

## **WORKSHOP ON ENERGY SECURITY IN MALAYSIA: THE PAST, PRESENT, AND WAY FORWARD**

On 14<sup>th</sup> November 2019, Higher Institution Centre of Excellence (HICoE) Centre of Biofuel and Biochemical Research and Governance and Public Policy Research Group, Universiti Teknologi PETRONAS hosted a workshop themed 'Energy Security in Malaysia: The Past, Present, and Way Forward' at the Centre for Advanced and Professional Education (CAPE) Kuala Lumpur. This workshop was organized in collaboration with the International Network for Government Science Advice (INGSA-ASIA), as part of the INGSA-Asia Grassroots Science Advice Promotion Awards. The focus of this workshop was to discuss the current scenario and challenges related to renewable energy as well as energy security and efficiency.

This one-day workshop was attended by various stakeholders including the government agencies, energy providers, academicians and researchers from various institutions, among others. The workshop started with the welcoming speech by Professor Ts. Dr Mohamed Ibrahim bin Abdul Mutalib, the vice chancellor of Universiti Teknologi PETRONAS followed by officiating speech by Professor Dr. Abhi Veerakumarasivam, Chair of INGSA-ASIA. During his presentation, background of INGSA as well as the previous and incoming activities have been shared with the participants. It was then followed by plenary speeches by the high profile speakers, including:

1. **Pn. Noorly Akmar Ramli** (*Senior Assistant Director, Capacity Planning and Development, Energy Commission Malaysia*): Malaysia's current energy mix and outlook / future prospect
2. **En. Ahmad Ameen Mohd Kamal** (*Manager of Technology division, MYBiomass*): Palm biomass as a renewable feedstock: Opportunities and challenges in the supply chain
3. **Ts. Puan Azah Ahmad** (*Senior Director of Strategic Planning, Sustainable Energy Development Authority (SEDA) Malaysia*): Development of solar PV energy in Malaysia
4. **Dr. Jay Mariyappan** (*Head, PETRONAS New Energy*): Overview on new energy
5. **Professor Dato' Ir. Dr Abu Bakar Jaafar** (*Director, UTM Ocean Thermal Energy Centre*): Ocean thermal energy conversion to power or H<sub>2</sub> ++ for sustainability
6. **Adjunct Professor Zulkifli Abd Rani** (*EMOG Chairman & Director, Center for Energy Transition and Climate Intelligence (CETCI), MIER*): Roadmap and challenges towards the energy transition in Malaysia
7. **En Ahmad Nizam bin Hassan** (*Chief Technical Officer, Tenaga Nasional Berhad Energy Services*): Energy efficiency and generation: Current and future positioning

The plenary presentations were followed by Q&A session that were moderated by Associate Professor Dr. Awangku Abdul Rahman Hj. Awangku Yussuf (*Universiti Sains Islam Malaysia*) and Professor Ir. Dr. Suzana Yusup (*Universiti Teknologi PETRONAS*).

The second part of the workshop included the group discussion (where participants were divided into two groups); deliberating on the (i) barrier/challenge for successful implementation of the renewable energy in Malaysia, as well as (ii) route to enhance energy security and efficiency. Facilitators for these sessions were Professor Ir. Dr. Abd Halim Shamsuddin (*Universiti Tenaga Nasional*), Associate Professor Dr. Zulkipli bin Ghazali (*Universiti Teknologi PETRONAS*), and Dr. Muhammad Ridhuan Tony Lim Abdullah (*Universiti Teknologi PETRONAS*). To conclude, closing presentation was delivered by the workshop Chair, Professor Ir. Dr. Suzana Yusup.

Some key findings from the workshop include the following:

