

1. Introduction: background and objectives

The workshop “ASEAN Renewable Energy Policy Support Mechanism”, hosted by the Ministry of Energy Science, Technology, Environment and Climate Change (MESTEEC) and jointly organised by the International Renewable Energy Agency (IRENA) and the ASEAN Centre for Energy (ACE), was successfully held on 21-22 November 2018 in Kuala Lumpur, Malaysia. Participants included over 40 representatives from Brunei Darussalam, Cambodia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand and Vietnam, representatives from energy ministry, utility, and other related agencies as well as development partners, financial institutions and project developers. The complete list of participants is as [Annex 1](#).



The workshop was a kick-off activity to initiate the implementation of ASEAN-IRENA MoU and Action Plan which was signed at the recently concluded ASEAN Ministers on Energy Meeting (AMEM) and Singapore International Energy Week (SIEW) at Singapore in October 2018.

The workshop supported effort of the AMS to move towards competitive renewables market and to provide a knowledge sharing platform among policy makers and related key experts from the region and beyond. The workshop also contributed to the achievement of outcome-based strategy 1 and 2 of ASEAN Plan of Action on Energy Cooperation (APAEC) Programme Areas for RE.

The workshop resulted in policy exchanges and in-depth discussions to support ASEAN Member States formulate appropriate actions on renewable energy policies including auctions (for competitive bidding), financing and investment mechanisms.

The report summarizes the main content and findings of the workshop. All presentations can be downloaded at <http://bit.do/ASEANREWorkshop>.

2. The workshop setup

The workshop was designed for two days in roundtable format. Keynote presentations and panel discussions from practitioners and international experts as well as ASEAN participants gave insights into different experiences in renewable energy policy and competitive RE market mechanisms in the region and beyond that set the base for discussion during the workshop.

On the first day, the following topics were discussed: (i) the RE ASEAN and global market analysis; (ii) policy instruments to support renewables in power sector and end-use sector and (iii) renewable energy incentives trends and design. Participants had chances to share experiences on the design and implementation of policies in their countries, focusing on innovative policy designs to address country-specific and regional barriers.

The second day focused on deep dive sessions on the latest global and regional trends on auctions and the trade-offs in design elements that need to be considered while designing auctions. Participants discussed on country experiences in the design of auctions among other mechanisms and how policies can be designed to enable the most cost-effective renewable energy development.

The final agenda is as [Annex 2](#).

3. Workshop activities

Day 1: 21 November 2018

- **Welcome remarks**



The workshop started with welcome remarks from Datuk Badriyah Ab Malek, Deputy Secretary General for Energy, MESTECC, Malaysia. She mentioned that Malaysia is increasing its RE target to 20% by 2025 in the power sector (including large hydro). She emphasized the need for a more competitive mechanism for renewable energy to bring down the cost and shared the success of Malaysia in moving from an administratively set feed in tariff (FiT) to an auction for large scale solar PV. She highlighted that renewables have reached grid parity since 2017, 10 years ahead of earlier projections. She also shared

that ASEAN Member States (AMS) support the global commitment to mitigate climate change as part of the Paris Agreement and the regional commitment to achieve 23% RE in TPES by 2025.

Gurbuz Gonul, Acting Director of Country Support and Partnerships at IRENA, addressed the importance of the workshop as it marks the beginning of the implementation of the ASEAN-IRENA MoU and the associated Regional Action Plan. He emphasized the MoU and the Regional Action Plan reflect IRENA's strong commitment to work more closely with the region, to scale up the Agency's support to the energy transition of the region as well as to solidify the strong partnership with the AMS and institutions. He highlighted that the workshop is well aligned with the ongoing efforts of the AMS to create more competitive renewables markets and to improve the understanding of the key aspects of designing and implementing auctions along with the trade-offs to consider between achieving the lowest price and other objectives while designing auctions.

Dr. Sanjayan Velautham, Executive Director of ASEAN Centre for Energy (ACE) mentioned that RE development in ASEAN continues to grow and is on the path to achieving the region's target as reflected in APAEC 2016-2020. He highlighted that the regional RE target may not be achieved unless the region moves collectively and ensures the enabling environment for RE deployment, which will be further explored in APAEC Phase II (2021 – 2025) to be drafted in 2019. He also pointed that renewables, especially large scale, are gaining momentum in the region; though, challenges such as securing financing, permits, licenses and grid integration (e.g. defining grid codes) need to be overcome. Finally, he emphasized that the importance of the collaboration between ACE and IRENA under the MoU and Action Plan within the regional context.

