Project Implementation in Existing Residential Buildings <i>Byungsam Kim</i>, Director of Energy &amp; Environment Center, KMAC, Republic of Korea: Innovative Business Models for Demand Side Management <i>Michael Reid</i>, Managing Director, The Keyline Group, Australia: Integration of Energy Efficiency with Air Pollution Policy and Programs <i>Ik Jin</i>, Director, National Assembly Budget Office, Republic of Korea: An Economic Evaluation of ESCO Scheme in Korea</p> <p><b>Open Forum: Paying for Energy Efficiency Initiatives</b> – Facilitator</p> <p><b>Wrap up and Closing</b></p>
6 p.m.	ACEF 2018 Opening Reception



## The Eleventh Meeting of Asia Solar Energy Forum

5 June (Tuesday), 9 a.m.–5:30 p.m.

### Background

The Asia Solar Energy Forum (ASEF) was established with support of Asian Development Bank as a non-profit regional knowledge sharing platform organization to help facilitate solar energy technology transfer across Asia and the Pacific. ASEF aims to bridge the information gap between suppliers and developers in the public and private sectors, support the growth of local solar energy competence in the developing countries of Asia and the Pacific, while addressing the barriers to trade in solar and smart grid applications. ASEF was registered as a non-profit organization in Japan in September 2012.

Multiple trends are driving the transformation of global energy systems, especially electricity networks, including “the digitization of everything and the electrification of everything,” decentralization, decarbonization, and democratization with solar power. Accelerated deployment and rapid cost declines of solar and wind power, energy storage, electric vehicles, smart grid technology, and more broadly the Internet of Things (IoT) can facilitate the growth of digital “exoskeletons” around electricity networks and other energy systems, increasing network resilience while creating opportunities for new business models and operations. Technologies are evolving at exponential rates, but policy, planning, and investment decisions continue to evolve in a linear fashion, which implies that disruption is inevitable, but can the transformation be managed.

### Objective of the Workshop

Covering strategic considerations for managing 21st century energy networks, the Eleventh Meeting of Asia Solar Energy Forum (ASEF) will highlight four topics (i) digitization, decarbonization, decentralization, democratization, and disruption; (ii) deployment of solar park model beyond India; (iii) solar irrigation; and (iv) floating solar.

### Agenda

Time	Activity
8 a.m.–9 a.m.	<b>Registration</b>
9 a.m.–9:10 a.m.	<b>Opening Remarks</b> <i>Yongping Zhai</i> , Chief of Energy Sector Group, Asian Development Bank and Chair of ASEF
9:10 a.m.–9:40 a.m.	<b>Keynote Address</b> <ul style="list-style-type: none"> <li><i>Kewal Kumar Sharma</i>, International Solar Alliance (ISA)</li> <li><b>Utility 3.0: The role of future power system to decarbonize the society</b> <i>Hiroshi Okamoto</i>, Ph.D., Executive Vice President, TEPCO Power Grid, Inc.</li> <li><i>Leandro Leviste</i>, CEO of Solar Philippines</li> </ul>

Time	Activity
9:40 a.m.–10:30 a.m.	<p><b>Session 1: Quantum leap by Digitization, decarbonization, decentralization, democratization, and disruption.</b> This session will discuss such global trend and possibility to apply for Asian DMCs and relevance to solar energy.</p> <p><b>Moderator:</b> <i>Yongping Zhai</i>, Chief of Energy Sector Group of ADB and Chair of ASEF</p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• <b>Distributed Solar Disruptions required to meet the SDGs: Experience of Bangladesh</b> <i>Dipal Barua</i>, Founder and Chairman, Bright Green Energy Foundation</li> <li>• <b>Energy Transformation and Solar Intermittency Issues in Power Design</b> <i>Hiroshi Tomita</i>, Director, Infrastructure and PPP, PwC Advisory LLC</li> <li>• <b>Solar Charged EVs</b> <i>Tan He</i>, Chief Executive Officer, Bangladesh Electric Vehicle Limited</li> <li>• <b>Solar Rooftop</b> <i>Dilip Kumar Jain</i>, General Manager (Credit), Punjab National Bank, India</li> </ul> <p><b>Q &amp; A</b></p>
10:30 a.m.–11 a.m.	<b>Coffee Break</b>
11 a.m.–12:30 p.m.	<p><b>Session 2: Deployment of Solar Park Model beyond India Deployment of Solar Park Model beyond India</b></p> <p><b>Moderator:</b> <i>Priyantha Wijayatunga</i>, Director, Energy Division, South Asia Department, ADB</p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• <b>Rajasthan Solar Park</b> <i>Agostinho Miguel Garcia</i>, Principal Consultant, SunBD – Sun Business Development Lda</li> <li>• <b>India’s National Solar Mission: Relevance of Solar Parks</b> <i>Ashvini Kumar</i>, Fellow and Senior Director, Renewable Energy Technology Applications, The Energy and Resources Institute</li> <li>• <b>Bhadala Solar Park</b> <i>Basant Dosi</i>, Managing Director, Rajasthan Renewable Energy Corporation Ltd.</li> <li>• <b>Development of 900MW solar power plant in Punjab, Pakistan</b> <i>Marco Ma</i>, Director International Business Department, Zonergy Company Ltd.</li> <li>• <b>Cambodia Solar Park</b></li> <li>• <b>Softbank experience and plans on solar parks in India</b></li> </ul> <p><b>Q &amp; A</b></p>
12:30 p.m.–2 p.m.	<b>Lunch</b>
12:30 p.m.–2 p.m.	<p><b>ASEF General Meeting (Invitation Only), PDR 3 and 3a</b></p> <p style="text-align: right;"><i>continued on next page</i></p>

Time	Activity
2 p.m.–3:30 p.m.	<p><b>Session 3: Solar Irrigation</b></p> <p>In many rural communities, ground water is extracted through electric water pumps, which use diesel to fuel their systems. These systems not only require costly, regular servicing and import of diesel fuel, in addition they emit carbon dioxide polluting the atmosphere. In some countries this is a huge fiscal burden. However, photovoltaic water pumping (PVP) for drinking and irrigation provides an alternative and is environmentally sustainable. These factors have made Solar Water Pumping an extremely viable way to expand energy access across developing countries and rural communities. Some governments have opted to subsidize the cost of solar water pumping, increasing the pool of shared learning for this emerging technology. Even though solar water pumping is ready for mainstreaming and has started to take off in some parts of the world, its benefits remain largely unknown to communities, governments, and development institutions. In this session, the speakers will share experiences from both the government and private sector led programs on solar PV pumps. Including challenges faced by the private sector and how these were over-come.</p> <p><b>Moderator:</b> <i>Anthony Jude</i>, Former Chair of ASEF</p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• <i>Kewal Kumar Sharma</i>, Advisor, International Solar Alliance (ISA)</li> <li>• <b>Solar PV irrigation experience and challenges in the adoption of the technology in rural Bangladesh</b> <i>Md. Sakil Ibne Sayeed</i>, Deputy Director, Office of the Project Director, Bangladesh Rural Electrification Board</li> <li>• <b>Status, challenges and prospects of solar water pumping in Nepal</b> <i>Ram Prasad Dhital</i>, Executive Director, Alternative Energy Promotion Center</li> <li>• <b>Promoting utility scale solar using viability gap financing modality in Nepal</b> <i>Abhishek Adhikari</i>, Project Manage, Nepal Electricity Authority</li> <li>• <b>Solar PV pumps research and applications in China</b> <i>Liu Zuming</i>, Professor, Solar Energy Research Institute, Yunnan Normal University</li> <li>• <b>Dual Use – Double Harvest: The Concept of Agro-Photovoltaics</b> <i>Frank Haugwitz</i>, Director, Asia Europe Clean Energy (Solar) Advisory Co. Ltd. (AECEA)</li> </ul> <p><b>Q &amp; A</b></p>
3:30 p.m.–4 p.m.	<p><b>Coffee Break</b></p>
4 p.m.–5 p.m.	<p><b>Session 4: Floating Solar</b></p> <p>Floating solar has been deployed at more than 70 sites worldwide, with most installations of 1-2 MW in Asia. The world’s largest floating plant, 40 MW in China commissioned in 2017, marks the transition to progressively larger plants. The technical potential in ADB developing member countries is easily 20 Giga watts. This session will provide an overview of current development trajectory in Asia.</p> <p><b>Moderator:</b> <i>Dan Millison</i>, ADB</p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• <b>Floating Solar and Low-Cost Energy Storage for Developing and Threshold Countries</b> <i>Hans-Henning Judek</i>, J.E. Access Ltd., Japan</li> <li>• <b>Floating Solar Technology</b> <i>Simon Li</i>, General Manager, Asia Pacific Project Division, Trina Solar</li> <li>• <b>Floating Solar Potential of Central and West Asia</b> <i>Cindy Tiangco</i>, Senior Energy Specialist, Central and West Department, ADB</li> <li>• <b>Floating Solar</b> <i>Atem Ramsundersingh</i>, CEO and Member of Board of Directors, WEnergy</li> </ul> <p><b>Q &amp; A</b></p>

