Transitioning The Nation Towards

Sustainable Energy

MALAYSIA

SALUTE TO OUR HEROES

Supported by

KEMENTERIAN TENAGA DAN SUMBER ASLI

Published by

seda

www.seda.gov.my

ISSN 2590-4000

RM9.50
VOL. 4
ISSUE 8

HOPE IN THE HORIZON: HOW COVID-19 CAN SHAPE THE FUTURE OF ENERGY

RESILIENCE OF SOLAR PV INDUSTRY IN TIMES OF COVID-19 PANDEMIC

Empowering Energy Transition

2020

ISES

International Sustainable Energy Summit

POSTPONEMENT

OF THE 5TH INTERNATIONAL SUSTAINABLE ENERGY SUMMIT (ISES)

In view of the rising outbreak of COVID-19, the organizing committee of the 5th ISES has decided to postpone the summit which is originally scheduled on

20th -21st April 2020
to a later date when the social distancing rule in the country and international travel bans are lifted up.

As part of global responsibilities for containing the ongoing spread of COVID-19 infection, SEDA Malaysia felt that the health and safety of our participants are of paramount importance. This decision aligns with the recent World Health Organisation's declaration that the COVID-19 should be regarded as a Public Health Emergency of international concern.

The Organizing Committee will continue to monitor the COVID-19 and decide on any adjustments closer to the time of the summit if necessary. We appreciate your commitment and your support.

Thank you for your kind understanding in this matter. For further information on the summit, please visit

www.ises.gov.my

The Sustainable Energy Development Authority (SEDA)
Malaysia
wishes a Heartiest

Congratulations

to

YAB TAN SRI DATO' HAJI MUHYIDDIN BIN HAJI MOHD. YASSIN

on his appointment as the

8TH PRIME MINISTER OF MALAYSIA

Congratulations

YB DATO' DR. SHAMSUL ANUAR BIN HAJI NASARA

on his appointment as the

MINISTER
OF ENERGY AND NATURAL RESOURCES

KEMENTERIAN
TENAGA DAN SUMBER ASLI
MINISTRY OF ENERGY AND NATURAL RESOURCES

Sustainable Energy Development Authority
seda
MALAYSIA

Congratulations

YB TUAN ALI ANAK BIJU

on his appointment as the

DEPUTY MINISTER
OF ENERGY AND NATURAL RESOURCES

KEMENTERIAN
TENAGA DAN SUMBER ASLI
MINISTRY OF ENERGY AND NATURAL RESOURCES

Sustainable Energy Development Authority
seda
MALAYSIA

Congratulations

YB TUAN LUKANISMAN BIN AWANG SAUNI

on his appointment as the

CHAIRMAN

OF SUSTAINABLE ENERGY DEVELOPMENT AUTHORITY (SEDA)
MALAYSIA

Congratulations

YBHG DATUK ZURINAH BINTI PAWANTEH

on her appointment as the

SECRETARY-GENERAL
MINISTRY OF ENERGY AND NATURAL RESOURCES

KEMENTERIAN
TENAGA DAN SUMBER ASLI
MINISTRY OF ENERGY AND NATURAL RESOURCES

Sustainable Energy Development Authority
seda
MALAYSIA

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

CONGRATULATIONS

to our Chief Executive Officer

YBrs. Ir. Dr. Sanjayan Velautham

for his appointment as Adjunct Professor at the Faculty of Engineering Universiti Teknologi Malaysia (UTM).

Dr. Sanjayan was appointed as CEO of SEDA Malaysia on 9th January 2019.

He has more than 30 years of experience in the industry, international organisation, an academia and research institutes. A professional engineer with a doctoral degree in Engineering and a Senior Member at the Institution of Engineers, Malaysia. He is also an Advisory Board Member for the Asia Pacific Energy Research Centre (APERC), Japan and maintains a mix of appointments and engagements in several countries within the Asia-Pacific region and beyond, working with decision makers in government, academia, industry and civil society.

Prior to his present appointment he was the Executive Director of the ASEAN Centre for Energy in Indonesia. He had started his career at Tenaga Nasional Bhd (TNB) in Malaysia within the Power Generations Division, including several years as an Associate Professor at UTM. He had moved to Singapore in 2008 initially as the Deputy Director with the Agency of Science, Technology and Research (A*STAR), and then with General Electric as Regional Manager for the Power Generation Services business. He had also served as the National Project Manager for the United Nations Development Programme's (UNDP Malaysia) BioGen Project.

Dr. Sanjayan has authored several publications in international journals/books and subject modules particularly in the field of energy. His interest among others is to continue to engage in the strategy and policy research related to sustainable energy development within the region.

NOT ALL HEROES WEAR CAPES

Our frontliners deserve our full cooperation in the war against COVID-19

Sustainable Energy Development Authority - SEDA Malaysia

SEDAMalaysia sedamalaysia SEDA Malaysia

CEO'S MESSAGE

SEDA Malaysia would like to take this opportunity to congratulate YAB Tan Sri Dato' Haji Muhyiddin bin Haji Mohd. Yassin on his appointment as the 8th Prime Minister of Malaysia. Similar well wishes also go to YB Dato' Dr. Shamsul Anuar bin Nasarah, our new Minister of Energy and Natural Resources; his Deputy YB Tuan Ali Anak Biju; and the Ministry's new Secretary-General YBhg. Datuk Zurinah binti Pawanteh. We would also like to welcome our new Chairman YB Tuan Lukanisman Awang Sauni and the new Board Members to SEDA Malaysia.

SEDA Malaysia had the privilege of hosting an introductory briefing session for the Minister and the Secretary-General on 13th April 2020 at our office in Putrajaya. The briefing was also attended by YBrs. Pn Noor Afifah Abdul Razak, the Ministry's Deputy Secretary-General (Energy) and En Asdirhyme Abdul Rasib, Senior Under Secretary of Sustainable Energy.

It has been an interesting and challenging first four months of 2020 thus far. Malaysia and the rest of the world were caught by surprise. The COVID-19 pandemic couples with the Movement Control Order (MCO) is already reshaping our way of life and our perspective of life may never be the same. However, this MCO period has seen Malaysians rise to the occasion as we always do in national crises. This crisis calls for new realities including policy approaches that would require broader public support and strong international collaborations.

SEDA Malaysia, while in full support of the government priorities on the health and welfare of its citizens, have also as much as possible kept to a Business- as-Usual concept with minimal disruption to our operations since the enforcement of the MCO on 18th March 2020. We have initiated a business continuity plan in place during this period. Apart from this, among others, we have also initiated several virtual meetings with the renewable energy industry players, conducted capacity building activities, public awareness programmes on the Net Energy Metering (NEM) and Corporate Social Responsibility (CSR) initiative to support frontliners and the less fortunate.