- With target of 2080 MW renewable energy (RE) by 2020, initiatives that have been done by SEDA to promote the growth of RE include the Feed-in-tariff mechanism (particularly in respect of solar energy), net energy metering scheme, Self-consumption scheme, and new solar PV business. The RE Transition Roadmap (RETR) incorporating the strategies and policies to raise the renewable energy share of 20% by 2025 is currently being developed, together with the Energy Commission and MESTECC.
- The value chain building blocks in the bio-refinery (particularly from oil palm waste) incorporate several elements, including: type of feedstock, supply sustainability, safe storage, operability, efficiency (i.e. waste emissions, maintenance), and easiness to connect to grid. Nevertheless, the potential value for bioenergy that is only 1-20X revenues needs further discussions for the way forward.
- Realizing the importance of renewable energy (RE), PETRONAS has also embarked into solar (since 2013) and on-shore/off-shore wind energy, and recently has collaborated with UITM Holdings on the large scale solar PV power plants and on-campus solar rooftop and energy efficiency projects.
- The ocean thermal energy has potential to be converted to power and hydrogen (H<sub>2</sub>) fuel due to low generation cost, apart from high value marine-based products. The feasibility of OTEC power towards sustainability that meets the 17 Sustainable Development Goals proves the technology's efficiency.
- Invisible crisis include the transition from conventional to renewable energy (RE) and managing climate change & environmental change are emphasized. Some of the challenges towards the RE

implementation are low opportunity cost/benefits to be factored into RE cost, high RE cost, and managing the greenhouse gas (GHG) emission. Therefore, appropriate plan by all the stakeholders need to be enforced to address the climate change effectively and towards the energy transition.

- Energy efficiency programs (i.e. awareness programs, efficient technologies, energy performance contract) capable to contribute to greenhouse gas (GHG) reduction, reducing demand for energy imports, conserving energy resources; at which lead to lower electricity bills. The way forward for wide implementation of energy efficiency include the awareness program, initiatives from the government, as well as private financing to support retrofitting and buildings' energy efficiency.
- Multiple challenges towards the successful adoption and implementation of renewable energy a identified, including: financial/economic barrier (i.e. lack of funding and investors' confidence); technical barrier (i.e. plant incompetence that failed after few years of commissioning, limited shelf life of biomass); market barrier (selective buyer); environmental/ecological barrier (i.e. lack of proper treatment of effluent); as well as policy/regulation barrier (i.e. lacking in appropriate policy mechanism, non-consolidation of energy stakeholders). Overall, further work need to be done to address these challenges.
- Energy security and efficiency can be improved through the following suggestions: improvement in infrastructure/technology, extensive R&D activities, incentive, as well as subsidy on renewable energy; training and proper awareness module by competent trainer; collaboration/engagement with developed countries; enforcing appropriate policy for people betterment; among others.

Upon the insightful knowledge sharing and information exchange during this one-day workshop, it hoped to advocate towards the better energy security and sustainability for future.

**ATTACHMENT**



*Figure 1: Group photo*



*Figure 2: Welcoming remarks by Professor Ts. Dr. Mohamed Ibrahim bin Abdul Mutalib*



*Figure 3: Officiating speech by Professor Dr. Abhi Veerakumarasivam*



*Figure 4: Sharing session on Malaysia's current energy mix and outlook / future prospect by Pn. Noorly Akmar Ramli (Senior Assistant Director, Capacity Planning and Development, Energy Commission Malaysia)*



*Figure 5: Sharing session on Palm biomass as a renewable feedstock: Opportunities and challenges in the supply chain by En. Ahmad Ameen Mohd Kamal (Manager of Technology division, MYBiomass)*



*Figure 6: Sharing session on Development of solar PV energy in Malaysia by Ts. Puan Azah Ahmad (Senior Director of Strategic Planning, Sustainable Energy Development Authority)*



*Figure 7: During the Q&A sessions (Session I)*



*Figure 8: Sharing session on Overview on new energy by Dr Jay Mariyappan (Head, PETRONAS New Energy)*



*Figure 9: Sharing session on Ocean thermal energy conversion to power or H<sub>2</sub> ++ for sustainability by Professor Dato' Ir. Dr Abu Bakar Jaafar (Director, UTM Ocean Thermal Energy Centre)*



*Figure 10: Sharing session on Roadmap and challenges towards the energy transition in Malaysia by Prof. Zulkifli Abd Rani (EMOG Chairman & Director, Center for Energy Transition and Climate Intelligence, (CETCI) MIER)*





*Figure 11: Sharing session on Energy efficiency and generation: Current and future positioning by En. Ahmad Nizam bin Hassan (Chief Technical Officer, Tenaga Nasional Berhad Energy Services)*



*Figure 12: During the Q&A sessions (Session II)*



*Figure 13: During the group discussions*



*Figure 14: During the group discussions*