- **Session 1: Scene-setting presentations and panel discussion on Innovative renewable energy policies to achieve the ASEAN RE target**

Scene setting presentations

Septia Buntara Supendi, Acting Manager of ASEAN-German Energy Programme (AGEP) from ACE gave presentation on *ASEAN's efforts to increase RE development in the region*. He shared the socio-economic development and energy landscape and projection of the region. He outlined the regional RE target and AMS efforts on enabling policies framework and gave examples on RE projects implementation. He also shared the challenges on technical and non-technical issues regarding renewable project development.



Badariah Yosiyana, Program Officer for Southeast Asia, Country Support and Partnerships (CSP) from IRENA presented the *Renewable global trends and RE market analysis for Southeast Asia*. She mentioned that renewable power capacity additions have consistently exceeded conventional power additions since 2012 globally due to the strong business case for renewable energy (including policy support for renewables, falling cost of technology, etc.). She also shared the findings of IRENA's publication *Renewable energy market analysis: Southeast Asia* which identifies

emerging trends and themes at the intersection of public policy and market development of renewable energy in the region.

Panel discussion



The panel discussion was moderated by Datuk Badriyah Ab Malek, Renewable Energy Focal Points and Director General of MESTECC with the following panelist: David Morgado (Senior Energy Specialist, Asia Infrastructure Investment Bank), Dato' Guntor Tobeng (Managing Director, Gading Kencana Sdn Bhd), Ray McLaughlin (Head of Asia Pacific, Mainstream Renewable Capital), and Gurbuz Gonul (IRENA). The panel shared their knowledge and

experiences on effective and innovative renewable energy policies that could accelerate the deployment of renewables.

The summary of discussion as follows:

- Based on donor perspectives, the region still has limited capacity in project development. The improvement of the RE development are including amongst others: i) Technology specific of RE-Auction, ii) Capacity building to support RE planning and iv) net metering.
- The challenge of RE development in ASEAN are including Power purchase agreement, land acquisition, and grid stability. In this regards, regional collaboration will be beneficial to address the challenge and reducing project cost. In terms of market development, ASEAN need to support small-medium developers in holistic approach.
- Stable and long-term policy including regulatory and fiscal incentives, transparency, and the establishment of a dedicated renewable energy agency with strong mandate, are key to enhance renewable energy deployment in the region. Transmission capacity and cross border electricity transaction are important to integrate more renewables in power sector.
- Alignment with other global initiatives such as climate change (Paris Agreement) and the Sustainable Development Goals is needed. Renewable energy cannot be isolated from other energy spectrum. The issue on stranded assets should also be considered by the policy makers in the region.
- For small and medium project developers, securing financing from banks/financing institutions is a major challenge due to limited capital and limited trust of financing institutions in the sector. There is no standard for bankable project as each bank perceives the risk of RE projects differently.
- Malaysia kicked-off the FiT in 2007 and has reached grid parity since 2016/2017. Malaysia also implemented the Greentech mechanism that provides 2% interest rate cut and 60% guarantee for project developers which significantly supported RE deployment. As of today, the country has

successfully developed a Large Scale Solar (LSS) farm which has 55 MW capacity and will be enhanced progressively due to the high RE target until 2025.

- The renewable energy sector is very dynamic, and the cost of renewable technologies continues to drop due to rapid innovations. However, the drop in technology costs is not automatically reflected in the price of renewable-based electricity. Enabling policies must be designed carefully by the government before deciding certain mechanism.
- The ASEAN-IRENA MoU and Action Plan will provide a platform to better understand the region's challenges and facilitate the scaling up of renewables in the region. There are several components under the MoU and Action Plan such as strengthening dialogue of ASEAN-IRENA, renewables readiness assessments and roadmaps for renewable energy, capacity building and project facilitation/financing which will support the region and AMS to achieve their renewable energy targets.

- **Session 2: Scene-setting presentation and country perspectives on Policies support mechanisms in the power sector**

Scene setting presentations



Diala Hawila, Program Officer, Policy Advise from IRENA presented the *Renewable energy policies in Southeast Asia – Power*. She started by outlining the drivers for renewable energy deployment in Southeast Asia including environment, energy security, falling costs and socio-economic benefits. Then she gave an overview of the most common policies used to support renewable energy in the power sector, including administratively set feed-in tariffs, auctions, and tax incentives. Diala also touched upon the instruments and business models used to support the deployment of decentralized renewable energy solutions in areas that do not have access to the grid, that house a population estimated at 65 million in the region.