Time	Activity
5 p.m.–5:30 p.m.	<b>Summary</b> <i>Naoki Sakai</i> , Secretary General of ASEF and Fellow ICMG <b>Closing Remarks</b> <i>Yongping Zhai</i> , Chief of Energy Sector Group, Asian Development Bank and Chair of ASEF
6 p.m.	<b>Reception</b>

## Grid Integration of Variable Renewable Energy: Innovative Solutions at the Transmission and Distribution Levels

June 5 (Tuesday), 9 a.m.–5:30 p.m.

### Gain knowledge and tools to enable a clean, modern, flexible, and affordable power system

With the costs for solar and wind energy technologies continuing to fall, an increasing number of countries have shifted from planning for the integration of variable renewable energy to actually implementing changes. This Deep Dive Workshop, organized by USAID, GIZ and NREL, will draw from these experiences to provide the most up-to-date information on emerging solutions for efficiently integrating variable renewable energy to both the transmission and distribution systems. Expert speakers from diverse power systems around the world will highlight case studies and provide participants with insights on solar and wind grid integration strategies that can be adapted to power systems of any size and market structure.

### Learn how decision makers in the Asia region (and beyond!) are addressing common grid integration questions

- Which **decision support tools** are available to enable power system flexibility?
- What strategies are effective in creating an enabling environment for **thermal plant flexibility** to support solar and wind integration?
- What considerations and approaches can help policy makers understand the type, size, and location of **energy storage** to best benefit their power systems?
- How can innovative approaches to interconnection processes, compensation mechanisms, and planning address the technical challenges that arise as large amounts of **rooftop solar PV** are interconnected to the distribution system?
- What will the role of **emerging technologies** be in systems with high levels of variable RE?

## Agenda

Time	Activity
9 a.m.–9:20 a.m.	<b>Opening: Welcome remarks</b> Mr. Helmut Fischer, Executive Director for Austria, Germany, Luxembourg, Turkey and the United Kingdom, Asian Development Bank Ms. Carrie Thompson, Deputy Assistant Administrator, USAID Bureau for Economic Growth, Education and Environment
9:20 a.m.–9:45 a.m.	<b>Morning Keynote - Grid Integration and Power System Flexibility: Challenges and Trends</b> Dr. Jaquelin Cochran, NREL
9:45 a.m.–10:30 a.m.	<b>Decision Support Tools to Enable Power System Flexibility</b> Identify methods and tools that can help planners understand the power system-specific issues that might arise as the penetration of solar and wind on the power system grows, as well as the flexibility strategies that are most likely be cost-effective.  <b>Speakers:</b> Overview: “Grid Integration Studies and Identifying Flexibility Solutions,” Ms. Jessica Katz, NREL Thailand case study: Dr. Peerapat Vithayasrichareon, International Energy Agency (IEA) Sri Lanka case study: Dr. H. M. Wijekoon and Mr. Randika Wijekoon, Ceylon Electricity Board
10:30 a.m.–11 a.m.	<b>Break</b>

11 a.m.–11:50 a.m.	<p><b>Overcoming Barriers to Flexibility in the Generation Fleet</b> Communicate the range of issues that policymakers will likely confront when addressing how to create an enabling policy, regulatory, and market environment for thermal plant flexibility.</p> <p><b>Speakers:</b> Overview: “Creating an Enabling Environment for Conventional Power Plant Flexibility,” <i>Dr. Peerapat Vithayasrichareon</i>, IEA Germany case study: <i>Ms. Claudia Weise</i>, VGB PowerTech e.V India case study: <i>Mr. Anjan Kumar Sinha</i>, NTPC</p>
11:50 a.m.–12:30 p.m.	<p><b>Utility-Scale Storage: If, When, What Type, How Much, and Where?</b> Provide an overview of the considerations and tools that will support policymakers in making cost-effective decisions about the deployment of storage as the penetration of variable RE grows.</p> <p><b>Speakers:</b> Overview “Storage services in a high-RE power system, and the state of the industry,” <i>Dr. Jaquelin Cochran</i>, NREL Hawai’i case study: <i>Mr. Leon Roose</i>, Hawai’i Natural Energy Institute (TBC)</p>
12:30 p.m.–2 p.m.	<b>Lunch</b>
2 p.m.–2:30 p.m.	<p><b>Afternoon Keynote - Grid Integration At The Distribution Level: Challenges and Trends</b> <i>Dr. Thomas Ackermann</i>, CEO, Energynautics</p>
2:30 p.m.–3:30 p.m.	<p><b>Solutions to Facilitate Successful RE Integration on the Distribution System</b> Support policy makers in identifying and navigating the range of institutional strategies (including policy, regulations, compensation mechanisms, and planning) that will help mitigate technical challenges (e.g., 2-way power flow, voltage control) that arise as large amounts of rooftop PV are interconnected to the distribution system.</p> <p><b>Speakers:</b> Overview: “Institutional mechanisms to enable efficient integration of rooftop PV,” <i>Ms. Jessica Katz</i>, NREL Hawai’i case study: <i>Mr. Marc Matsuura</i>, Hawai’i Natural Energy Institute (TBC) Other: TBC</p>
3:30 p.m.–4 p.m.	<b>Break</b>
4 p.m.–5:15 p.m.	<b>Panel: Where Do We Go From Here?</b>
5:15 p.m.–5:30 p.m.	<b>Summary, Additional Resources, and Closing</b>



## Developing Sustainable Mini Grids

5 June 2018 (Tuesday), 9 a.m.–5.30 p.m.

### Background

The utilization of renewable energy mini-grids is one of the pathways available to attain electricity access especially in off-grid and remote areas. Mini-grids have its advantage because of its ability to provide electricity not only for households use but for productive and commercial activities as well. These technologies can be effectively deployed in rural and remote areas without investing in expensive infrastructure for electricity transmission, making them quick to implement and cost-effective. Because of these factors, several initiatives have been undertaken in the development and promotion of mini-grids.

This workshop will invite mini/micro-grid experts from some universities around the region to share their research work, experiences and pilot projects on the mini-grid space. The session will also look into the different aspects of mini-grid development such as policy regulation, private sector participation and technical discussions pertaining to renewable energy grid integration. Presentations will showcase actual experiences in the fields by various practitioners such IPPs, distribution utilities, government officials and private sector companies. The challenges and barriers will be discussed to serve as inputs for further development of mini-grids in ADB’s developing member countries.

### Objective of the Workshop

This workshop aims to bring various players on renewable energy min-grids to share experiences, best practices and insights relating to technical, policy, and regulatory aspects, among others.

### Agenda

Time	Activity
9 a.m.–9:10 a.m.	<p><b>Opening</b></p> <p><b>Welcome Remarks</b>  <i>Olly Norojono</i>, Director, Transport, Energy and Natural Resources Division (PATE), Pacific Department, ADB</p>
9:10 a.m.–10:30 a.m.	<p><b>Session 1: Policy and regulatory framework in developing renewable energy mini-grids</b></p> <ul style="list-style-type: none"> <li>• <b>Fiji’s experience on our Rural Electrification Programme</b>, <i>Mikaele Belena</i>, Senior Energy Analyst, Fiji Department of Energy</li> <li>• <b>Learnings in Last Mile Electrification from the Philippines</b>, <i>Ian Driscall</i>, Principal &amp; Director, Morvah Consultants, Inc.</li> <li>• <b>Experience from developed country</b>, <i>Leon Roose</i>, Specialist, University of Hawaii Manoa</li> </ul> <p><b>Moderator:</b> <i>Hasmukh Patel</i>, Chief Executive Officer, Energy Fiji Limited</p>

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<p>11 a.m.–12:30 p.m.</p>	<p><b>Session 2: Integrating renewable energy in mini-grids</b></p> <ul style="list-style-type: none"> <li>• <b>The promise of storage: How mini-grids can leverage transition in storage technology and cost</b>, <i>Dr. Chris Blanksby and James Mason, Entura</i></li> <li>• <b>Smart Peer-to-Peer Solar</b>, <i>Sebastian Groh, Managing Director, MESolshare</i></li> <li>• <b>Successful Micro-grid Deployment: Takeaways from Electro Power Systems S.A. (EPS) Experience in Powering a Town in Somalia and Two Resorts in the Maldives</b>, <i>Kotryna Kanapyte, Business Development Manager, EPS</i></li> </ul> <p><b>Moderator:</b> Anthony Maxwell, Principal Energy Specialist, ADB</p>
<p>2 p.m.–3:30 p.m.</p>	<p><b>Session 3: Private sector participation on mini-grid development</b></p> <ul style="list-style-type: none"> <li>• <i>Matt Basinger, Electric Vine Industries</i></li> <li>• <b>Creating village electricity utilities by using private sector practices to create public purpose entities</b>, <i>Jeffery Dickinson, Renewable Energy Lead, CDM Smith</i></li> <li>• Khotang/Okhaldunga Micro-Grid Project in Nepal (TBC)</li> <li>• Palawan rural micro-grid, <i>Atem S. Ramsundersingh, CEO/Member of the Board of Directors, WEnergy Global</i></li> </ul> <p><b>Moderator:</b> Sagar Gubbi, Consultant, ADB Energy for All Initiative</p>
<p>4 p.m.–5:20 p.m.</p>	<p><b>Session 4: Platform/network of universities to expand research/pilot of mini-grids in universities</b></p> <ul style="list-style-type: none"> <li>• <b>Shanghai Electric Power University Experience:</b> <i>Qunzhi Zhu, Professor, College of Energy and Mechanical Engineering, Shanghai Electric Power University</i></li> <li>• <b>University of Moratuwa’s Experience:</b> <i>Narendra de Silva, Head of Engineering, Lanka Electricity Company, Sri Lanka</i></li> <li>• <b>Seoul National University Experience: Mini-/Micro-Grid Solutions</b>, <i>YS Baeg, Team Leader, LG Electronics, Republic of Korea</i></li> <li>• <b>Nanyang Technological University</b> (TBC)</li> </ul> <p><b>Moderator:</b> Susumu Yoneoka, Energy Specialist (Smart Grids), ADB</p>
<p>5:20 p.m.–5:30 p.m.</p>	<p><b>Wrap up</b> <b>Closing remarks</b></p>

## Promoting Efficient, Clean Cooling through Technology and Policy Innovation

5 June (Tuesday), 9 a.m–5:30p.m.

### Objective of the Workshop

1. To provide an update on recent international discussions and market developments related to efficiency, clean cooling
2. To present technological innovations
3. To present effective policy measure innovations that enable improved buildings and cooling equipment
4. To provide participants with a list of priority actions and next steps

### Agenda

Time	Activity
8:30 a.m.	Arrival and networking
<b>Session 1: Introductory Session–Setting the Scene</b> The session provides an update on recent international discussions and market developments related to efficient, clean cooling. <b>Moderator:</b> Toru Kubo, ADB <b>Outline:</b> four 10–12 minute presentations followed by facilitated discussion	
9 a.m.	<b>Efficient, Clean Cooling - Huge Opportunities and Challenges Ahead</b> <i>Dan Hamza-Goodacre, Kigali Cooling Efficiency Program</i>
9:15 a.m.	<b>The Future of Cooling–Implications for Energy and the Environment</b> <i>Melanie Slade, IEA</i>
9:30 a.m.	<b>Maximizing Cost and Climate Benefits of Air Conditioning in Asia</b> <i>Philipp Munzinger, GIZ Proklima</i>
9:45 a.m.	<b>Social and Economic Benefits of Improving Cooling Efficiency</b> <i>Ian Crosby, SE4ALL</i>
10 a.m.	<b>Facilitated Group Discussion</b>
10:45 a.m.–11 a.m.	Coffee Break

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Time	Activity
<p><b>Session 2: Technology Solutions to Improve Efficiency and Environmental Performance of Cooling</b></p> <p>This session aims to present technological innovations that enable thermal comfort and reduced energy use for cooling</p> <p><b>Moderator:</b> Philipp Munzinger, GIZ Proklima</p> <p><b>Outline:</b> four 10-minute presentations followed by facilitated discussion</p>	
11 a.m.	Toby Peters, Professor, Heriot-Watt University
11:15 a.m.	Didier Coulomb, International Institute of Refrigeration
11:30 a.m.	<p><b>Demand Response/ Digitalization</b> Arjun Gupta, Smart Joules</p>
11:45 a.m.	<ul style="list-style-type: none"> <li>• <b>Heat Pumps/Air Conditioning</b></li> <li>• <b>Equipment installation, maintenance, and servicing</b></li> </ul>
12 noon	<ul style="list-style-type: none"> <li>• <b>Facilitated Group Discussion</b></li> </ul>
12:30 p.m.–1:30 p.m.	Lunch and Networking
<p><b>Session 3: Policy Measures to Improve Cooling Energy Efficiency</b></p> <p>This session aims to present effective policy measure innovations that enable improved buildings and cooling equipment.</p> <p><b>Moderator:</b> Melanie Slade, IEA</p> <p><b>Outline:</b> four 10-minute presentations followed by facilitated discussion</p>	
1:45 p.m.	<p><b>RAC NAMA Thailand Project</b> Electricity Generating Authority of Thailand</p>
2 p.m.	<p><b>Bulk purchasing programme</b> Bhawanjeet Singh, EESL</p>
2:15 p.m.	<p><b>Montreal Protocol policy opportunity</b> Meg Seki, Ozone Secretariat, UN Environment</p>
2:30 p.m.	<b>Behavior Change</b>
2:45 p.m.	<b>Facilitated Group Discussion</b>
3:30 p.m.–4 p.m.	Coffee Break
<p><b>Session 4: What next, take away messages and priority actions</b></p> <p>This session aims to summarise the key points of the workshop and provide participants with a list of priority actions and next steps. Commitments’ from the audience—what will they do differently as a result of attending.</p> <p><b>Moderator:</b> Dan Hamza-Goodacre, Kigali Cooling Efficiency Program</p> <p><b>Outline:</b> 60 mins facilitated discussion with Panel and group</p>	
4 p.m.	<ul style="list-style-type: none"> <li>• K-CEP</li> <li>• GIZ Proklima</li> <li>• IEA</li> </ul> <p>Summary of next steps and actions</p>
5 p.m.	Meeting Close



# Realizing the Potential of Waste to Energy

5 June (Tuesday), 9 a.m.–5.30 p.m.

## Background

Waste to Energy has persistently lagged behind other renewable energy sources in the energy transition to decarbonization and distributed generation. This is due to waste to energy straddling both renewable energy and energy efficiency functions in industry. Large plants operate on a stand alone basis while captive and/or distributed power plants operate in diverse applications.

This Deep Dive Workshop seeks to explain the opportunities and explore ways to realize the potential of Waste to Energy in the wider energy transition.

The Waste to Energy DDW will present technologies, business models and the skills needed to successfully implement solutions. Technologies will be explained with examples. These examples will provide valuable insight into the successful implementation of projects.

New business models will be explored which relook at logistics scale and community involvement. There will be a section on new technologies and how they might be deployed. Industry leaders will give their views based in experience and share their vision of the future of Waste to Energy.

## Objective of the Workshop

The objective of the DDW is to provide an introduction to waste to energy:

1. Highlight technology innovation and emerging trends,
2. Discuss regulatory frameworks and challenges,
3. Highlight innovative technology advances and new business models and
4. Highlight successful implementations and how they overcame challenges.

## Agenda

Time	Activity
9 a.m.–9:15 a.m.	Introduction DG, Sustainable Development and Climate Change Department, Asian Development Bank
9:15 a.m.–9:30 a.m.	Introduction by Energy Group Chief, <i>Dr Zhai Yong Ping</i> , Energy Group, Sustainable Development and Climate Change Department, Asian Development Bank
	<b>Session 1. Technology &amp; implementation</b>
9:30 a.m.–9 :50 a.m.	<b>Biomass in rural power</b> , <i>David Gardner</i> , Principal, DGA Co Ltd
9:50 a.m.–10:10 a.m.	<b>Incineration of solid municipal waste</b> , <i>Dr. Xue</i> , Deputy Director CUCD

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10:10 a.m.–10:30 a.m.	<b>Biogas from cassava production</b> , Chief Technical Officer, Asia Biogas
10:30 a.m.–10:50 a.m.	<b>Biogas to BioCNG</b> , Harmen Dekker, DME Group
10:50 a.m.–11:10 a.m.	Coffee Break
	<b>Session 2. Regulatory frameworks and challenges</b>
11:10 a.m. 11:25 a.m.	<b>Regulatory challenges in South East Asia</b> , Des Godson, CEO, Asia Biogas
11:25 a.m.–11:40 a.m.	<b>How biogas fits into the gas market and energy transition</b> , Vincent Choy, Secretary General, Asia Pacific Biogas Alliance
11:40 a.m.–12 p.m.	<i>Challenges faced in the biomass industry</i> , Verena Seifredt, ERK Eckrohrkessel GmbH
12 p.m.–12:30 p.m.	<b>Panel Discussion</b> Moderated by Grace Lange, Principal, Lange Group Consulting
	Lunch
	<b>Session 3. Innovative technology advances and new business models</b>
2 p.m.–2:15 p.m.	<b>Innovation in solar rooftop thermal solution</b> , Dr. Satyanarayanan, Technical Advisor/CTO Aspiration Energy, Professor of Fluid Mechanics, IIT Madras.
2:15 p.m.–2:30 p.m.	<b>Village biogas in India using containerized solution</b> , Sandra Sassow, CEO, SEaB Energy Ltd
2:30 p.m.–2:45 p.m.	<b>Waste heat recovery using ORC turbines</b> , Nicolas Bernier, Energy Consulting
2:45 p.m.–3 p.m.	<b>Biogas from Sewerage Treatment Plants</b> , Representative, JFE Engineering
3 p.m.–3:15 p.m.	<b>Waste to Fuel and Chemicals</b> , Henrik Selstam, CEO, Quantafuels
3:15 p.m.–3:30 p.m.	<b>Innovation in Gasification Technologies</b> , Associate Professor Kentaro Umeki, Luleå University of Technology
3:30 p.m.–3:45 p.m.	Coffee Break
	<b>Session 4. Implementation and how to successfully overcome challenges</b>
3:45 p.m.–4 p.m.	<b>Experiences in clean energy startup companies</b> , Joost Siteur, AWR Lloyd New Energy Advisors
4 p.m.–4:15 p.m.	<b>Putting the pieces together</b> , Ed McCartin, Director, Asia Greentech Pte Ltd
4:15 p.m.–4:30 p.m.	<b>The owner's engineers view</b> , Heinrich Seul, President/CEO, CBE Thailand Co Ltd
4:30 p.m.–4:45 p.m.	<b>Experience in EU waste to energy projects</b> , Werner Versluys
4:45 p.m.–5:30 p.m.	<b>Panel Discussion</b> Moderated by Steve Peters, Senior Energy Specialist (Waste to Energy), Energy Group, Sustainable Development and Climate Change Department, Asian Development Bank

## From Start Up to Scale Up

5 June (Tuesday), 9 a.m.–5.30 p.m.

### Background

Local entrepreneurs and startups are critical to accelerating the large-scale adoption of clean energy and related clean technologies in the Asia-Pacific region. They develop the technologies, business models, projects, and services required to drive down the costs and risks of deploying clean energy at scale.

However, the few clean energy entrepreneurs in the region often face huge barriers such as lack of access to the risk capital, pilot customers and human resources they need in order to survive and scale-up. What are the challenges they face after piloting stage in order to largely scale up their operations? What are the roles of corporates to better support them to accelerate the growth and deployment of clean energy in the region? What kind of collaborations do we need in the region? What growth hacks, enabling models, programs, and platforms from around the world can we learn from and replicate?

In this workshop, we will invite experienced and emerging clean energy startup entrepreneurs including ADB's New Energy Leaders, finalists from Start-up Energy Transition Award powered by DENA and start-ups from California Clean Energy Fund. We also invited start-up enablers including corporate player, policymakers and donors etc. We will discuss the challenges facing entrepreneurs, the growth hacks that are beneficial to more start-ups in the area and collaborations between start-ups and enablers.

### Objective of the Workshop

Through peer to peer sharing and discussions between start-ups and enablers, the goal of the workshop is to discuss actionable ideas, growth hacks, programs and platforms that can support and help clean energy startups in the region to scale-up.

### Agenda

Time	Activity
2:00 p.m.–2:05 p.m.	<b>Opening remarks</b>
2:05 p.m.–2:20 p.m.	<b>Introduction to the workshop</b>
2:20 p.m.–3:50 p.m.	<b>Part 1: Corporate innovation</b> 4-5 Corporate presentations on corporate innovation including the internal challenges they face followed by a panel discussions on examples of corporate collaborations with start-ups  <b>Coffee Break (30 minutes)</b>
3:30 p.m.–3:50 p.m.	<b>Part 2: Platform overviews</b> (60 minutes)
3:50 p.m.–5 p.m.	<b>Part 3: Breakout Session</b> (70 minutes) <ul style="list-style-type: none"> <li>Discussions on how to identify good start-ups, the challenges they face and how to collaborate with them.</li> <li>Discussions on what kind of support start-ups need and come up with concrete actions.</li> </ul>
5 p.m.–5:25 p.m.	<b>Part 4: Presentations/voting</b> (25 minutes)
5:25 p.m.–5:30 p.m.	<b>Closing Remarks</b> (5 minutes)



## Deep Dive Workshop on Clean Cooking

5 June 2018 (Tuesday), 9 a.m.–12.30 p.m.

### Background

There are still more than 2 billion people in the Asia-Pacific region that do not have access to clean cooking fuels and technologies.<sup>1</sup> The use of traditional biomass and conventional fuels has detrimental health impacts, especially on women and children, and contributes to environmental degradation and climate change. This DDW will discuss barriers to access clean cooking as well as various aspects of clean cooking interventions ranging from implementation of appropriate policy frameworks, financing and technical solutions as well as social and behavioral acceptance. Government officials from ADB’s DMCs, civil society organizations, private sector and other experts will be invited to share their experiences in this field.

### Objective of the Workshop

The objective of the DDW is to provide an understanding of the reasons and barriers why clean cooking solutions have still not reached large portions of the population in Asia-Pacific and to discuss and present solutions and best practices of successful interventions and clean cooking policies in selected Asian countries. High impact government interventions will be showcased for possible replication in other countries. The crucial role of private sector, NGOs and civil society in the shift to clean cooking will also be highlighted and how this shift can be further supported through conducive policy frameworks.

### Agenda

Time	Activity
9 a.m.–10.30 a.m.	<p><b>Session 1: Best Practices and Solutions for Scaling up of Access to Clean Cooking</b></p> <p>This session will discuss the barriers (information and awareness about impacts of traditional cooking, lack of private sector involvement, financing, technical and behavioral, distribution, affordability, etc.) and reasons why clean cooking activities/ technologies are not being adopted more quickly; as well as potential solutions to overcome those barriers and key elements that need to be taken into account when crafting policies and support schemes.</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• <i>Marina Dubois</i>, StovePlus program coordinator for Asia, GERES</li> <li>• <i>Heena Ben Dave</i>, District Coordinator Head of Surendranagar, SEWA</li> <li>• <i>Carlo Figà Talamanca</i>, CEO, Sustainable Green Fuel Enterprise</li> <li>• <i>Nodira Akhmedkhodjaeva</i>, Programs Director, Nexus (tbc)</li> </ul> <p>Moderator: TBD</p>

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<sup>1</sup> SEforALL Global Tracking Framework, 2017



11 a.m. – 12.30 p.m.	<p><b>Session 2:</b> <b>Policy Interventions to Scale the Impacts of Clean Cooking</b></p> <p>This session will discuss policy implementation strategies, lessons on overcoming institutional and market challenges, incentives for increased private sector involvement, and efforts to coordinate cross-sectoral, public-private partnerships to generate demand, encourage behavior change, and strengthen clean cooking markets across a range of cooking fuels, such as LPG, electricity, pellets, and biomass and will also be touching on related clean heating issues and programs. The panel discussion will also highlight the impact and value of inter-governmental engagement through South-South cooperation that can support robust policy infrastructures around national economic, climate, and energy goals.</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"><li>• <i>Ram Prasad Dhital</i>, Executive Director, Alternative Energy Promotion Centre (AEPC)</li><li>• <i>Oyun Sanjaasuren</i>, former Minister of Environment and Green Development Mongolia</li><li>• <i>Li Jingming</i>, Chief Economist, Renewable Energy Division, Rural Energy and Environment Agency, Ministry of Agriculture (tbc)</li></ul> <p><b>Moderator:</b> <i>Riya Kumar</i>, India Country Representative, Global Alliance for Clean Cookstoves</p>
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## Sustainable Energy for All in the Asia-Pacific

5 June (Tuesday), 2:00 p.m.–5:30 p.m.

### Background

Recognizing that we are not moving fast enough to meet the ambitious Goal 7 of the Sustainable Development Goals (SDG7), the SEforAll Strategic Framework of Results (SFR) has committed to help partners move “further, faster”. Specifically, the SFR states that SEforALL will:

- Strengthen engagement with countries where there is a need to make swifter progress and it can effect change
- Help other countries achieve their goals, by supporting national plans and processes
- Work through Regional Hubs and local partners to enhance efforts, resources and capacity to develop robust, bankable project pipelines

The joint ADB-UNDP-ESCAP SEforALL Hub for Asia and the Pacific (AP-SEforALL Hub) aims to accelerate and facilitate the achievement of sustainable energy goals in the Asia Pacific Region. Thus, it serves to

- support countries in the preparation and implementation of national sustainable energy action plans and international commitments,
- build constructive dialogue on policy, investment and market development by governments, businesses, and civil society and
- promote regional cooperation in sustainable energy related activities

### Objective of the Workshop

1. Disseminate the most recent flagship research reports published and outcomes of conferences organized by SEforALL
2. Provide an overview of the current and planned initiatives of the SEforALL Global Team and the partner thematic hubs and accelerators in the region
3. Communicate how public and private sector organizations, academic institutions, civil society, etc. in the Asia-Pacific can be engaged in the work of SEforALL in the region, and facilitate potential collaboration and gather insights and advice from these regional stakeholders
4. Identify/validate the challenges and innovative solutions for electrification and clean cooking financing in the Asia-Pacific, based on input both from a macro perspective (from SEforALL) and on-the-ground (from market actors).

## Agenda

Time	Activity
2 p.m.–2.30 p.m.	<p><b>Introduction and Overview</b></p> <ul style="list-style-type: none"> <li>• Welcoming remarks (SEforALL Asia-Pacific Regional Hub) <ul style="list-style-type: none"> <li>◦ ADB</li> <li>◦ UNESCAP</li> <li>◦ UNDP</li> </ul> </li> <li>• Updates from the SEforALL Global Team <ul style="list-style-type: none"> <li>◦ SDG7 Tracker and RISE 2018 (Asia-Pacific results)</li> <li>◦ Results of the SEforALL Forum (Lisbon, May 2018)</li> <li>◦ SEforALL Heat Maps (Asia-Pacific results)</li> </ul> </li> </ul>
2.30 p.m.–3.30 p.m.	<p><b>Energy Efficiency and Energy Access: SEforALL Initiatives in the Asia-Pacific</b> (SEforALL Global Team and Accelerators)</p> <ul style="list-style-type: none"> <li>• Energy Efficiency Hub (Copenhagen Centre on Energy Efficiency)</li> <li>• Energy Efficiency Accelerators (TBC) <ul style="list-style-type: none"> <li>◦ District Energy</li> <li>◦ Building Efficiency</li> <li>◦ Appliances and Equipment</li> <li>◦ Industrial EE</li> </ul> </li> <li>• Energy Efficiency Facilitating Hub (Energy Conservation Center, Japan)</li> <li>• People Centered Accelerator</li> <li>• Cooling for All</li> <li>• Clean Fuels and Cookstoves</li> </ul>
3:30 p.m.–4 p.m.	Tea/Coffee Break
4 p.m.–4:45 p.m.	<p><b>Networking with Regional Stakeholders</b> – Breakout session by hub/accelerator to facilitate potential collaboration and information sharing with the Asia-Pacific public and private sector, academe, civil society, donor community, etc.</p>
4:45 p.m.–5:30 p.m.	<p><b>Panel Discussion: Energy Access Financing in the Asia-Pacific</b></p> <ul style="list-style-type: none"> <li>• This discussion aims to Identify/validate the challenges and innovative solutions to increase and properly direct financing flows for electrification and clean cooking in the region, based on input both from a macro perspective (from SEforALL) and on-the-ground (from market actors)</li> <li>• Panelists (TBC): <ul style="list-style-type: none"> <li>◦ SEforALL - Energizing Finance report (themesetter)</li> <li>◦ Three entrepreneurs in pre-commercial/commercial/expansion stages of electrification and/or clean cooking businesses</li> <li>◦ A private financial institution with experience catering to access enterprises</li> </ul> </li> </ul>
6 p.m.	Reception



## Opportunities and Models for Renewable Energy Project Finance

8 June 2018 (Friday), 9 a.m.–5:30 p.m.

### Background

This Deep Dive Workshop will convene stakeholders in the region to share their experiences and discuss the challenges of attracting early stage capital and some of the larger structural barriers that need to be overcome to spur investment at small and large scales in renewable energy in the SEA region.

The discussions will cover the roles that local communities, donors, philanthropies, research institutes, and others can play to support government, financiers and project developers in the region to stimulate, and navigate, access green finance in order to speed the deployment of low cost clean energy technologies and business models.

### Objective of the Workshop

The workshop is jointly organized by the ADB Institute (ADBI), Green Investment Group (GIG), the UK Government, and a group of philanthropies. The workshop will present several issues related to financing investments in renewable energy.

The morning session will be an opportunity to learn more about the UK's green finance expertise, and how it is hoping to share knowledge and build capacity in the region. The UK is the world-leader in green finance, through the City of London, and can provide valuable expertise. The session leaders will encourage discussion about some of the aid programmes the UK is planning to roll out in the region which focus on green finance, and the types of interventions planned. For example, the Prosperity Fund SE Asia Low Carbon Energy programme scheduled to start later this year will provide policy support, capacity building and technical assistance to facilitate green finance flows. It will help strengthen connections between project developers and investors, and partnership coordination and commercial ventures within SE Asia. The session leaders will welcome frank discussion and feedback about what type of interventions would have most impact in improving the operating environment for green finance investment, and thus supporting economic development and business opportunity in Asia.

The next part of the workshop will cover The Green Investment Group (GIG) which was established by the UK Government and is the first institution of its kind in the world. GIG finances infrastructure projects which are green and profitable. As one of the most active green infrastructure investors in the world, GIG finance complex and challenging projects, large and small, which need help to go ahead. Between them, these projects will contribute to the global transition to a sustainable low carbon future.

Gavin Templeton, Head of Sustainable Finance at GIG, will discuss the history and design of the institution, including innovations in investment and impact measurement. He will also share GIG's plans to work with Asian countries interested in creating their own Green Investment Banks, and how the lesson learned from the creation of GIG might apply in the region.

In the final portion of the morning session, foundations will discuss their current and future role in the South East Asia clean energy landscape. The philanthropic community, represented by a diverse range of foundations, has begun to actively engage in grant making across the region using aligned platforms and strategies with the goal of creating an umbrella initiative towards enabling a clean energy ecosystem that can help expedite deployment in the region. Current initiatives include the following: 1) International Forum for Energy (IFE) developed under the European Climate Foundation focused on civil society engagement; 2) South East Asia Clean Energy Facility (SEACEF) focused on driving investments in early stage project development; 3) Southeast Asia Renewable Energy Initiative (SEA-REI), a new and developing philanthropic umbrella initiative. During the workshop, representatives of the philanthropies will introduce their emerging programmes and then seek input on questions such as how philanthropy can innovate to catalyse faster RES deployment in South East Asia; gaps that government and the private sector can look to philanthropy to engage on; and how to stimulate faster change by working in tandem.

IFE (International Forum on Energy) is focused on political engagement with civil society on building up renewable energy expertise and capacity and direct technical assistance to governments, utilities, system operators and local research entities. IFE is a pooled fund established by vanguard funders the Growald Family Fund and the Children’s Investment Fund Foundation and is hosted for its set-up phase at the European Climate Foundation.

SEA-REI is a new initiative, in its early stages of planning, that aims to support the acceleration of renewable energy deployment in South East Asia region. The initiative looks to tackle key barriers and support the enabling environment through close collaboration between philanthropy, governments and international agencies. The programme will align with current and planned initiatives, focusing on civil society and industry engagement, technical assistance, donor coordination, high level diplomacy and other market development or finance interventions that may be warranted to help unlock the clean energy market in South East Asia.

SEACEF is building a multi-donor project development fund of \$20M to de-risk and help produce bankable clean energy projects in high impact/growth markets in South East Asia. Its focus is to provide early stage project development capital, pre-construction, for solar, wind and storage projects and may include electric vehicles and efficient cooling business models. It will deploy a type of capital (risk wise) currently scarce in most markets toward technologies that are cost effective, rapidly deployable and mainstream in other regions of the world. This work and other interventions were developed during 2016/2017 by South Pole and Global Climate Capital on behalf of the Packard Foundation.

In the afternoon part of the workshop, ADBI will explain a tool for community-based financing of renewable energy, called Hometown Investment Trust (HIT) Funds, that have been used successfully in Japan. While large energy projects have access to standard financing, many smaller projects lack access. Banks are reluctant to lend or 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. ADBI will organize another workshop in Niigata, Japan, in August, 2018, to show interested governments how HIT Funds work and how they can be applied elsewhere. The ACEF workshop will conclude with a brief introduction to ADBI’s later workshop and how governments can participate.

## Agenda

Time	Activity
8:30 a.m.	Registration
9 a.m.	Opening and introduction to the workshop, David Dole, ADBI
9:10 a.m.	UK’s Support for Green Finance, Camilla Fenning, UK Government
9:40 a.m.	Pioneering Green Investment - Creating the world’s first Green Investment Bank , Gavin Templeton GIG
10:30 a.m.	Coffee Break
11 a.m.	Philanthropies Panel: Current and Future Role of Philanthropies in South East Asia
11:40 a.m.	Regional Barriers Discussion with Workshop Participants and Stakeholders
12:30 a.m.	Lunch
1:30 p.m.	Introduction to Community-based Investment for Renewable Energies, Naoyuki Yoshino, ADBI
2:30 p.m.	Break
2:45 p.m.	Paris Agreement and the Role of Community-based Development, Kazuo Matsushita, Keio University
3:45 p.m.	Experiences and Lessons from the Community-based Renewable Energy Development in Japan, Noriaki Yamashita, IGES
5 p.m.	Closing

## Gigatech Solutions for Gigaton Problems: Floating Solar Practice and Potential

8 June 2018 (Friday), 9 a.m.–5:30 p.m.

### Background

While nascent, floating solar PV is expected to grow rapidly due to certain key advantages, including avoided land-use competition through utilizing space on freshwater reservoirs, and providing complementarity with hydropower production in terms of hybrid operation and reducing evaporation. In some countries such as Republic of Korea, Japan and People's Republic of China, large-scale commercial floating solar installations have been built—People's Republic of China's 40 MW installation in Anhui Province is considered the largest floating solar power plant in the world, and was successfully connected to the grid in May 2017.

For Asia-Pacific countries, there is significant near-term potential for floating solar PV in inland fresh water sites, as well as in the future commercialization of systems for brackish and marine waters. However, much like ground-mounted solar, grid parity remains a challenge in some countries. In addition, operational and environmental viability must be carefully considered. Knowledge exchange and initiatives to address technical and non-technical barriers, such as pilot projects, will be crucial in these early stages.

### Objective of the Workshop

- Present the concept of floating solar PV and the current state of the technology to ACEF attendees
- Develop interest among ADB staff and Asia-Pacific government officials to explore floating solar
- Encourage partnerships between stakeholders to overcome technical and non-technical barriers

### Agenda

Time	Activity
9 a.m.–9:15 a.m.	<b>Workshop Chair:</b> <i>Cindy Tiangco</i> , Senior Energy Specialist ADB
9:15 a.m.–9:45 a.m.	<b>Opening Remarks:</b> <i>Yongping Zhai</i> , Chief of Energy Sector Group of ADB
	<b>Session 1: The early days – historical development and technology testing</b>
	<b>Moderator:</b> <i>Cindy Tiangco</i> , Central & West Asia Energy Division, ADB
	<b>Global Development through 2017,</b> <i>L. Pacudan &amp; C. Tiango</i> , CWRD, ADB
	<ul style="list-style-type: none"> <li>• <b>Solar Energy Research Institute of Singapore (SERIS) testbed operations</b> <i>Thomas Reindl</i>, SERIS</li> <li>• <b>Technology Development,</b> <i>Ciel et Terre</i>, Harold Meurisse</li> </ul>

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Time	Activity
9:45 a.m.–10:30 a.m.	<p><b>Session 2: Scaling up</b></p> <p><b>Moderator:</b> TBA</p> <ul style="list-style-type: none"> <li>• <i>Simon Li</i>, Trina Solar experience with 40 MW and larger plants in PRC</li> <li>• Singapore's Floating Solar Program, <i>Atem Ramsundersingh</i>, CEO, WEnergy</li> <li>• <i>Werner Versluys</i>, PerPetum Smart Energy Solutions</li> </ul>
10:30 a.m.–10:45 a.m.	Coffee break
10:45 a.m.–12:30 a.m.	<p><b>Session 3: Development and operational considerations including colocation with hydro facilities and regional energy trading - I</b></p> <p><b>Moderator:</b> <i>Dr. Wei-nee Chen</i>, COO, Sustainable Energy Development Authority of Malaysia (SEDA)</p> <ul style="list-style-type: none"> <li>• International Solar Alliance (to be confirmed)</li> <li>• EGAT of Thailand (invited)</li> <li>• Sarawak Energy Bhd. of Malaysia (invited)</li> <li>• Tenaga Nasional Bhd. of Malaysia (invited)</li> <li>• Market prospects—<i>Frank Haugwitz</i>, AECEA</li> </ul>
12:30 p.m.–2 p.m.	Lunch
2 p.m.–3:30 p.m.	<p><b>Session 4: Development and operational considerations including colocation with hydro facilities - II</b></p> <p><b>Moderator:</b> <i>Akanksha Chaurey</i>, IT Power Ltd.</p> <ul style="list-style-type: none"> <li>• Central Asia ADB Regional TA, <i>Cindy Tiangco</i> ADB CWRD</li> <li>• Bangladesh RE Development Project, <i>Hongwei Zhang</i>, ADB SAEN</li> <li>• Indonesia's Floating Solar Potential, <i>Yudo Dwinanda Priaadi</i>, Ministry of Energy and Mineral Resources (invited)</li> <li>• India's 10 GW Initiative - <i>S.K. Mishra</i>, SECI (to be confirmed)</li> <li>• Other developer (to be confirmed)</li> </ul>
3:30 p.m.–4:45 p.m.	<p><b>Session 5: Anticipated future developments including marine applications</b></p> <p><b>Moderator:</b> <b>Dan Millison, Transcendery LLC</b></p> <ul style="list-style-type: none"> <li>• Virtual pumped storage &amp; combined cycle hydropower, <i>Sasank Goli</i>, Ecogy Cleantech</li> <li>• Floating Solar and Low-Cost Energy Storage for Developing and Threshold Countries, <i>Hans-Henning Judek</i>, JE Access</li> <li>• Marine floating solar (to be confirmed)</li> <li>• Floating wind power (to be confirmed)</li> <li>• Floating tidal instream energy, <i>Jason Hayman</i>, Sustainable Marine Energy</li> </ul>
4:45 p.m.–5 p.m.	<p><b>Summary and closing remarks</b></p> <ul style="list-style-type: none"> <li>• <i>Wei-nee Chen</i>, SEDA Malaysia</li> </ul>

NOTE: the agenda is subject to revision pending confirmation of various speakers. Updated agenda will be available on the ACEF website.





## Renewable Energy Auctions: A New Paradigm for Asia

June 8 (Friday), 9 a.m.–5:30 p.m.

### Background

The world will recognize 2016 and 2017 as years of remarkable progress and growth for renewable energy (RE) auctions in both developed and developing countries. According to cost analysis from the International Renewable Energy Agency (IRENA), the best onshore wind and solar photovoltaic projects could deliver electricity for \$0.03 per kilowatt-hour (kWh) by 2019, much lower than the current cost of power from fossil fuels, which ranges from \$0.05 to \$0.17 per kWh.

Thus, market conditions have enabled a transitioning from feed-in tariffs to an auction mechanism for certain technologies such as grid-based wind and solar farms and this trend is continuing.

### Objective of the Workshop

The goal of this Deep Dive Workshop is to discuss lessons learned and potential future directions for RE auctions in Asia, providing insight into a new paradigm for RE auctions in more advanced countries, and analysis of how to address challenges of RE auctions in nascent markets through effective auction design.

### Agenda

Time	Activity
9 a.m.–10 :30 a.m.	Trends in RE auctions: Factors affecting prices, competition, high realization rates (USAID/E3) <ul style="list-style-type: none"> <li>• Highlight USAID auction work and auction guide (USAID)</li> <li>• Overview of global auction trends–Diala Hawila (IRENA) - TBC</li> <li>• Analysis of auction design factors affecting prices–Fabian Wigand (Ecofys)–TBC</li> </ul>
11 a.m.–12:30 p.m.	Recent RE auctions in ASEAN: From the perspective of private investors <ul style="list-style-type: none"> <li>• Mikell O’Mealy (USAID CEADIR) -TBC</li> </ul>
2 p.m.–3:30 p.m.	Auctions for RE hybrid and firm power: A new paradigm in Asia <ul style="list-style-type: none"> <li>• Thailand case: SPP hybrid-firm auction–Supawan Saelim</li> <li>• India case: Policy on auctions for hybrid solar-wind power systems</li> <li>• Best practices in firm power or hybrid systems</li> </ul>
4 p.m.–5:30 p.m.	Challenges in RE auction design for nascent markets <ul style="list-style-type: none"> <li>• Lao PDR: Solar auction pilot design–(Lao PDR Govt Rep) -TBC</li> <li>• Cambodia/Viet nam pilot solar auctions: Results to date</li> <li>• Best practices/successful design of auctions for nascent markets – <i>Fabian Wigand (Ecofys)</i> –TBC</li> </ul>



# Battery Energy Storage Technology for Clean Energy

8 June (Friday) 9 a.m.–5.30 p.m.

## Background

Energy storage for power system application has recently attracted significant interest and attention as an enabling technology for integrating the growing capacity of clean energy resources into the electric grid. Energy storage systems are likely to become an essential contributor to grid modernization investments that will transform the DMCs power system to a modern grid. However, in order to truly mainstream such technologies, enabling policy environments and extent of benefits vis-à-vis investment costs (including benefits that improve grid operation beyond the integration of RE) must be well understood by key stakeholders.

## Objective of the Workshop

The workshop aims to provide participants (specifically energy policy makers, RE project developers, and grid operators) with updated information on battery energy storage technology, specifically:

- Policy frameworks from Asia, Europe and the United States intended to enable R&D and utilization
- The economic viability of battery technology
- Use cases and benefits for grids, microgrids and RE integration

## Agenda

Time	Activity
9 a.m.–10:30 a.m.	<b>Policy</b>
	Presentation 1: ASIA Presentation 2: EU Presentation 3: US
10:30 a.m.–10:45 a.m.	<b>Coffee Break</b>
10:45 a.m.–12:15 p.m.	<b>Economics</b>
	Presentation 1: Battery Costs Presentation 2: Levelized Cost of Storage Presentation 3: The New Economics of Energy Storage
12:15 p.m.–2 p.m.	Lunch Break
2 p.m.–3:30 p.m.	<b>Application 1</b>
	Presentation 1: Frequency Regulation Presentation 2: Peak Shaving & Load Levelling Presentation 3: Demand Response
3:30 p.m.–3:45 p.m.	<b>Coffee Break</b>
3:45 p.m.–5:15 p.m.	<b>Application 2</b>
	Presentation 1: Solar Power Integration Presentation 2: Wind Power Integration Presentation 3: Microgrid



## Connecting Asian and Global Carbon Capture, Utilization and Storage (CCUS) Expertise

8 June (Friday), 9 a.m.–5:30 p.m.

### Background

Carbon Capture Utilization and Storage (CCUS) is expected to play an important role in meeting global climate goals. While much of the development has been in OECD member countries, ADB's DMCs are taking an increased interest, but remain concerned with the technical and financial viability. In this context, the Utilization part of CCUS becomes more important, especially as a tool for countries to pilot or demonstrate the technology in a cost-effective manner, showing a pathway that supports both economic development and meeting of NDCs.

### Objectives

1. To understand recent developments in CCUS from practitioners
2. To open a dialogue amongst stakeholders of Asia to promote CCUS

Time	Opening Session
8 a.m.–8:30 a.m.	Registration
8:30 a.m.–8:40 a.m.	<b>Welcome Remarks</b> <i>David Elzinga, Sr. Energy Specialist, ADB</i>
8:40 a.m.–9 a.m.	<b>Introduction to the program</b> <i>Peter Warren, Senior Climate Investment Lead, BEIS, Government of UK (TBC)</i>
	<b>Session 1: Asia's Drivers and Progress on CCUS</b> This session will answer the “what” and the “why” of CCUS in Asia. It will clearly articulate specific aspects that must be addressed and/or considered for CCUS to progress in Asia DMCs. <i>Shannon Cowlin, Energy Specialist, ADB</i>
9 a.m.–9:15 a.m.	<b>CCUS a tool for PRC's Green Growth</b> <i>Sun Zhen, DDG, Dept. of Climate Change, NDRC, PRC (TBC)</i>
9:15 a.m.–9:30 a.m.	<b>Current status and future path of Developments for CCUS in Indonesia</b> <i>FX Sutijastoto, Head of Research and Development Agency of the Ministry of Energy and Mineral Resources, Government of Indonesia (TBC)</i>
9:30 a.m.–9:45 a.m.	<b>CCUS opportunities in India</b> <i>NETRA, NTPC Limited, India (TBC)</i>
9:45 a.m.–10:00 a.m.	Tea Break
10:00 a.m.–10:15 a.m.	<b>CCUS in context of Bangladesh</b> <i>Abul Mansur Md Faizullah, Chairman of Bangladesh Oil, Gas and Mineral Corporation, Bangladesh</i>

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10:15 a.m.–11 a.m.	<b>Round-table discussion on Asian experiences including successes and challenges.</b> Emphasis will be placed on the Asian characteristics and way forward. Creating push and pull for CCUS, <i>Siree Nasakul</i> , Senior Petroleum Engineer Department of Mineral Fuels, Ministry of Energy, Thailand, <i>Dr. Ji Whan Ahn</i> , Director, Korea Institute of Geoscience and Mineral Resources (KIGAM), Representatives from Myanmar, Malaysia (TBC)
	<b>Session #2: Connecting International Experiences Across Asia</b> The objective of this session is to highlight international experiences and the most relevant aspects that can be applied across Asia. The session will identify regional differences, similarities and discuss technology. <i>Pradeep Perera</i> , – Principal Energy Specialist ADB
11 a.m.–11:15 a.m.	<b>Opportunity to Decarbonize Steel Sector through CCS</b> <i>Tony Zhang Sr.</i> , Advisor, Global CCS Institute, Australia
11:15 a.m. –11:30 a.m.	<b>Sharing Experience at Petronova CCUS project</b> <i>Noriaki Shimokata</i> , JX Nippon Oil Exploration, Japan
11:30 a.m. –11:45 a.m.	<b>Planning and executing a CCUS Project in PRC</b> <i>Gao Ruimin</i> , President YPG Research Institute
11:45 a.m. – 1 p.m.	Lunch and Networking
1 p.m. – 1:45 p.m.	<b>Roundtable discussion: How do we jump start CCUS in Asia?</b> What can we do in next 6 months on institute to Institute knowledge exchange? Asia to ask what they need and advanced countries to reply what they can give) Discussion on low hanging fruits, the first tasks and policy decisions <i>Adichat Srinkum</i> , Director, CCOP Technical Secretariat, Rahamat Ullah Mohd. Dastagir, ndc Additional Secretary, Planning and Renewable Energy, Power Division, Ministry of Power, Energy and Mineral Resources, Bangladesh , ONGC Limited, India (TBC)
	<b>Session #3: Pathways for CCUS in Asia.</b> This session will focus on opportunities for collaboration and next steps in the near and medium term. Focus will be placed on least cost or the most financial viable opportunities. <i>Johannes Vogel</i> , Energy Specialist, East Asia Department, ADB
1:45 p.m.–2 p.m.	<b>Evolution of Policy CCUS policy Framework in Canada and way forward</b> <i>C. Beth Hardy</i> , VP, Strategy & Stakeholder Relations, ICCSKC, Canada
2 p.m.–2:15 p.m.	<b>Development of CCUS technology and its commercial implementation</b> <i>Aniruddha Sharma</i> , Carbon Clean Solutions, UK
2:15 p.m.–2:30 p.m.	<b>Japan’s experience in CCUS development and vision of low carbon economy</b> <i>Makoto Nunokawa</i> , Project Coordinator, Environment Department, NEDO Japan
2:30 p.m.–2:50 p.m.	Tea break
2:50 p.m.–3:10 p.m.	<b>European perspective on CCUS and Future course through ACT</b> (via video con) <i>Ragnhild Rønneberg</i> , ACT Coordinator, The Research Council of Norway
3:10 p.m.–3:30 p.m.	<b>Key Note Address 2 Mineralization of CO2 and CCUS as a Decarbonization Tool for Decarbonization Cement Manufacturing</b> TBC
3:30 p.m.–4:15 p.m.	<b>Round Table Discussion: How do we jump start CCUS in Asia?</b> What can we do in next 6 months on institute to Institute knowledge exchange? Asia to ask what they need and advanced countries to reply what they can give) Discussion on low hanging fruits, the first tasks and policy decisions IEA, IEA – GHG, IEA Clean Coal Centre, CLSF
4:15 p.m.–4:30 p.m.	Conclusion and Next steps <i>David Elzinga</i> , Sr. Energy Specialist, ADB



## Women Entrepreneurship in Clean Energy

8 June (Friday), 9 a.m.–12:30 p.m.

### Background

During ACEF 2017, PFAN together with ADB and ENERGIA had organized a session called “Voices from Grassroots,” where clean energy women entrepreneurs had presented their businesses. This was well received by the audience and ADB intends to conduct a deep dive workshop, dedicated to fostering support for women entrepreneurs in the clean energy business.

### Objective of the Workshop

To exhibit the path to entrepreneurship for aspiring clean energy women entrepreneurs in Asia by examining current cases, the macro-environment and gender-lens investment climate.

### Agenda

Time	Activity
<b>Session 1</b> Project Presentation	Selected Women Entrepreneurs shall present their story of entrepreneurship, enumerating their path to success including the challenges they have faced. The projects shall represent a wide cross-section across Asia and across different types of businesses. The presentations shall be followed by a panel discussion and questions and answers from the audience
<b>Session 2</b> Examining the Macro Environment	There will be presentations from representatives of organizations such as Energia, ARE and others actively working in this space, shall be presenting on the macro-environment, examining both the enabling factors and challenges. The presentations shall be followed by a panel discussion and questions and answers from the audience
<b>Session 3</b> Gender Lens Investment	There will be presentations from representative of organizations such as Kopernik, SEAF Women’s Opportunity Fund and other such investors, who shall be presenting their work in gender-lens investment and facilitation. The presentations shall be followed by a panel discussion and questions and answers from the audience.

## Scaling-Up Solar PV Deployment: Implementing Projects with Assured Quality

June 8 (Friday), 9 a.m.–12:30 p.m.

### Background

The competitiveness of renewable energy technologies is improving rapidly, also highlighted by recent price developments, including in the field of PV technologies. The next challenge for a major scale-up in markets is to assure, to all stakeholders, that these technologies will deliver the anticipated services, with the expected performance, during their lifetime.

The necessary scale-up in PV deployment will therefore need to be underpinned by systematic quality assurance, requiring a physical and institutional infrastructure, so-called Quality Infrastructure (QI). QI comprises the institutional network and legal framework within which standards are formulated and implemented, including other elements such as metrology, testing, certification and accreditation of a technology.

IRENA, with support from its partner organisations, has developed comprehensive guidelines and tools to support countries in developing and maintaining such a quality infrastructure for PV systems, based on international best practices. Experience has shown that the implementation of a quality infrastructure accelerates future investments in PV projects, lowers capital costs, improves overall performance, extends module lifespans and lowers the resulting electricity costs.

### Objective of the Workshop

The meeting aims at sharing best practices in assuring quality for PV systems based on experts' experience as well as IRENA's tools and guidelines on how to develop PV projects based on an assured quality. Approaches that support the development of bankable renewable energy projects and quality infrastructure for different types of PV markets will be showcased, including particular emphasis on regions with extreme weather conditions, and needs and priorities of stakeholders in these fields will be identified.

### Agenda

Time	Activity
9 a.m.–9:10 a.m.	<b>Welcome and introduction to the workshop</b> Opening by IRENA: Francisco Boshell
	<b>Session 1: Role of Quality Infrastructure (QI) in PV Markets</b>
9:10 a.m.–9:25 a.m.	<b>Quality Infrastructure boosting PV Markets</b> <i>Francisco Boshell, Analyst for RE Technology, Standards and Markets, International Renewable Energy Agency (IRENA)</i>
9:25 a.m.–9:40 a.m.	<b>The importance of Standards and Quality Assurance to support financing of PV projects</b> <i>Yongping Zhai, Technical Advisor, Energy Sector Group, ADB</i>
9:40 a.m.–9:55 a.m.	<b>Integration of quality infrastructure into public policy and regulation in South Asia</b> <i>Vimal Mahendru, Ambassador of IEC for mini-grids, IEC</i>

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9:55 a.m.–10:05 a.m.	Audience Q&A
	<b>Session 2: QI mitigating technical risks for PV</b>
10:05 a.m.–10:20 a.m.	<b>Risks in the operation of solar parks and ways to insure against them</b> <i>Ronald Sastrawan, Senior Risk Analyst, Munich Re</i>
10:20 a.m.–10:35 a.m.	<b>Technical challenges with performance and durability of PV systems in Asia: Regional experiences (Presentation 1)</b> <i>Alex Li, Head of Jinko Solar's Asia-Pacific Technical Service, Jinko Solar</i>
10:35 a.m.–11 a.m.	Coffee Break
11 a.m.–11:15 a.m.	<b>Technical challenges with performance and durability of PV systems in Asia: Regional experiences (Presentation 2)</b> <i>Yu Hui, General Manager, China General Certification Center</i>
11:15 a.m.–11:30 a.m.	<b>Resilient solar PV systems</b> <i>Kyle Datta, General Partner, Ulupono Initiative</i>
	<b>Session 3: Implementing effectively QI</b>
11:30 a.m.–12 noon	<b>Good practices in testing and certification for PV systems in Asia</b> <i>Sebastian Petretschek, Vice General Manager, Head of Independent Engineering Asia, Solar/ Fuelcell Technology Greater China, TÜV Rheinland</i>
12 noon–12:15 p.m.	<b>Enhance your analysis and projects with the web tool INSPIRE (International Standards and Patents in Renewable Energy)</b> <i>Alessandra Salgado, Associate Professional, IRENA</i>
11:55 a.m. – 12:05 p.m.	<b>The PV module reliability scorecard</b> <i>Alfredo Jakub, Senior Consultant, Clean Technology Centre, DNV GL</i>
12:15 p.m.–12:35 p.m.	<b>Panel Discussion: How to build up QI in countries with different context and market maturity?</b>
12:35 p.m. –12:40 p.m.	<b>Closure</b> <b>Key messages</b> <i>Francisco Boshell, Analyst for RE Technology, Standards and Markets, IRENA</i>
12:40 p.m. –12:45 p.m.	<b>Group Photo</b>