SEDA Malaysia's biennial International Sustainable Energy Summit (ISES) that had been planned, the 5th ISES originally scheduled on 20th-21st April 2020 has been rescheduled to a later date. Nevertheless, we are hopeful the 5th ISES when held will be a great platform to exchange views, experiences and aspirations of the new norm in our journey of Energy Transition coupled with the needed economic recovery strategies. Within the recently announced Economic Stimulus package by the government, 1,400MW are to be awarded to solar PV projects. Of this 1,400MW, 400MW will be for rooftop installations under the NEM while 1,000MW will be for Large Scale Solar (LSS) projects. Importantly for the rooftop installations, 300MW is for domestic, commercial, industrial and agricultural sectors of Tenaga Nasional Berhad's consumers while 100MW is allocated for government buildings. This is supported with the Feed-in Tariff programme for other renewable resources such as Biomass, Biogas and small hydro.

We believe the current month of Ramadan will be somewhat a different experience for our Muslim staff and friends as the social distancing directive would continue for some time. We do hope they stay safe and stay healthy while performing their "ibadat berpuasa". We wish them Selamat Berpuasa as well as an auspicious Hari Raya. To the frontliners, our heartfelt gratitude goes to you for your relentless efforts to fight the health crisis. We salute you.

IR DR SANJAYAN VELAUTHAM
Chief Executive Officer
Sustainable Energy Development Authority (SEDA) Malaysia

SALUTE TO OUR HEROES

PROTECTING THE NATION FROM THE COVID-19 PANDEMIC

As SEDA Malaysia strives to ensure that sustainable energy plays a pivotal role in the nation's economic development and environment conservation, supporting the common social good has become just as important a goal as delivering SEDA Malaysia's values.

To break the active chain of COVID-19, the Prime Minister Tan Sri Muhyiddin Yassin has announced the Movement Control Order (MCO), which took effect from 18th March 2020 to 31st March 2020, and then has extended the Order to 12th May 2020.

With that in view, SEDA Malaysia has activated its corporate social responsibility (CSR) initiatives to support Malaysians combating the COVID-19 pandemic and those whose livelihoods are affected by the current situation and the MCO.

For this CSR initiative, SEDA Malaysia decides to support the medical frontliners and the less fortunate communities in the Federal Territories of Putrajaya and Kuala Lumpur, Melaka, Selangor and Negeri Sembilan.

Out of the five states, the recipients for SEDA Malaysia's CSR initiative have been divided into two categories, namely hospitals and the less fortunate communities. The form of support under the CSR initiatives were to provide facial masks and lunch packs to the health frontliners while essential food items to the less fortunate communities.

SEDA Malaysia adopted two modus operandi to execute the CSR initiative while adhering to the MCO directive. In the case of lunch meals, the Authority has contributed the meals to the recipients. Similarly, SEDA Malaysia has contributed the essential foodstuff and face masks.

The recipients of SEDA Malaysia's support are Melaka General Hospital; Putrajaya Hospital; Pertubuhan Kebajikan dan Penjagaan Nur Hidayah; Sincere Care Home; and selected residents of Putra Nilai, Negeri Sembilan.

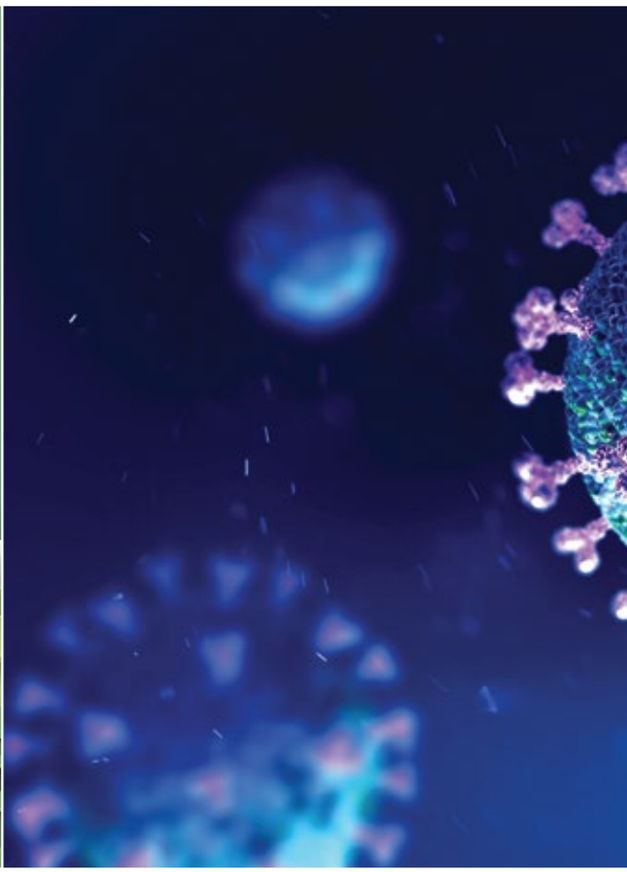
The lunch packs were delivered to the Putrajaya Hospital on 15th April and 16th April 2020; and the face masks were delivered to Melaka General Hospital on 17th April 2020. By 28th April 2020, all items were handed out to all the recipients.

SEDA Malaysia has been in contact regularly with the parties involved throughout the purchasing and delivering processes via online and the recipients have extended their full cooperation throughout the exercise.

The SEDA Malaysia's gesture is to remind Malaysians that "we are together in the fight against COVID-19 and we should extend whatever support we can to those in need."

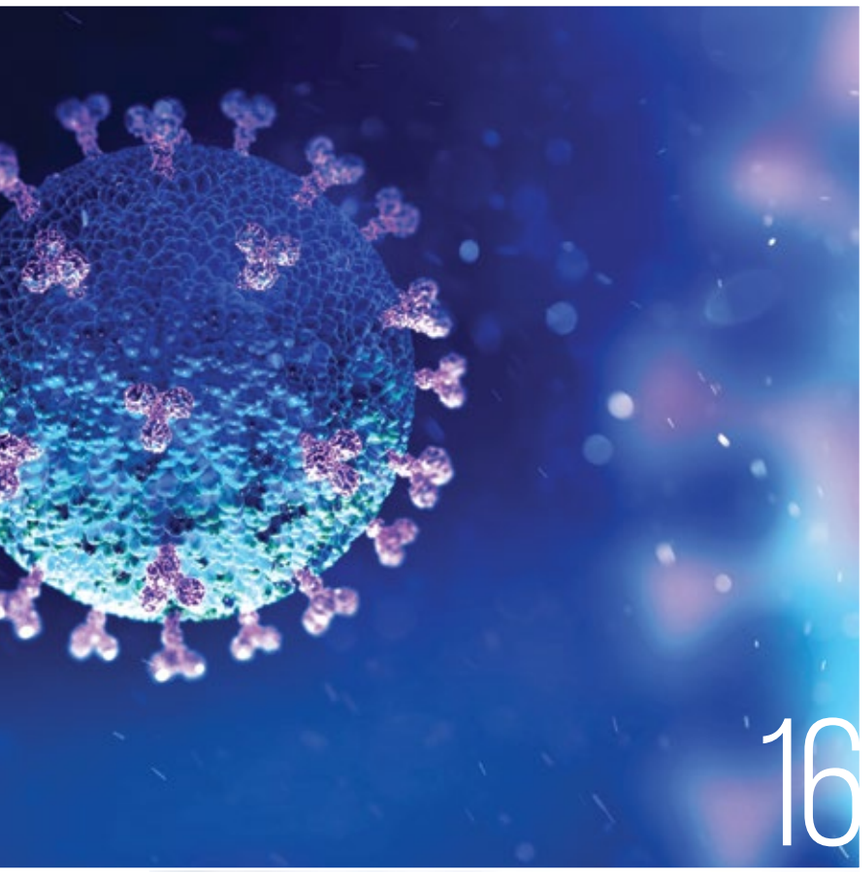
#KitaJagaKita

For more story on SEDA Malaysia's CSR initiative, kindly visit SEDA Malaysia's website and social media accounts.



CONTENTS

// VOLUME 4 ISSUE 8



SEDA Publication No:
SEM Volume 4 Issue 8
Tri-annual Publications

Conceptualised, produced and published for
Sustainable Energy Development Authority (SEDA) Malaysia
By
Hijau Setiajaya Sdn Bhd
(1197440-P)
L-07-01, Level 7, Block L
Solaris Mont Kiara
No. 2, Jalan Solaris Mont Kiara
50480, Kuala Lumpur
Tel.: +603 6200 0638
Email: simon@theplus.my
Website: www.theplus.my

Printed by:
Mercprint Sdn Bhd
(1106010-H)
No.18 & 20, Jalan Pbs 14/13,
Kawasan Perindustrian Bukit Serdang,
43300 Seri Kembangan, Selangor.

ZEB EXPERTS BRAINSTORM ON ENERGY EFFICIENT PROPERTIES

Zero Energy Building (ZEB) experts from Japan were in Kuala Lumpur in February 2020 to share their country's experience on making real estates energy efficient hence reducing further greenhouse gas (GHG) emissions.

These foreign experts were speakers of a second training programme co-organised by the Sustainable Energy Development Authority (SEDA) Malaysia and Japanese Business Alliance for Smart Energy Worldwide (JASE-W) on raising the awareness and promoting the ZEB and ZEB family concept. The first of such a programme was held in 2019.

Among the experts were Japanese Business Alliance for Smart Energy Worldwide (JASE-W) ZEB Dissemination Working Group Head Mr. Hajime Moroo; Energy Conservation Center, Japan (ECCJ) representative Dr. Yoshitaka Ushio; Nikken Sekkei representative Ms. Sheau-Chyng Wong; Sanken Setsubi Kogyo official Mr. Keiichi Saeki; Tokyo Metropolitan University Professor Dr. Masayuki Ichinose; and AGC Asia Pacific Pte Ltd Senior Director Mr. Eugene Quek;

1

The topics that were discussed during the programme include Concept of ZEB Family and Activity for Standardization as ISO/TR (Maroo); Policy and Strategy in Japan towards ZEB realization including ZEB cooperation in ASEAN (Ushio); Examples of ZEB New Buildings Projects (Wong); Consideration of Local Factor of ZEB in the Tropics Asia (Dr Masayuki); and Introduction of Technology for ZEB/ZEB Family by Japanese Companies (Quek).

The training programme came about following the signing of a Memorandum of Understanding (MoU) between SEDA Malaysia and JASE-W on October 17, 2018. The MoU enables both parties to exchange information on energy efficiency programme opportunities in Malaysia. Japan is one of the leading countries emphasising on the development of ZEB. Through the MoU, information on energy efficiency knowledge, services and technologies will drive dissemination and promotion of ZEB, and ZEB concept in Malaysia.

The parties will also cooperate to facilitate potential business opportunities and partnership-based projects where the Japanese knowledge and services for energy conservation and efficiency will benefit Malaysia's industries. JASE-W is appointed by the Ministry of Economic, Trade and Investment, Japan (METI) to provide dissemination and promotion of ZEB, and ZEB series concept in Japan and the Association of Southeast Asian Nations (ASEAN).

The very first ZEB training in Malaysia was conducted in February 2019 in Putrajaya, where 100 participants from various backgrounds had attended the training. The high commitment and interest shown by JASE-W is also a catalyst for the proposed implementation of the programme.

ZEB development however was not new in Malaysia. It had started since the integrated energy efficient building design programme and the promotion of the use of MS1525 – Code of Practice on Use of Energy Efficiency & Renewable Energy for Non-residential Buildings, introduced in 2002.

Some of the energy efficient public buildings in Malaysia with energy saving of more than 50% are the Low Energy Office; GreenTech Malaysia's Green Energy Office, and the Energy Commission's Diamond Building.

The private sector's energy efficient buildings include Panasonic Green Warehouse and the Putrajaya's Zero Energy Home P14. There is also likely to be a government office building that has reached over 50% energy reduction resulting from retrofitting periodically.

> ...started since the integrated energy efficient building design programme and the promotion of the use of MS1525 – Code of Practice on Use of Energy Efficiency & Renewable Energy for Non-residential Buildings, introduced since 2002.

2

3

The ZEB programme is a global programme involving the development of super energy efficient buildings that are integrated with renewable energy applications, which are actively promoted by the European Union (EU), Japan, Singapore and countries committed to energy and carbon reduction.

Most of these countries are targeting new public buildings to achieve ZEB categories by 2020; and new public and private buildings (on average) to achieve ZEB categories by 2030.

4

1. *Ir. Dr. Sanjayan Velautham, CEO of SEDA Malaysia delivered a welcoming remark during the opening ceremony of ZEB workshop.*
2. *Mr. Hajime Moroo, JASE-W/Head of ZEB Dissemination Working Group presented on the concept of ZEB Family and Activity for Standardization as ISO/TR during the workshop. Mr. Moroo will also be speaking at the 5th ISES.*
3. *The Q&A session during the 2-day workshop was very active with many questions from the floor.*
4. *This workshop was attended by 50 participants from various backgrounds.*

According to United Nations Environment's Global Status Report 2019 for Buildings and Construction, the buildings and construction sector accounted for the largest share of both final energy use 36% and energy and process-related carbon dioxide (CO2) emissions 39% in 2018. In 2018, global emissions from buildings increased 2%. Growth was driven by strong floor space and population expansions that led to a 1% increase in energy consumption.

Based on this fact, some countries with the Low Carbon City programme choose to implement energy efficient low carbon building programmes to reduce their carbon emissions. The development of the ZEB building is the most suitable for that purpose and to meet this requirement a standard ISO / TC205, relating to ZEB building is being developed internationally.

ZEB Programme is a global race targeted to make buildings become super energy efficient with the deployment of on-site renewable energy (RE) technology to achieve ZEB. Countries such as Japan, Singapore and those in the EU have targeted that all new public buildings by 2020 must achieve ZEB status.

In order to reduce operational carbon in buildings, sustainable energy have been identified as the key driver during the operation phase of building, starting with the energy efficiency measures to optimise the energy consumption. With current RE technology and applications such as Net Energy Metering (NEM) under SEDA Malaysia, it can be used to off-set further the balance of energy needed by using an on-site RE system.

Towards ZEB mean, the portion of energy used is reduced and the portion of RE generated increased and it is possible to achieve 100% energy generated by RE. Furthermore, with current development of experience and technology in both energy efficiency (EE) and RE in Malaysia, it is possible to make buildings to become super EE or ZEB.

SEDA Malaysia is currently providing the Low Carbon Building Facilitation Programme, especially to the States and Local Authorities that have been involved in the Low Carbon Cities Programme since 2015. Starting from 2018 SEDA Malaysia also had embarked in another voluntary initiative, the ZEB Facilitation Programme, aiming to encourage and facilitate more super EE buildings starting with basic energy savings initiative and step- by-step moving to super EE / ZEB.

SEDA Malaysia officers were trained by METI through its agencies ECCJ/JASE-W on ZEB development since 2017. SEDA Malaysia also inherits some of the EE in building design experiences gained from the previous government integrated EE in building demonstrations such as the LEO Building and GEO Building.

SEDA Malaysia is in the opinion that super EE building design should be promoted further in line with current technology development available in Malaysia. JASE-W has been appointed and managed by ECCJ on behalf of the Japan Government/METI to promote the development of ZEB in Japan and ASEAN. The collaboration between Malaysia and Japan can facilitate further the development of ZEB in Malaysia.

1. *Group photo: Training for Dissemination and Promotion of Zero Energy Building (ZEB) and ZEB Family Concept which took place on 4th and 5th February, 2020.*
2. *The participants also had a great experiential visit to the 5-star rated energy efficient building, the Diamond Building at the Energy Commission HQ in Putrajaya.*

STAY HEALTHY AT HOME TO AVOID COVID-19

KEEP ACTIVE

PRACTISE GOOD HYGIENE

GET ENOUGH SLEEP

STAY DIGITALLY CONNECTED

EAT HEALTHY FOOD

Sustainable Energy Development Authority - SEDA Malaysia

SEDAMalaysia sedamalaysia SEDA Malaysia

HOPE IN THE HORIZON: HOW COVID-19 CAN SHAPE THE FUTURE OF ENERGY

By
Ts. Dr. Wei-nee Chen
Chief Strategic Officer
SEDA Malaysia

2020 is a significant year. For a start, it marks the beginning of a new decade and a new chapter in the time horizon. At the start of 2020, the Chinese ushered in the Lunar New Year of the Rat. The Rat is the first of the 12 animals cycle of the Chinese Astrology. In this regard, 2020 is truly a year of new beginning.

THE PANDEMIC

However, little did we know that the year of the Rat can be so disruptive. At the time of writing this article, most parts of the world are either in partial or complete lockdown due to the widespread of COVID-19 outbreak. As such, I have more time to ponder over how this pandemic is shaping the future, particularly the future of energy. And time is an interesting dimension of life. According to John Archibald Wheeler, time is what prevents everything from happening at once. True. But I concur with Amy Harder that in recent days everything seems to happening "all at once". At least the bad ones: the global economic crisis, the eroding price of oil, the loss of jobs, the loss of life, and for most of us, the need to stay at home just to save the world.

WHAT INSIGHTS DO WE GAIN OUT OF THE PANDEMIC?

After a cup of coffee and much gazing into the clear blue skies from my balcony, here are my thoughts:

DECARBONIZATION

Because of the pandemic, pollution and CO2 emissions in countries with heavy reliance on fossil fuel have witnessed a sharp drop. News source reported that China's CO2 emissions was likely to have dropped by 25% just four weeks after the Chinese Lunar New Year while researchers in New York told the BBC their early results showed carbon monoxide mainly from cars had been reduced by nearly 50% compared with last year. And that's the good news. For a moment in time, we have the privilege to enjoy living in a cleaner air environment.

But the bad news is that this is only temporary. Once the economy picks up, its back to polluted air. But clean air is possible. With deep electrification of other sectors such as transportation and energy intensive industries, we can achieve this. In fact, there is a strong trend that shows that deep electrification is taking place. A presentation by EPRI in a recent webinar organized by IRENA showed that efficient electrification can have growth up to 52% from 2015 to 2050 under the Transformational Scenario in the United States (Exhibit 1). While this represents a positive trend, how will the recent plummeting price of oil impact this transformation?

DOUBLE WHAMMY OF PLUMMETING OIL PRICE

It's been more than two weeks since I last drove my little red car. The world has witnessed plummeting oil price in recent weeks caused by the severe drop in demand due to COVID-19 pandemic that puts a halt in non-essential travels including driving on road. Aside from the pandemic, the oversupply is exacerbated by the trade war between Saudi Arabia and Russia. With such low oil price and government's shift of focus to revive the economy, will this impede energy transition? In fact, some analysts are of the view that the low oil prices offer opportunities for governments to reform their fuel subsidies without significant impact to consumers. In Malaysia, it is projected that such subsidy removal can result in an estimated savings of RM6 billion by the government. This presents an opportunity for governments to carry out a subsidy swap from fossil fuel to green energy. In fact, this opportunity can be meted out in stimulus economy packages that are very much in need to revive a flagging economy.

TRANSITIONING TOWARDS A GREEN ECONOMY

Economic Stimulus Package: By now most governments have developed and announced their economic stimulus packages and some have even announced a series of packages that commensurate with the severity of the pandemic situation. As governments round the world took turns to announce their economic stimulus packages, we are reminded that economic stimulus packages should embody means to a sustainable end rather than an end by itself.

Economic package is costly and yes, the Iron Lady was right. Governments are duty-bound to make the best use of taxpayers' money. If the economic stimulus package is well developed, this could help shape a more sustainable economy that also aligns with the climate agenda. The COVID-19 pandemic is somewhat of an accelerated snapshot of what a climate crisis could possibly be like in the future. This crisis includes resource scarcity such as food, medical needs, and jobs. Much like the COVID-19, the climate crisis will imply a struggle for basic human survival.

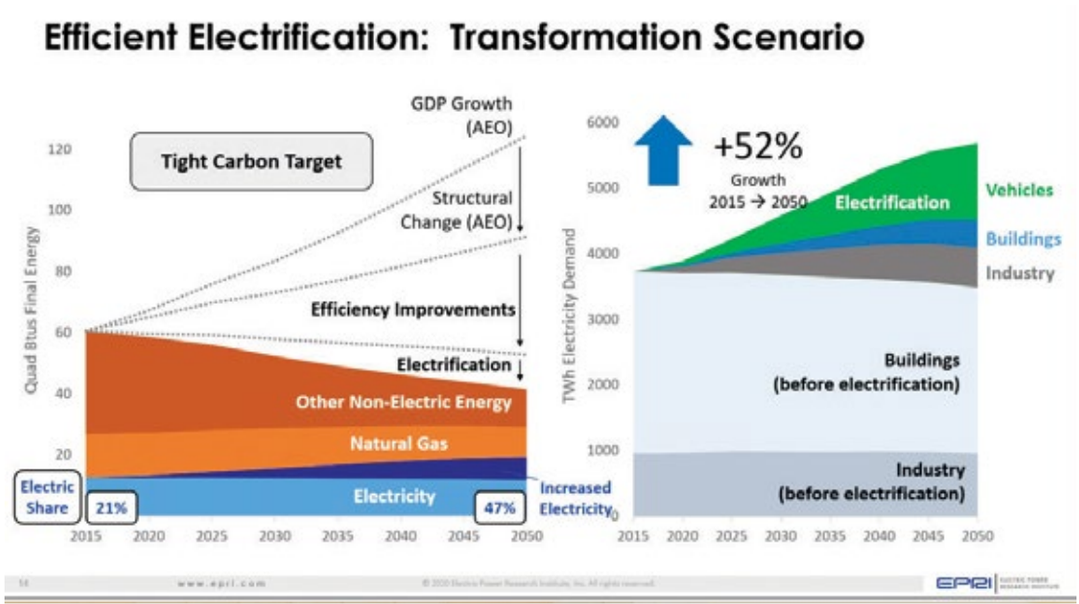


Exhibit 1: Screenshot of IRENA's webinar: Presentation by EPRI

MAKING THE BEST USE OF CREATIVE DISRUPTION

According to Dr Fatih Birol, the economic stimulus package provides government an excellent opportunity to accelerate energy transition. In fact, several countries have already included this measure. For instance, Malaysia's economic stimulus package encompasses the roll-out of 1,400MW of solar photovoltaic (PV) to be awarded with an estimated private capital investment of nearly RM5 billion and an opportunity to create 25,000 jobs. Australia's economic stimulus package also includes tax deduction incentives for solar PV for the commercial and industrial sectors. Such measures leverage on the fact that solar PV rooftop market provides significant employment and the rapid decline in the cost of solar electricity can help the economy to rebound in a manner which aligns with the climate agenda. This is an opportune moment to apply Joseph Schumpeter's creative destruction theory for a timely disruptive and yet a positive transition towards a greener economy.

DIGITALIZATION

Without a shadow of a doubt, the combination of electricity and internet have become a critical platform for many of us to communicate while observing social distancing. Digitalization has become our window to the outside world and connects us in a virtual manner so non-essential business operations can continue to operate remotely, daily news can be communicated to the public and online social communications help us to remain connected with distant loved ones.

It is essential that during times like this, knowledge continues to grow through webinars and virtual conferencing. It is also times like this when digitalization and automation of offices, especially the manufacturing and their supplier chains, be implemented as part of a sustainable business continuity plan. Within the electricity sector, digitalization will continue to underpin and shape the future of energy. Intelligent building energy management systems coupled with the rise of solar prosumers enabled by innovative policies such as (virtual) net metering can help consumers to reduce their electricity bills in moving towards a more affordable and greener living. This can also help to reduce government's obligation to bear discounts in regulated electricity tariff in future crisis as the sun will always shine regardless of any situation.

WHAT HAVE WE LEARNED?

I have just finished an online call with my daughter who is currently living in Australia. Aside from her traumatic experience of running out of toilet paper, I told her it is a privilege to be part of such a historic moment. Yes, for now the global economy may be broken, in many countries energy transition and climate action plans may be stalled, some have lost their jobs, some have lost loved ones and we will get discouraged. But out of this, it is hoped that there is a generational lesson that when we come out of the storm, we will come out stronger. And 2020 should be remembered as the start of a new era of hope in the horizon. By 2021, the Chinese will usher the Lunar New Year of the Ox. The Ox denotes hard work and perseverance. These are the precise attributes that will be required of us as we continue to shape the future of energy.

It is crucial to stay digitally connected with family members during this lockdown period

CENERGI SEA

THE LARGEST GRID-CONNECTED BIOGAS DEVELOPER IN MALAYSIA

Cenergi FJP 1.5 MW Biogas Power Plant, Jerantut, Pahang

WHO WE ARE

Our journey began with small steps taken in 2013 by a group of people who believed that they can improve the world.

Today, Cenergi has become a premier project development, investment and operation company specialising in renewable energy and energy efficiency projects in Malaysia and Southeast Asia. Since inception, Cenergi has proudly generated 174GWh of electricity and avoided emission of 145 kiloton of CO_2 equivalent through our operational projects.

Cenergi will continue to move along the same path taken in our early days, to contribute towards the same noble goal in every possible way.

SUSTAINABILITY

Governed by Cenergi's sustainability pillars; Commercial Viability, Carbon Reduction and Environmental Impacts, we take effort to ensure these principles are balanced in order to produce a sustainable business.

ENVIRONMENT

We take part in a global effort to provide for better environment through developing renewable energy projects to avoid carbon emissions and capitalise on sustainable energy sources. Through our business verticals, we strive to continue contributing towards the environment for the betterment of this world.

SAFETY

Proud achievement of 1,000,000 Safe Man-Hours in November 2019 – Cenergi has managed to achieve this invaluable milestone despite having to manage a complex operating environment on a daily basis.

COMMUNITY

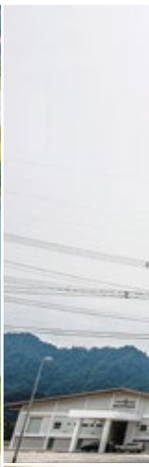
Placing community at the forefront of our business, we try to create a higher quality of life by increasing environmental-responsibility in our corporate activities and to use our unique position to help realise society that functions in harmony with the environment.

PEOPLE

Cenergians are our greatest assets and we are committed to their development – our 150-strong workforce is made up of a combination of skills, talents, and diverse backgrounds, as Cenergi strongly believes in inclusion and equal opportunities.

IRM Solar 5 MWp , Padang Besar, Perlis

www.cenergi-sea.com



RENEWABLE HYDROPOWER

DRIVING SARAWAK DEVELOPMENT

Sarawak aspires to achieve a developed and high-income status by 2030, and a key strategy towards realising this ambition is by building up its hydropower generation capacity to drive the state's economic and industrial growth under the Sarawak Corridor of Renewable Energy (SCORE) launched in 2008.

Blessed with the necessary geographical and climate conditions - rivers, mountainous terrain and abundant rainfall almost all year round - it was a logical step for Sarawak to harness its strengths and embark on hydropower development. The state also has a good understanding of its hydropower development potential with studies that go back to the 1960s.

As the primary provider of electricity and energy developer in Sarawak, Sarawak Energy is supporting the Sarawak Government in realising this growth ambition. At the same time, together with Sarawak's Ministry of Utilities, the corporation is intensifying efforts to ensure the vast state which covers an area almost the size of Peninsular Malaysia achieves full electrification by 2025.

YBhg Datu Haji Sharbini Suhaili
Group Chief Executive Officer

"Hydropower has played a major role in Sarawak's energy development strategy. It is renewable and reliable and since we focused on its development, we were able to secure sufficient and affordable electricity for the people and catalyse hydro-industrialisation in the Sarawak Corridor of Renewable Energy," said Datu Haji Sharbini Suhaili, Sarawak Energy Group Chief Executive Officer.

"In addition, with the development of large hydropower, the carbon intensity of our power grid has been reduced by 76.5% since 2009 and can help towards meeting Malaysia's Paris Conference of the Parties (COP) 21 target in the global fight against climate change," said Sharbini.

Hydropower has enabled Sarawak to offer the lowest unsubsidised average electricity tariffs in Malaysia and amongst the lowest average tariffs within ASEAN to its 700,000 customers.

"For a developing state like Sarawak, affordability is a crucial consideration. We needed an energy source that supports our development at an acceptable cost and hydropower provided that. Hydropower projects do have a high upfront outlay during the construction phase, but they have very low running costs and can operate for many decades," Sharbini explained.

"The globally competitive rates have also attracted energy intensive industries to set up their operations here in designated industrial parks, creating downstream business opportunities and jobs for Sarawakians," he said.

Sarawak's total hydro installed capacity is 3,452 MW from its hydropower plants comprising the 2,400 MW Bakun, 944 MW Murum and 108 MW Batang Ai.

Currently in construction is the Baleh HEP — a 188m-high Concrete Faced Rockfill Dam located on the Baleh River. Construction began in late 2017 and the project is scheduled to be commissioned in 2026. With the addition of 1,285MW renewable electricity, Baleh HEP is set to meet anticipated rising energy demands.

Sarawak has also built mini-hydropower plants to cater for localised grids and meet demand needs in areas yet to be connected to the state's main grid due to their distant geographical locations. The 10.5MW Kota 2, a run-of-river scheme, was built to provide supply to the northern district of Lawas and displace its diesel power station.

The company has a target to raise the percentage of alternative renewables in its generation mix this year and is looking to introduce large scale solar into the mix by 2030. It is embarking on a 50MW floating solar project and built Southeast Asia's first integrated hydrogen production plant and refuelling station with the Linde Group in 2019. Sarawak Energy also entered a memorandum of understanding with a Korean Consortium to collaborate on a research into microgrid technology in Sarawak.

Sarawak's rural electrification plan is based on a mix of strategies that includes extending the transmission and distribution infrastructure further inland and focuses on solar or micro-hydro for Sarawak's most remote hinterland communities. This initiative – the Sarawak Alternative Rural Electrification Scheme (SARES) has displaced thousands of household or village-owned diesel generators since 2017, boosting Sarawak's renewable energy credentials. SARES has won Sarawak an international recognition at the 4th International Alliance for Rural Electrification (ARE) Energy Access Investment Summit in Catania Sicily in 2018 under the Government in Africa, Asia and Latin America category of the ARE Awards.

Sharbini went on to explain that even with renewable hydropower forming the predominant part of Sarawak's generation mix, Sarawak Energy still maintained a balance of thermal resources for energy security, utilising indigenous resources. Sarawak has the largest reserves of coal and gas in Malaysia and has just commissioned its last coal-fired power plant.

However, renewable hydropower would continue to be the primary energy source for Sarawak as it can deliver the necessary benefits required for a developing state especially affordability.

Sarawak's hydropower projects are located in the state's hinterland and have brought development in terms of infrastructure and economic opportunities in the interior.

Sarawak Energy is guided by the International Commission on Large Dams (ICOLD) which ensures Sarawak Energy's hydropower projects are built and operated safely and the International Hydropower Association (IHA) Hydropower Sustainability Assessment Protocol which is formally embedded in Sarawak Energy's project development process focusing on social and environmental aspects. Where relocation of communities is required, Sarawak Energy works closely with affected peoples and in consultation with the authorities and the relevant field experts which includes those from the non-governmental organisations.

"We subscribe to these international good practices to ensure responsible development of our hydropower portfolio from safety aspects right up to our social obligation to the local communities. Murum HEP was commissioned in 2014 and we continue with our social investments and partnerships with the resettled community focusing on literacy and education, sustainable livelihood and cultural preservation," said Sharbini.

Sarawak's first venture into hydropower began in the 1980s with the construction of its first hydropower plant, Batang Ai. It built the foundation for Sarawak in terms of knowledge and experience in designing, building and operating hydroelectric plants.

Sarawak Energy also exports up to 230MW of power to West Kalimantan after working with Indonesian power utility Perusahaan Listrik Negara to establish an interconnection in 2016. More cross-border connectivity within Borneo on the horizon – Sarawak Energy would like to see a Borneo Power Grid materialise.

> ...the carbon intensity of our power grid has been reduced by 76.5% since 2009 and can help towards meeting Malaysia's Paris Conference of the Parties (COP) 21 target in the global fight against climate change.

"By building up our generation capacity, we can meet our own organic and SCORE demand and export power to Kalimantan, Indonesia as an additional revenue stream," he explained. Other countries that have successfully done this include Norway and Canada.

The company is also working with a local Indonesian holding company on a potential hydropower development in Kalimantan Utara.

Sarawak Energy has a growing reputation and support as a responsible hydropower developer resulting in its acceptance into the global hydropower community. Sharbini is an elected Board Member of the International Hydropower Association (IHA).

This support was further displayed at the inaugural Sustainability and Renewable Energy Forum or SAREF in December 2019 held in Kuching. The event drew international and national energy thought leaders to discuss sustainability and renewable energy topics in line with the United Nations Sustainable Development Goals particularly on Goal No 7- Affordable and Clean Energy. The platform also provided a platform to recognise large hydro as a renewable energy resource in Malaysia as well as enabling businesses to deliver on decarbonisation initiatives.

"It was highly impactful and included decision makers from our counterparts such as Singapore Power and TNB. We shared our story on hydropower, and the discussion was focused on how we can build a more sustainable energy future," he said.

"SAREF also saw the launch of Sarawak's first Renewable Energy Certificate (REC) whereby each certificate represents the environmental benefits of 1 megawatt hour (1MWh) of renewable energy generated from our Batang Ai hydroelectric plant.

With the International Renewable Energy Agency (IRENA) projecting that hydropower is likely to remain the world's largest source of renewable electricity generation, Sarawak looks set to deliver on a more sustainable energy future for its people and neighbours, with strategies that are best suited to Sarawak's needs.

SEDA MALAYSIA
TRAINING PROGRAMMES

Renewable Energy

Trainings for Qualified Person/Technical

- Grid-Connected Photovoltaic (GCPV) System Design
- Off-Grid Photovoltaic (OGPV) System Design
- Grid-Connected Photovoltaic (GCPV) for Wireman & Chargeman
- Grid-Connected Photovoltaic (GCPV) Installation and Maintenance
- Operation and Maintenance of Biogas Power Plant
- Continuous Development Programme for Continuous Development Programme (CDP) for SEDA Malaysia Grid-Connected Solar PV Systems Design Qualified Persons (QPs)

Awareness Trainings:

- Introductory Training on Grid-Connected Photovoltaic (GCPV) System for Non-Technical Persons

For more information, please visit our website

www.seda.gov.my

SEDA Malaysia has made a clarion call on Malaysian to capitalise on its Net Energy Metering (NEM) scheme and make the most of the country's solar energy potential due to its strategic location in the equatorial zone.

This call was made to hundreds of viewers at home during the fourth phase of the national Movement Control Order (MCO) imposed by the Government as a result of the COVID-19 outbreak.

At its inaugural webinar entitled "Invest in the Sun: What COViD-19 has taught us" on 28th April 2020, SEDA Malaysia pooled experts to deliver talks on investment in solar PV for the rooftop in Malaysia and the relevance of such investment at the pandemic period.

CALL TO INVEST IN THE SUN

The speakers were TaiyangNews Managing Director Mr. Michael Schmela; SEDA Malaysia Chief Strategic Officer Ts. Dr. Wei-nee Chen; Malaysian Investment Development Authority (MIDA) Green Technology Senior Deputy Director Ms. Zulina Mohamed; Malaysian Photovoltaic Industry Association Secretariat Head Mr. Lionel Yap; TNBX Sdn Bhd Managing Director Ir. Nirinder Singh Johl; and CIMB Islamic Bank Commercial & Transaction Banking Regional Head Mr. Hussam Sultan.

The webinar received an overwhelming response with more than 500 attendees from the public and specifically the commercial sector, including international viewers.

In his keynote address at the webinar, SEDA Malaysia's CEO Ir. Dr. Sanjayan Velautham said the COVID-19 pandemic has drastically altered mankind's daily lives and exposed the vulnerability of world economies.

"Attention is drawn to turn towards economic recovery packages. Malaysia is no exception. In fact, the Government has rolled out a series of economic stimulus packages to help the various sectors.

"To this effect, the Government at the end of February 2020 has announced the economic stimulus package which consists of 1,400MW of solar PV to be awarded. Of the 1,400MW, 1,000MW will be for the large-scale solar (LSS) projects and, importantly for rooftop installations, 300MW for the domestic, commercial, industrial and agricultural sectors while 100MW for government buildings," he said.

Dr Sanjayan said the COVID-19 crisis is already reshaping attitudes and the new realities for different policy approaches that will require broader public briefings on the investment on low carbon systems that will significantly pay off when compared to the cost accounting from the health and environmental damages.

TaiyangNews' Schmela presented a talk on the status of the global solar PV market in times of COVID-19 where he shared, among others, developments in China with regards to solar PV production and the demand as well as its price trend.

Keynote Address

SEDA Malaysia
Ir. Dr. Sanjayan Velautham
Chief Executive Officer

Speakers

TaiyangNews
Mr. Michael Schmela
Managing Director

Malaysian PV Industry Association
Mr. Lionel Yap
Head of Secretariat

TNBX
Ir. Nirinder Singh Johl
Managing Director

CIMB Islamic Bank
Mr. Hussam Sultan
Regional Head, Commercial & Transaction Banking

MIDA
Ms. Zulina Mohamed
Sr. Deputy Director of Green Tech Division

SEDA Malaysia
Ts. Dr. Wei-Nee Chen
Chief Strategic Officer

He noted that the COVID-19 pandemic has not helped much in the pursuit of promoting solar PV as only a few countries have included solar PV development in their economic recovery packages. He lauded countries like Japan, Switzerland and Malaysia for including solar energy intervention measures in their respective packages.

Schmela anticipated global projects and sales related to solar PV to be somewhat delayed due to the pandemic outbreak but expected the situation to return to normal as of 2021/22. This however hinges on the effectiveness of the economic stimulus packages.

He said an oversupply situation was looming in the solar PV industry as the producers continued to ramp-up output while demand remained stagnant as a result of the pandemic. This would subsequently drive the solar PV prices down.

SEDA Malaysia's Dr Chen, in her presentation on the NEM programme, told the participants of the Webinar that the NEM programme is fast gaining acceptance in Malaysia.

She said the NEM programme is instrumental in democratising the country's energy generation system via the solar PV technology hence giving the public a role in generating clean energy while lowering the carbon footprint.

"PV technology is very scalable. It is perhaps the only renewable technology that truly democratises electricity and allows the public at large to take part in energy transition so that we can together flatten the climate curve," she added.

The excess energy generated can be exported to Tenaga Nasional Berhad (TNB) on a one-on-one offset basis. Dr Chen said while the balance of 300MW of NEM 2.0 will be valid until the end of this year, SEDA will study the subsequent NEM scheme to further support the PV rooftop market.

SEDA Malaysia runs the NEM scheme that allows electricity consumers of TNB to install a solar PV system in their premises.

Dr Chen also said that during this pandemic period, extension of time for NEM projects will not be automatic and NEM applicants are required to submit their request for extension of time and approval be granted on a case by case basis.

MIDA's Ms. Zulina Mohamed gave a talk on Tax Incentives for Green Technology at the Webinar.

She said the Government has introduced incentives under the green technology in the Budget 2014 to encourage companies to utilise green technology or invest in green equipment for own use or business purposes.

Under the Budget 2020, the incentives, namely Green Investment Tax Allowance (GITA) and Green Income Tax Exemption (GITE), have been extended to end-December 2023 to recipients who met the criteria of green technology as defined in the National Green Technology Policy.

However, at this juncture, MIDA has yet to receive the finalized revised guidelines for the extension of GITA and GITE, including the new GITE provision for companies undertaking solar leasing activities.

Meanwhile, MPIA's Lionel Yap shared his views on the local solar PV industry when presenting his talk on the Malaysia Solar PV Rooftop Market.

> PV technology is very scalable. It is perhaps the only renewable technology that truly democratises electricity and allows the public at large to take part in energy transition so that we can together flatten the climate curve

Based on the large untapped areas of rooftops for solar PV installations in Malaysia, Yap is optimistic with the prospects of the industry.

Specifically, Yap provided illustrations of payback of three to over five years for PV rooftop projects within the Northern-Klang Valley region with GITA support for electricity consumers of tariff commercial and industrial sectors.

He noted that the nation's 20% renewable energy target in electricity mix by 2025 focuses on increasing solar energy generation capacity and this will continue to create new business opportunities for big companies, SMEs, microbusiness and households.

TNBX managing director Ir. Nirinder Singh Johl gave a talk on Supply Agreement with Renewable Energy (SARE) at the Webinar. SARE is a tripartite contract between prosumer, investor/asset owner and TNB that reduces the counterparty risk of the investor/asset owner.

SARE makes green energy accessible to businesses by facilitating investors to fund and own on-site renewable energy generation on prosumers premise. The SARE has four options depending on financing configuration and ownership of the building to be installed with PV.

The final speaker at the Webinar was CIMB Islamic Bank's Hussam Sultan. He shared the bank's available financing solution for solar PV investments.

Hussam said CIMB is moving forward with sustainability and the bank has always emphasised value creation which requires a delicate balancing of the long-term interests of its people, planet and profitability.

He noted that the bank has introduced a SME renewable energy financing to assist the SMEs in fulfilling their financing needs to install rooftop solar PVs. Some of the features of the solar financing include term loan of up to 10 years, financing limit of up to 100% of PV system cost capped at a maximum of RM1 million and no collateral is required as security save for joint and several guarantee.

So what has COVID-19 taught us? Dr Sanjayan summed up his thoughts towards the end of his keynote speech, "Just like the pandemic curve, climate change has no respect for borders. It is colour blind and has no regards on which social status we belong to. To this end, we must learn and we must act to flatten the climate curve."

In this regard, the inaugural webinar by SEDA Malaysia has shed valuable insights that investment in the sun is one such measure to flatten the climate curve.

GRAB THE OPPORTUNITY TO REDUCE YOUR ELECTRICITY BILLS

Better savings by going green

LET'S START SAVING!

Net Energy Metering (NEM) is the right solution for you!

WHAT IS NEM?

Generate and consume your own electricity by installing solar photovoltaic (PV) system on your own rooftop via NEM programme. Any excess of energy generated by your solar PV system, can be offset on a **1 on 1 basis***.

WHAT'S IN IT FOR ME?

- Reduce electricity bills and enjoy more savings
- Generate own clean energy
- Reduce your carbon foot print
- Hedge against uncertainty in electricity tariff

WHAT ARE THE REQUIREMENTS?

- Registered consumer of TNB
- Not blacklisted by TNB

WHO CAN APPLY?

Open to below categories of TNB:

- Domestic
- Commercial
- Agricultural
- Industrial

HOW MUCH CAN I SAVE BY GOING SOLAR?

Let's find out through our investment calculator at:

www.seda.gov.my/nemcalculator

*1 on 1 offset - every 1kWh exported to the grid will be offset against 1 kWh consumed from the grid at gazetted tariff

HERE ARE THE OPTIONS OF SOLAR PV PURCHASING MODES THAT YOU CAN CHOOSE FROM

NEM
Net Energy Metering

OUTRIGHT PURCHASE

- Cash
- Credit Card
- Loan

LEASING

- Solar Power Purchase Agreement (PPA)
- Solar Leasing Programme

1. www.seda.gov.my/rpvsp
2. www.seda.gov.my/rpvi

Registered Solar
PV Service Provider (RPVSP)

The RPVSP will apply for NEM on behalf of customer.

Registered Solar
PV Investor (RPVI)

The RPVI will apply for NEM on behalf of customer.

3. Solar PV Installation

4. **NEM** Applicant (Site Owner)

CHOOSE THE BEST PACKAGE FOR YOU AND

ENJOY THE GREAT SAVING!!!

RENEWABLE ENERGY
SUSTAINABLE FUTURE!

ELECTRICITY BILL

RM 300

Method of Payment

1. Direct to Solar Investor

or

2. Direct to TNB via **SARE**
(Supply Agreement For Renewable Energy)

TNB will remit the payment to solar investor and collect a service fee.

For more info about **NEM**
www.seda.gov.my/reportal

NEM
Net Energy Metering

KEMENTERIAN TENAGA DAN SUMBER ASLI

seda MALAYSIA

PEER TO PEER (P2P) ENERGY TRADING PILOT PROJECT IN MALAYSIA

By
Ts. Hazril Izan Bahari
Director of Digital Services, SEDA Malaysia
cum Technical Lead for Pilot Run of P2P Energy Trading

Peer-to-peer (P2P) energy trading is a concept that allows the buying and selling of energy between two or more grid-connected parties. It uses a digital platform to process the trading which derives from the energy transaction between the energy producers (prosumers) and the buyers (consumers). Furthermore, P2P energy trading allows the consumer to purchase green electricity and contribute to a sustainable environment. Currently, there are several P2P energy trading platforms available around the world to support the business and community projects.

Globally, several projects have been ongoing for the P2P energy trading. The International Renewable Energy Agency (IRENA) has proposed P2P energy trading as a business model which involves an online marketplace where consumers and distributed energy suppliers transact electricity at the desired price. It will also allow the consumer to buy the green energy direct from the prosumers using emergency technologies such as blockchain. Furthermore, P2P has been proven to reduce the energy price for the customers up to 30% such as in Germany. Another Asian country which is running such a pilot project is Thailand. In Malaysia, under the study for Renewable Energy Transition Roadmap (RETR) the P2P energy trading has been identified as one of the initiatives to encourage the solar PV rooftop installation.

According to Infinite Energy Australia, P2P energy trading provides several potential benefits as below:

People without the rooftop can still buy the renewable energy from the solar panels at a reasonable price from their neighbours.

Reduction of the electricity transportation costs since the energy are transported within the distribution system.

Traceability of the renewable energy generation source. Furthermore with the usage of blockchain technology can help maintain immutability of energy transaction.

Malaysia has started a P2P energy trading pilot project since October 2019. The pilot project's duration is expected to be eight months starting from November 2019 until June 2020. The pilot project is currently conducted by SEDA Malaysia under the sandbox regulatory approved by the Energy Commission.

The purpose of the pilot run is to conduct a technical feasibility study for Malaysia to implement the P2P energy trading in the future. In tandem with the Malaysian Electricity Supply Industry (MESI 2.0), P2P energy trading provides customers a choice to buy the green electricity from the market using a digital technology provided by the energy trading platform.

Under the P2P energy trading pilot run, the project was divided into 2 phases namely:

- Alpha: Technical feasibility study without commercial transaction. Simulation using actual participants meter data.

- Beta: Pilot run with the commercial transaction between prosumers, consumers and utility company (TNB)

To operationalize the P2P energy trading pilot run, below are the important components:

i. Prosumers
ii. Consumers
iii. RMR Meter
iv. Billing system
v. P2P energy trading platform

P2P energy trading allows buying and selling of energy between two or more grid-connected parties. Using the concept of arbitraging the existing regulated electricity tariff between the prosumers and consumers, participants are selected based on the criteria below:

Prosumer:

- Existing NEM applicant with minimum 1000kWh excess energy to the grid each month
- