Enhancing Energy Sector Climate Resilience in Asia

Asia Clean Energy Forum (5-8 June, 2017) - Manila, Philippines

Background

Asia is one of the fastest growing regions in the world in terms of GDP and projected energy demand. To meet this rising energy demand and other energy objectives such as improving energy access and enhancing energy security, governments across Asia are planning significant energy and infrastructure investments. At the same time, the region is particularly vulnerable to climate change impacts, motivating both climate change mitigation and adaptation efforts. For the energy sector, extreme weather events, rising temperatures, and changes to precipitation patterns pose a range of risks to energy infrastructure, supply, and demand:

- Energy infrastructure (including oil & gas infrastructure, power plants, and transmission lines) face risks of physical damage from increasing frequency and magnitude of extreme weather events, causing disruptions in the supply of electricity, oil, and gas. Coastal and off-shore infrastructure face compounded risks from sea level rise and increased flood risk. For instance in Southeast Asia it is estimated that 55 million residents will live in areas below sea level or regular flood levels by the end of the century¹.

- Increasing water stresses caused by changing hydrological patterns have direct repercussions for hydropower generation, which makes up important shares of electricity generation and considerable installed capacity in certain Asian countries². Thermal power generation - particularly coal, which notably comprises the majority of the generation mix in China and India - is also highly dependent on the availability of water for steam cooling. Rising water constraints can increase cooling costs for power plants and may require adoption of alternative cooling technologies or improved water management practices.

- Rising temperatures reduce the efficiency of electricity transmission and distribution lines, as well as that of thermal processes in power plants. Projected hotter temperatures, including more frequent and intense heat waves,³ will increase cooling and energy demand during the summer months⁴.

² Hydropower represents considerable installed capacity in China (304 GW), Japan (50 GW), India (45 GW), Viet Nam (15.8 GW) and Indonesia (5.3 GW). It represents important shares in electricity generation in various countries: Myanmar (75%), Laos (97%) and Bhutan (98%).
Looking ahead, a growing and changing energy system characterised by increased electrification, more variable renewable energy, and other low-carbon energy technologies (e.g. CCS) may alter the nature of the climate resilience challenge in Asia, as water demand, the ability to localise and buffer supply disruptions, and risks from extreme weather events, all evolve.

While Asian countries share a vulnerability to climate change impacts, they are equipped with varying capacity to adapt or mitigate these impacts. Countries are characterised by diverse energy mixes, levels of economic development, and energy access. Yet these differences may also be strengths, if countries work together to support each other and strengthen the overall resilience of their energy systems with stronger coordination and integration. As such, cooperation – both intraregional and international – are key for unlocking the many challenges and opportunities that lay in the pathway to achieving greater energy access while ensuring climate resilience.

**Climate-Energy Security Nexus: Regional Focus on Asia**

Building on past Nexus Fora, the IEA’s seventh workshop will have a regional focus on Asia, to be held as a series of sessions within the Asia Clean Energy Forum in Manila, Philippines to:

- Improve understanding of the climate risks facing the energy sector in Asia and the landscape of current policies/programs addressing these risks;
- Explore the potential implications of a low-carbon transition (e.g. more variable renewables, increased electrification) on resilience;
- Share regional and international best practices in identifying, assessing, and addressing risks to enhance resilience, particularly in the areas of policy development and financing resilience-building investments;
- Identify uncertainties, challenges, and needs for data, modelling, tools, and policy;
- Identify and discuss opportunities to strengthen regional and international collaboration on resilience.

Since 2012, the IEA has convened six workshops under the Forum on the Climate-Energy Security Nexus: to raise awareness about the risks faced by the energy sector from climate change and to facilitate dialogue between businesses, researchers, and policy-makers to explore and share ideas and best practices on enhancing resilience.

Further information on IEA’s work on energy sector climate resilience, including workshop reports from each Nexus Forum, can be found here: [http://www.iea.org/topics/climatechange/subtopics/resilience/](http://www.iea.org/topics/climatechange/subtopics/resilience/).
Schedule:

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<tr>
<th>2:00-3:30pm</th>
<th>Creating an enabling environment to enhance climate resilience</th>
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*In this session, speakers will discuss how enabling policy and financial environments can be established to drive resilience-building investments and business practices in the energy sector.*

- How can government policies and regulations drive businesses to build resilience, particularly alongside other objectives (decarbonisation, energy access, affordability)?
- What measures can be taken to ensure the low carbon transition, including deployment of variable renewables, promotes rather than threatens system resilience?
- What are successful models being used to finance resilience-building activities? How can momentum in driving investment for clean energy and energy efficiency be used for resilience objectives and how can we move beyond financing disaster recovery to investing in climate preparedness of assets?

**Moderator:**

Caroline Lee, IEA

**Mindanao Development Authority**

Romeo Montenegro, Deputy Executive Director

**Australia Energy Market Operator (AEMO)**

Sorrell Grogan, Engineer, Operations Department

**IEA**

Peerapat Vithayasrichareon, Energy Analyst, Systems Integration of Renewables

**ADB**

Andrew Jeffries, Director, Southeast Asia Energy Division
Building resilient energy assets and infrastructure

In this session, speakers will highlight best practices in building resilience into existing and new energy infrastructure, as well as the barriers that are creating challenges for asset owners, managers, and operators.

- How are energy asset owners/managers identifying and assessing climate risks, and how do these assessments inform investment and operational decisions?
- What gaps or barriers are creating challenges in identifying and addressing climate risks to energy assets?
- What are best practices in leading power and oil and gas companies, and how can they be shared?

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<th>Moderator:</th>
<th>Jesus Posadas, Undersecretary, Philippines Department of Energy</th>
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<tbody>
<tr>
<td>World Bank</td>
<td>Vivien Foster, Global Lead for Energy Economics, Markets &amp; Institutions, Energy and Extractives Global Practice</td>
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<td>China National Petroleum Corporation (CNPC)</td>
<td>Shi Jing, Chief Editor, Department of Corporate Presentation</td>
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<td>Eskom (South Africa)</td>
<td>Lwandle Mqadi, Specialist, Climate Change and Sustainable Development: Group Risk and Sustainability (via video conference)</td>
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<td>ADB</td>
<td>Frédéric Asseline, Principal Climate Finance Specialist</td>
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Speakers:

**Mikell O’Mealy**, Activity Manager, USAID Climate and Economic Analysis for Development, Investment and Resilience (CEADIR)

Mikell O’Mealy manages the USAID Asia CEADIR Activity to accelerate private sector investment and finance for clean energy and sustainable landscapes in Asia. She is a Senior Associate in Climate Change with Abt Associates, where she leads global and country-specific climate change projects. She previously served as USAID’s Eastern Caribbean Climate Change Advisor, and has worked in USAID’s Regional Development Mission for Asia and USAID’s Russia Mission. Focus areas include designing and managing climate change, sustainable development, and capacity strengthening initiatives.

**Ali Izadi-Najafabadi**, Head of Japan and Korea, Bloomberg New Energy Finance

Ali oversees an analyst team focused on research and analysis of Japan and Korea’s energy sector covering topics such as LNG supply and demand, new energy retail strategies, and the future of electrified transport. His prior experience includes working at the National Institute of Advanced Industrial Science and Technology, and the fuel cell manufacturer, Ballard Power Systems. Ali has an undergraduate degree in Engineering Physics and a Masters in Electrical Engineering from the University of British Columbia, and a Doctorate in Materials Science from Meijo University.

**Boonrod Yaowapruek**, Investment Mobilization Lead, USAID Clean Power Asia

Boonrod Yaowapruek is a clean energy finance specialist with more than 15 years of experience in technical and managerial support for clean energy and the environment. He serves as Investment Mobilization Lead for the USAID-funded Clean Power Asia initiative, a five-year effort to increase grid-connected renewable energy in the Lower Mekong countries. Over his career, he has mobilized more than $200 million in climate financing and more than $100 million in project financing in Asia for renewable energy development. Boonrod has a M.Sc in Sustainable Energy Engineering from the Royal Institute of Technology in Sweden.
Marlon Apañada, Managing Director, Allotrope Philippines

Marlon Apanada is the Managing Director of the Philippine office of Allotrope Partners with 12 years of experience in clean energy development. He oversees business origination, regulatory policy monitoring, and project development. He previously served as an Environmental Specialist for a USAID-funded project, Business Development Manager at the Transnational Renewable Energy Corporation, and an Origination Manager at EcoSecurities Philippines. He has been a Consultant to the Office of Philippine Senator Juan Miguel Zubiri and an Advisor to Solar Philippines. He holds a B.S. degree in Environmental Science from the Ateneo de Manila University and additional training on clean energy strategies for business development, contract negotiation, and financial modeling.

Atty. Jose M. Layug, Jr., Chairman, Philippines National Renewable Energy Board

Atty. Jose M. Layug, Jr. or “Jay” is currently a Senior Partner at Puno & Puno Law and the newly appointed Chairman of the National Renewable Energy Board. Jay was the Undersecretary of the Philippine Department of Energy (DOE) from 2010-2012 and headed the Renewable Energy Management Bureau, Energy Resources Development Bureau, Energy Utilization Management Bureau, Oil Industry Management Bureau and Legal Services. He was primarily responsible for the revival of various sectors in the Philippine energy sector with the successful launching of the National Renewable Energy Program, the Philippine Energy Contracting Rounds for Petroleum and Coal and the Public Transport Assistance Program of Pantawid Pasada.

Anna Maria Gonzales, Sustainability Head, Ayala Land Inc.

Anna Maria Gonzales serves as Sustainability and Planning Manager of Ayala Land, Inc., which is the real estate arm of the Ayala Corporation, one of the Philippines’ largest and well-established business conglomerates. Ayala Land, Inc. is the Philippines’ leading developer of sustainable estates, including residential, retail, offices, hotels, and leisure developments. The company currently has 20
sustainable estates and is present in 55 growth areas nationwide. In February 2017, Ayala Land Inc. announced an aggressive plan to reduce GHG emissions in its commercial properties and to be carbon neutral by 2022. To achieve this goal, the company is implementing a range of strategic initiatives including passive cooling design, energy efficiency, renewable energy sourcing, and carbon offset mechanisms such as forest regeneration and protection.
Anna Maria Reodica, Renewables Program Manager, Manila Energy Company

Anna Maria Reodica serves as Renewables Program Manager for the Manila Energy Company (MERALCO), which is the Philippines' largest distributor of electrical power serving metro Manila and nearby provinces. Ms. Reodica leads strategy development to address the challenges of integrating renewables in the distribution network, overseeing projects ranging from network readiness to customer process enhancement to capacity building. In addition to renewable energy integration, over the course of her career in the electric power industry she has led utility rate design, demand-side management, energy efficiency, marketing programs, smart grid initiatives, and climate change mitigation. She holds a B.S. degree in Management Engineering from Ateneo de Manila University, a Masters Degree in Business Economics from the University of Asia and the Pacific, and certificates from the GHG Management Institute in the United States and the Renewables Academy (RENAC) of Germany in GHG management and renewable energy, respectively.

Salvador Antonio Castro Jr., President and CEO, CleanTech Global Renewables, Inc.

Engr. Salvador Antonio “Aboy” Castro, Jr., is President and CEO of CleanTech Global Renewables, Inc., which constructs and operates renewable energy power plants including solar PV, mini-hydro, biomass, and geothermal power plants. He began his career as an engineer in the National Power Corporation and has held executive and management positions in top 500 companies in the Philippines, including Procter & Gamble, Coca Cola Bottlers, and others, leading initiatives in environmental preservation, technology development, and social entrepreneurship. With his extensive network in the cleantech industry and his coaching and mentoring skills, Mr. Castro is a frequent speaker on the topics of project and energy development as well as team building. Mr. Castro is also actively involved in the Private Financing Advisory Network-Asia (PFAN Asia), linking clean energy projects with suitable financing. He holds a degree in Chemical Engineering from the University of the Philippines and is a candidate for a Masters in Industrial Relations – Human Resources Development from the School of Labor and Industrial Relations of the University of the Philippines.

About the Organizations

CEADIR helps governments, the private sector, and civil society make the business and economic case for investing in climate change mitigation and adaptation. CEADIR conducts assessments, develops and disseminates tools, and strengthens capacity for analysis, design, and implementation of clean energy (renewable energy and energy efficiency) sustainable landscapes, and climate change adaptation activities. CEADIR also helps mobilize public and private sector finance and supports Low Emission Development Strategies (LEDS), Nationally Determined Contributions (NDCs), and National Adaptation Plans (NAPs). CEADIR convenes a
monthly discussion series on economic analysis, planning, policies, strategies, and financing for renewable energy, energy efficiency, sustainable landscapes, and climate change adaptation, called Navigating the Climate Economy.

The Asia LEDS Partnership is a voluntary regional network of individuals and organizations from the public, private, and non-governmental sectors active in designing, promoting, and implementing LEDS in Asia. It is one of three regional platforms of the LEDS Global Partnership, an initiative of more than 120 countries and international programs launched in 2011. The goal of the Asia LEDS Partnership is to advance the development of country-led and country-specific strategic plans to promote economic growth while reducing GHG emissions in the Asia region.

Bloomberg New Energy Finance provides independent analysis and insight, enabling decision-makers to navigate change in an evolving energy economy. Leveraging the most sophisticated new energy data sets in the world, Bloomberg New Energy Finance synthesizes proprietary data into clear narratives that frame the financial, economic and policy implications of emerging energy technologies.

USAID Clean Power Asia works with Lower Mekong countries and other Association of Southeast Asian Nations (ASEAN) member states to encourage power sector investments in clean energy, focusing on increasing renewable energy in the region’s electricity grids. It employs a regional approach by collaborating with diverse stakeholders, partners and regional organizations in four Lower Mekong countries (Cambodia, Lao PDR, Thailand, and Vietnam) and sharing lessons learned and best practices from other ASEAN countries. The goal of USAID Clean Power Asia is to accelerate the regional transition to a high-performing, low-carbon power sector through three main efforts:

- **Promoting Low-Emission Power Systems**: Clean Power Asia works with project developers, the investment community, government and other donor agencies to attract public- and private-sector investment for grid-connected renewable energy development;
- **Power Sector Planning**: It supports the establishment and updating of national renewable energy targets and the integration of these targets in electric power development plans;
- **Mobilizing Public and Private Sector Investment**: Clean Power Asia is reducing barriers to renewable energy financing, for example, by promoting standardized documentation and evaluation practices and approval processes.

The Clean Energy Investment Accelerator (CEIA) is an innovative public-private partnership co-led by Allotrope Partners, the World Resources Institute (WRI), and the U.S. National Renewable Energy Laboratory (NREL) under the LEDS Global Partnership. The CEIA convenes leaders from the public and private sectors to develop and implement policies to increase public and private sector financing for clean energy. Through targeted policy and regulatory engagement and innovative finance vehicles, the CEIA works to advance policy and financing frameworks to meet the clean energy demand of large offtakers, such as commercial and industrial consumers and municipalities. Allotrope Partners is a private equity-backed impact investment firm focused on low-carbon infrastructure and asset development in emerging markets. Allotrope’s mission is to accelerate and capitalize on the transition to a sustainable energy future. It has regional offices in Indonesia, Mexico, Philippines, and Singapore.
Additional Information for Participants

On March 27-28, 2017, USAID brought together private sector and government leaders in Bangkok to discuss opportunities to increase clean energy investment in the region. This workshop on *Enabling Private Sector Clean Energy Investment in Southeast and South Asia* showcased corporate commitments and facilitated peer learning on implementation of clean energy strategies. Participants developed country-specific recommendations on how governments can strengthen policies and regulations to accelerate deployment of private sector capital for clean energy. They also identified short- and medium-term actions for advancing these recommendations through public-private sector working groups.

The workshop was supported by the USAID Global Climate Change Office, co-hosted by the Asia LEDS partnership, and organized by the USAID CEADIR Activity. The workshop benefited from additional support from the Clean Energy Investment Accelerator, USAID Private Financing Advisory Network-Asia, USAID Clean Power Asia, and Climate and Development Knowledge Network (CDKN). Approximately 90 representatives of major Asian, American, and European corporations and senior government officials from India, Indonesia, Philippines, Vietnam, and the United States attended. The workshop report with recommended next steps will be available soon on the USAID Development Experience Clearinghouse at [https://dec.usaid.gov/dec/home/Default.aspx](https://dec.usaid.gov/dec/home/Default.aspx).

Contact

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