Country perspective



The country perspective session was moderated by Septia Buntara Supendi, ACE. In this session, each country had the opportunity to share their current energy policy, support mechanism and challenges regarding renewable energy deployment in the power sector, including in providing electricity access and boosting electrification rates. Cambodia (Yim Sophy, Chief Office of Department of New and Renewable Energy, Ministry of Mines and Energy); Myanmar (Dr. Win Myint, Deputy Chief Engineer, Electric Power Generation Enterprise, Ministry of Electricity and Energy); Malaysia (Razib Dawood, COO of Energy Commission); Singapore (Phua Zhi Ling, Senior Analyst, Policy and

Planning, Energy Market Authority); and Thailand (Jariya Budnard, Engineer, Professional Level, Department of Alternative Energy Development and Efficiency) presented their country reports followed by an open discussion.

The following key summaries are noted from the country perspectives:

- Cambodia currently has 10 MW installed solar capacity located in Bavet City which has tariff 0.9 USD/KWh. The country will continuously develop solar project such as 60 MW Solar Farm in Kompongchhang in 2019 and 50 MW Solar Farm in Phnom Penh by 2020. The challenge for the country is on capacity enhancement, unavailability of specific RE Outlook, unstable transmission line, and imbalance power supply.
- Myanmar is in the planning of the 1st 40 MW grid connected solar projects. In increasing further renewable projects, Myanmar strengthen bilateral cooperation through signed Agreement with International Solar Alliance, firmed up cooperation with Denmark, Finland and India. The priority challenges in RE initiatives are on legal framework, finance, tariff, and human resource development.
- Towards the 20% RE capacity mix by 2025, Malaysia was successfully commenced their biggest Solar Farm in 2018 with 50 MW capacity and 558 MW total of Feed in Tariff projects, both within Peninsula and Sabah area. However, to achieve the RE target, the country needs 3,991 MW Capacity of RE.
- Solar PV is the most viable form of renewables in Singapore with total installed capacity increased from 0.4 MWp in 2008 to 162 MWp in 2018. The country continuously sets effort on right pricing system, rules simplification, R&D enhancement and RE programme development.
- Thailand has introduced several initiatives on RE development such as FiT, data support, investment grants and taxes programmes. However, the most challenging situations are on the bottleneck of transmission system including limited grid code, permit issues, land acquisition, people understanding on biomass and law and regulation on RE such as Waste to Energy.

- **Session 3: Scene-setting presentation and country perspectives on Policies support mechanisms in end-use sectors**

Scene setting presentation



Emanuele Bianco, Associate Program Officer, Policy, at IRENA presented on *Renewable energy in the end-use sectors*. He highlighted that renewable energy policies have become increasingly widespread; however, policy makers focus on power sector while heating, cooling and transport lag behind. He outlined the socio-economic and health benefits of modern RE in heating and direct use. He emphasised that government intervention is needed to facilitate deployment for modern renewable energy solutions with a whole energy vision, encompassing heating and cooling, transport and direct uses of energy.

Country perspectives

The country perspective session was moderated by Septia Buntara Supendi, ACE. In this session, each country had the opportunity to share their current energy policy, support mechanism, and challenges in end-use sectors (transport and heating/cooling for industry, household, etc.). Brunei Darussalam (Abdul Matiin Md Kasim, Head of Renewable Energy Unit, Ministry of Energy, Manpower and Industry); Vietnam (Pham Thuy Dung, Expert of RE Division, Electricity and Renewable Energy Authority. Ministry of Industry and Trade); and Lao PDR (Boualom Saysanavong, Head of Non-Hydro Renewable Energy Generation Promotion, Ministry of Energy and Mines) presented their country reports followed by an open discussion.



The summary of country perspectives are as follows:

- Brunei Darussalam has introduced RE certificate installation programme that aims to promote and incentivise the deployment of RE. The country will apply Reverse -Auction mechanism for utility scale projects in 2019 and targeted to have net metering for distributed solar PV in 2020. The challenges for end user sector is the unavailability of dedicated policies to promote end user for RE, low price of electricity from gas fired power plants, lack of financial incentives, and low biofuel potential.
 - Lao PDR is in the preparation of 250 MW wind project in Sekong Province and feasibility study of Solar PV which has 4,000 MW Potentials. The main challenges are lack of resource information, insufficient knowledge on technical know-how, high technology cost for RE and limited funds.
 - Vietnam has 189.2 MW total installed capacity for wind projects which being developed since 2011 until 2017. Apart from wind, the country aims to adding power capacity in solar PV (5.5 GW), waste to energy (1.93 MW), and 342 MW of biomass. Thus, to enhance RE, the country need improvement on their grid system (frequency and power supply).
- **Session 4: Scene-setting presentation and panel discussion on Scaling up RE deployment through incentives and de-risking investment**

Scene setting presentation



Lasse Ringius, Director and Head of Green Investment Services from the Global Green Growth Institute presented on *Scaling up renewable energy deployment through incentives and de-risking investment*. He stated that commercial and institutional investors perceive green climate investment projects in emerging economies as high risk and low return. He mentioned the most common risk in green investment, including those related to political, regulatory, technology, credit and capital market at each stage of project development. He shared the need for innovation in financial instruments to mitigate the risk such as

guarantee, grant, insurance, equity and loans. He also provided a brief overview of Southeast Asia RE investment landscape.

Syed Ahmad Syed Mustafa, Acting CEO of GreenTech Malaysia presented the policy support mechanism for green investment in Malaysia, among others: tax incentives, R&D grants, technical support, public private partnership, policy instruments, and de-risking instruments. He outlined the green technology financing schemes (GTFS) that give incentives of 60% government guarantee on financing provided by financial institutions and 2% rebate on interest/profit rare charged by financial institutions as well as the criteria to receive it. He highlighted the GTFS potential impact (socio-economic and environment) and next plan to scaling up green investment in Malaysia.



Panel discussion

The panel was moderated by Badariah Yosiyana with the following panelists: Danna Kenney (Chief of Party, USAID Clean Power Asia), Alin Pratidina (Advisor, GIZ), Syed Ahmad Syed Mustafa (Acting CEO of Greentech Malaysia) and Lasse Ringius.

The summary of discussion is as follows:

- RE projects are considered capital-intensive, thus significant investment risks are attached to the project. These risks need to be mitigated through risk transfer instruments e.g. insurance and guarantee schemes to encourage investors, project developers, lenders and other stakeholders in entering the ASEAN sustainable energy market. The study by GIZ and ACE found that there are around 20 insurances and 26 guarantee providers in the region, addressing risks from the general project and technology related risks to political risks. The providers are mostly from the World Bank groups and international insurance. The insurance and guarantee products are mostly for large scale project (above 50 MW) due to high transaction cost.
- Reducing the risk of investment in renewable energy projects is important, with major components: policy/political risk, security risk, technology risk, and pricing/currency risk. Addressing each of these risk profiles will help investors, utilities, government and other institutions, find the necessary will to invest in renewable projects.
- The most difficulties for RE investment are the Financial closure; some project developers need to secure their financing modality before executing the project/s.

Day 2: 22 November 2018

- **Session 1: Deep dive on RE auctions**

In this session, three presentations were delivered to provide better understanding on renewable energy auction, followed by an open discussion.

Renewable energy auctions: Design elements and trade-offs, by Diala Hawila (IRENA)



Diala started the presentation by showing the trends of countries that have adopted auctions from 2005 -2018. She outlined the strengths and weaknesses of auctions in regard to keeping pace with rapidly decreasing costs. She highlighted the flexibility of the design of auctions to achieve other objectives and how they could permit real price discovery as well as enable commitments and transparency. However, auctions are associated with relatively high transaction costs for both developer and auctioneer, and risk of underbidding and delays. The factors that impact the price such as country-specific conditions, investor confidence and learning curve, policies supporting renewables, and auction design were also mentioned. She underlined the key consideration in designing and implementing auctions, i.e. auction demand, qualification requirements, winner selection and sellers' liabilities. Finally, she stressed the value of renewable energy goes well beyond the energy services it provides, hence, trade-offs between cost competitiveness and other development objectives (such as jobs, industry development) should be carefully examined.

Practical implementation of auctions for ASEAN, by Dana Kenney, Chief of Party, USAID Clean Power Asia

Dana opened the presentation by giving an overview of the recent renewable energy auctions that took place in Asia. She then provided more detailed information on auctions in Indonesia, Malaysia and Thailand as well as in Cambodia and Vietnam where auctions are under development. She also shared the ongoing project of USAID Climate Economic Analysis for Development, Investment, and Resilience (CEADIR) that conducted interviews with private sector participants in two auctions in Thailand and Malaysia. Common findings include concerns regarding the bankability of PPAs with utility companies, concerns over whether winning projects would get built as planned, time to submit bidding document and standardised grid interconnection requirement. She also shared the role of USAID supporting the government of Lao PDR in the design and implementation of a solar farm auction pilot project.

Lessons learned from India, Birjendra Sangwaiya. Senior VP - International Business Development, Amplus Energy Solution

Birjendra started his presentation on the evolution of open access business that allows large users of power - typically with a connected load of 1 megawatt (MW) and above - to buy cheaper power directly

from generators. He provided a projection that Indian distributed solar market poised for an exponential growth due to highly attractive market that offers long term structural growth drivers. He highlighted India's institutional structure and emphasized that the national RE target is well translated by state utilities. He also mentioned that India will auction 40 GW of renewable energy projects comprising 30 GW solar and 10 GW wind every year for the next 10 years until 2028, indicating huge potential for domestic manufacturers and developers.

The summary of the discussion is as follows:

- The design element of the auctions should be carefully considered to ensure the success of auction, including integrated planning process (land selection, resource assessment, grid connection and others).



government and related stakeholders.

- In Malaysia's case, the node location for electricity connection provided by the utility is included in the auction document as well as additional maximum capacity for new connection (there are around 126 nodes in total). Hence, the project developer could find suitable land to reduce the cost. Land regulation is strict and only certain status (industrial zone) could be utilized for RE project, otherwise, the land permit should be renewed annually.
- The risks of RE project should be carefully considered by

- **Session 2: Panel discussion on lesson learnt of Auction Implementation in ASEAN region**

The session started with presentations from Naveen Balachandra (Southeast Asia Advisor, Global Wind Energy Council) and Chatchai Mawong (Director, Hydro and Renewable Energy Power Plant Development, Electricity Generating Authority of Thailand (EGAT)).

Naveen gave a presentation on *Auction – the new norm*. He mentioned that Southeast Asia will be one of the fastest growing regions for wind power. He also outlined the drivers and barriers for wind power markets especially in Indonesia, Philippines, Thailand and Vietnam. He highlighted the foundation for a successful auction and how auctions could be the driver for LCOE reductions by giving examples from India, Argentina and other countries. He emphasized the key factors to transition from FiT to auctions. Finally, he shared the Southeast Asia taskforce under Global Wind Energy Council.

Chatchai presented the *Renewable energy development in Thailand*. He first shared the electricity situation and policy, highlighting that renewables account for around 9% of the electricity generation (excluding large hydro). He outlined the principle of Power Development Plan (PDP) 2015 and the renewable energy policy with target of 20% RE in electricity generation by 2036. He further explained the history of renewable energy and future development plan. He highlighted the issue of grid integration of

variable renewable energy (VRE) and several initiatives taken by EGAT to accommodate higher share of VRE.



The panel discussion was moderated by Septia Buntara Supendi (ACE) with the following panelists: Naveen Balachandra; Chatchai Mawong; Gladys Mak (Acting Chief Operating Officer, SEDA Malaysia); Bernard Casey (Development Director for Vietnam, Mainstream Renewable Capital); and Rizal Ramli (Head of System Operation Unit, Energy Commission, Malaysia).

The panelists shared their experiences on how to move from FiT to more competitive schemes (Auctions). The summary of discussion is as follows:

- The FiT in Malaysia started in 2010 aiming to catalyse renewable energy deployment and create awareness. The fund for FiT was taken from RE fund which is collected from additional 1% of electricity bill of consumers who use above 300 unit of electricity. It has successfully increased the capacity from 12 MW to around 600 MW in 2017, bringing many socio-economic benefits. The country has transitioned from FiT to auctions for large scale solar (LSS). Malaysia has to realise the limitation of land. The Energy Commission benefitted from the experiences of thermal auction before starting the LSS auction. The auction process is continuously improved and starting this year, a biogas (online) auction is applied with positive feedback.



renewable energy auction.

- Before deciding to implement an auction, fundamental efforts need to be undertaken by government and other stakeholders, such as infrastructure development, grid reinforcement, the implementation of regulation, etc. The other factors such as socio-economic benefits also need to be considered.

- Thailand started the auction of hybrid IPP of around 300 MW beginning of this year which mostly resulted in biomass projects. The new PDP 2018 will provide a basis for the next

- Coordination among related agencies and securing budget to fund the RE projects (especially on FiT) are crucial.

- **Session 3: Designing auctions for broader policy objectives**

In this session, two presentations were on the topic of designing auction for broader policy objectives. The session was moderated by Emanuele Bianco (IRENA).

Renewable energy benefits and Auction design elements that can support them, Diala Hawila (IRENA)

Diala started the presentation by giving an example of the case of onshore wind auctions in Brazil, how they were designed to support the development of a domestic wind industry, the challenges and the opportunities that were faced due to auction design and macroeconomic conditions. She then highlighted the global socio-economic benefits that can be achieved from the energy transition (scaling up renewable energy to meet Paris Agreement goals – according to the IRENA REmap). She provided detailed information on the value chains of solar PV and onshore wind including the activities at each segment of the value chain, their requirements in terms of manpower, skills and materials needed. She highlighted the auction design elements, along with other policies related to industry, education and trade to support local value creation and how to bridge the gap through enabling policy and investment frameworks.

Lessons learned from Latin America and Africa Auction, Bernard Casey (Mainstream Renewable Power)

Bernard presented the fundamentals of renewable energy auction in Chile, South Africa and UK: (i) medium to long term energy policy framework set by the government; (ii) the framework is supported by administrative action; (iii) transparency and independence; and (iv) bankable PPA to attract international capital. He also shared the lesson learned on auction design and approach such as to engage early with participants (qualification criteria and offtake/PPA), transparency on auction rules and non-negotiability of standard agreements to give confidence and reduce risk, objective qualification criteria and transparent ‘scoring’. Finally, he stressed that well design auction system will facilitate price discovery and drive down cost.

- **Session 4: Key factors in implementing competitive RE schemes**

This session was moderated by Naveen Balachandra (Global Wind Energy Council) with following panelists: Dato' Guntor Tobeng (Gading Kencana, Malaysia); Boualom Saysanavong (Ministry of Energy and Mines, Lao PDR); Mohd. Yusrizal Mohd. Yusof (Tenaga Nasional Berhad); Bernard Casey (Mainstream Renewable Capital); and Birjendra Sangwaiya (Amplus Energy Solution India).



The panelists shared their experiences on key factors and potential challenges that need to be addressed in implementing auctions, including land acquisition, grid integration of VRE, financial risk, administration, PPA, etc. The summary of discussion is as follows:

- In Malaysia, there are different land zoning and land status. Only 'industrial' land could be utilized for RE project, otherwise, the land status needs to be converted or annual fee should be paid, which could increase the project cost. The project developers are required to conduct two steps of grid impact study: technical feasibility to be submitted with bidding document and design concept with detail aspect (such as harmonization). Grid connection test is very stringent; however, the project developers seem to appreciate the process and understand the purposes.
- With the current grid infrastructure of Peninsular Malaysia, around 2,500 MW VRE could be integrated without upgrading the grid or battery.
- In most countries, the utilities are still skeptical of VRE. Thus, grid code is very important. Weather forecasting could be one of the solution to better predict the renewable power generation.
- TNB Malaysia was exploring to participate at international bidding, including the one in Abu Dhabi. The case of Abu Dhabi low RE price was discussed: free cost for grid connection and land, generous fiscal incentives and very low interest rate. If those conditions were applied to Malaysia, the price could be around 5 US\$ cents/kWh.
- The idea of having a designated agency to manage land issues for RE project could be considered.



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- **Closing remarks**

ACE closing remarks

ACE expressed their sincerest thanks to MESTECC of Malaysia for the strong support and coordination to the success of workshop arrangement. ACE appreciated the active participation from the invited speakers and panelist from the ASEAN Member States and the Private Sectors which bring insightful perspective towards holistic approach in RE development in ASEAN. ACE was also thanked IRENA for the support in co-organising the workshop. Lastly, ACE is looking forward for the upcoming activities under the ASEAN-IRENA cooperation.

IRENA closing remarks

In his closing remarks, Gurbuz once again highlighted the ASEAN-IRENA MoU and Action Plan implementation to support the realisation of ASEAN Plan of Action for Energy Cooperation (APAEC) and to facilitate the scaling up of renewables in the region. He emphasised the need for ASEAN to accelerate RE deployment by providing supporting policy that could enhance RE investment. He underlined the region's initiative to move towards a more competitive RE market, and auction could be one of the option as long as the design elements and trade-off are carefully measured. He finally thanked Malaysia for the hospitality as a good host, ACE for the good coordination, speakers, panellists and AMS participants for active participation and fruitful discussion.

Annex 1 – List of Participants

| Name | Organisation |
|----------------------------|---------------------------------------------------------------------------------------------|
| Abdul Matiin Md Kasim | Ministry of Energy, Manpower and Industry of Brunei Darussalam |
| Boualoum Saysanavong | Ministry of Energy and Mines of Lao PDR |
| Daovieng Sounanthalath | Electricity Du Lao, Lao PDR |
| Sangkhan Inthavongsa | Electricity Du Lao, Lao PDR |
| Chhun Ratana | Electricity Authority of Cambodia |
| Leang Soklak | Electricity Authority of Cambodia |
| Yim Sophy | Ministry of Mines and Energy of Cambodia |
| Pham Thuy Dung | Electricity and Renewable Energy Authority. Ministry of Industry and Trade of Vietnam |
| Do Thi Kieu Trang | Electricity Regulatory Authority of Vietnam |
| Win Myint | Ministry of Electricity and Energy of Myanmar |
| Koh Yen Ling, Vanessa | Energy Market Authority of Singapore |
| Phua Zhi Ling | Energy Market Authority of Singapore |
| Jariya Budnard | Department of Alternative Energy Development and Efficiency, Ministry of Energy of Thailand |
| Chatchai Mawong | Electricity Generating Authority of Thailand |
| Datuk Badriyah Ab Malek | Ministry of Energy, Science, Technology, Environment and Climate Change of Malaysia |
| Hazrey Tomyang | Ministry of Energy, Science, Technology, Environment and Climate Change of Malaysia |
| Esther Lew | Ministry of Energy, Science, Technology, Environment and Climate Change of Malaysia |
| Zawani Zainuddin | Ministry of Energy, Science, Technology, Environment and Climate Change of Malaysia |
| Razib Dawood | Suruhanjaya Tenaga of Malaysia |
| Gladys Mak | Sustainable Energy Development Agency of Malaysia |
| Rizal Ramli | Suruhanjaya Tenaga of Malaysia |
| Mohd. Yusrizal Mohd. Yusof | Tenaga Nasional Berhad of Malaysia |
| Septia Supendi Buntara | ASEAN Centre for Energy |
| Sanjayan Velautham | ASEAN Centre for Energy |
| Gurbuz Gonul | International Renewable Energy Agency |
| Badariah Yosiyana | International Renewable Energy Agency |
| Diala Hawila | International Renewable Energy Agency |
| Emanuele Bianco | International Renewable Energy Agency |
| Dana Kenney | USAID Clean Power Asia |
| David Morgado | Asian Infrastructure Investment Bank |
| Dato' Ir. Guntor Tobeng. | Gading Kencana Sdn Bhd |
| Alin Pratidina | GIZ ASEAN-German Energy Programme |



**ASEAN Renewable Energy Policy Support
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IRENA
International Renewable Energy Agency

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|------------------------------|-------------------------------|
| Tuan Syed Ahmad Syed Mustafa | Greentech Malaysia |
| Birjendra Sangwaiya | Amplus Energy Solution |
| Lasse Ringius | Global Green Growth Institute |
| Ray McLaughlin | Mainstream Renewable Capital |
| Bernard Casey | Mainstream Renewable Capital |
| Bui Vinh Thang | Mainstream Renewable Capital |
| Naveen Balachandra | Global Wind Energy Council |

Annex 2 – Agenda

| Time | Session Title and Objective |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DAY 1, 21 November 2018 | |
| 08.30 – 09.00 | Registration |
| 09.00 – 09.30 | <p>Welcome Remarks and workshop agenda</p> <ul style="list-style-type: none"> ○ Datuk Badriyah Ab Malek, Deputy Secretary General for Energy, Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Malaysia ○ Gurbuz Gonul - Acting Director of Country Support and Partnerships (CSP), IRENA ○ Sanjayan Velautham – Executive Director, ACE |
| 09.30 – 10.50 | <p>Scene Setting Presentation:</p> <p>i. ASEAN’s effort to increase the RE development – Septia Buntara Supendi. Acting Manager of ASEAN-German Energy Programme, ACE</p> <p>ii. Global trends on RE and RE Market Analysis for Southeast Asia – Badariah Yosiyana. Program Officer for Southeast Asia, IRENA</p> <p>Panel discussion: Innovative Renewable Energy Policies to achieve ASEAN RE target moderated by Datuk Badriyah Ab Malek. Deputy Secretary General for Energy, <i>MESTECC, Malaysia</i></p> <p><i>The panellists will share their knowledge and experiences on effective and innovative renewable energy policies that could accelerate the deployment of renewables.</i></p> <p>Panellist:</p> <ul style="list-style-type: none"> - David Morgado. Senior Energy Specialist, AIIB - Dato’ Guntor Tobeng. Managing Director, Gading Kencana Sdn Bhd - Ray McLaughlin. Head of Asia Pacific, Mainstream Renewable Capital - Gurbuz Gonul. Acting Director of Country Support and Partnership, IRENA. |
| 10.50 – 11.15 | Group photo and coffee break |
| 11.15 – 12.30 | <p>Scene setting presentation: Policies Support Mechanism in Power Sector Diala Hawila. Program Officer of Policy Advise, IRENA</p> <p>Country Perspective, followed by open discussion – moderated by Septia Buntara, ACE <i>Each country has opportunity to share their current energy policy, support mechanism and challenges on power sector, including in providing electricity access and boosting electrification ratio on islands/remote area</i></p> <ul style="list-style-type: none"> - Yim Sophy, Chief Office of Department of New and Renewable Energy, Ministry of Mines and Energy, Cambodia |

| | |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> - Win Myint, Deputy Chief Engineer. Electric Power Generation Enterprise, Ministry of Electricity and Energy, Myanmar - Razib Dawood, COO of Energy Commission, Malaysia - Phua Zhi Ling, Senior Analyst, Policy and Planning, Energy Market Authority, Singapore - Jariya Budnard, Engineer, Professional Level, DEDE, Thailand. |
| 12.30 – 13.45 | Lunch |
| 13.45 – 15.00 | <p>Scene setting presentation: Policy support mechanism in end-use sectors</p> <ul style="list-style-type: none"> - Emanuele Bianco. Associate Program Officer of Policy, IRENA <p>Country Perspective, followed by open discussion – moderated by Septia Buntara, ACE <i>Each country has opportunity to share their current energy policy, support mechanism and challenges on end use sector (transport, heating/cooling, household, etc.)</i></p> <ul style="list-style-type: none"> - Abdul Matiin Md Kasim, Head of Renewable Energy Unit, Ministry of Energy, Manpower and Industry, Brunei Darussalam - Pham Thuy Dung, Expert of RE Division, Electricity and Renewable energy Authority. Ministry of Industry and Trade, Vietnam - Boualom Saysanavong, Head of Non Hydro Renewable Energy Generation Promotion, Ministry of Energy and Mines, Lao PDR |
| 15.00 – 15.20 | Coffee break |
| 15.20 – 17.00 | <p>Scene Setting Presentation: Scaling up RE deployment through Incentives and De-risking Investment – Lasse Ringius. Director and Head of Green Investment Services, GGGI</p> <p>Panel Discussion – moderated by Badariah Yosiyana, IRENA <i>The panellists will share their experiences to enhance RE deployment through incentives and de-risking RE investment</i></p> <ul style="list-style-type: none"> - Danna Kenney. Chief of Party, USAID Clean Power Asia - Alin Pratidina. Advisor, GIZ ASEAN-German Energy Programme (AGEP) - Tuan Syed Ahmad Syed Mustafa, Acting CEO of Greentech Malaysia - Lasse Ringius. Director and Head of Green Investment Services, Global Green Growth Institute (GGGI) |
| 18.30 – 20.00 | Networking Dinner at JW Marriot Hotel |
| DAY 2 | |
| 09.00 – 10.30 | <p>Deep dive on RE Auctions – moderated by Badariah Yosiyana, IRENA</p> <p>Presentation:</p> <ul style="list-style-type: none"> ○ Renewable energy auctions – an overview of design elements and tradeoffs Diala Hawila. Program Officer of Policy Advise, IRENA |

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| | <ul style="list-style-type: none"> ○ Practical implementation of auctions for ASEAN Dana Kenney. Chief of Party, USAID Clean Power Asia ○ Lesson learned from India Birjendra Sangwaiya. Senior VP - International Business Development, Amplus Energy Solution <p>Discussions</p> |
| 10.30 – 10.45 | Coffee break |
| 10.45– 12.15 | <p>Lessons learnt of Auction Implementation in ASEAN region - moderated by Septia Buntara, ACE</p> <p>Panel Discussion:</p> <p>The panelist will share their experiences on how to move from FiT to more competitive schemes (Auctions)</p> <ul style="list-style-type: none"> - Naveen Balachandra. Southeast Asia Advisor, Global Wind Energy Council (presentation) - Chatchai Mawong. Director, Hydro and Renewable Energy Power Plant Development, Electricity Generating Authority of Thailand (presentation) - Gladys Mak, Acting Chief Operating Officer (COO), SEDA Malaysia - Bernard Casey, Development Director for Vietnam, Mainstream Renewable Capital - Rizal Ramli. Head of System Operation Unit, Energy Commission, Malaysia |
| 12.15 – 13.30 | Lunch |
| 13.30– 15.00 | <p>Designing Auction for broader policy objectives – moderated by Emanuele Bianco, IRENA</p> <p>Presentation:</p> <ul style="list-style-type: none"> - Broader benefit on Auction Diala Hawila. Program Officer of Policy Advise, IRENA - Lesson learned from Latin America and Africa Auction Bernard Casey. Development Director of Vietnam, Mainstream Renewable Capital <p>Discussions</p> |
| 15.00 – 15.15 | Coffee break |
| 15.15 – 16.45 | <p>Key factors in implementing competitive RE schemes – moderated by Naveen Balachandra. Southeast Asia Advisor, GWEC.</p> <p>Panel Discussion:</p> |

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Mechanism Workshop Report**

Kuala Lumpur, Malaysia, 21-22 November 2018



IRENA
International Renewable Energy Agency

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| | <p>The panelist will share their experiences on key factors and potential challenges that need to be addressed in implementing auctions, including land acquisition, grid integration of VRE, financial risk, administration, PPA, etc.</p> <ul style="list-style-type: none">- Dato' Guntor Tobeng. Managing Director, Gading Kencana, Malaysia- Boualom Saysanavong. Head of Non Hydro Renewable Energy Generation Promotion, Ministry of Energy and Mines, Lao PDR- Mohd. Yusrizal Mohd. Yusof, Tenaga Nasional Berhad- Bernard Casey. Development Director of Vietnam, Mainstream Renewable Capital- Birjendra Sangwaiya. Senior VP - International Business Development, Amplus Energy Solution India |
| 16.45 – 17.00 | Closing |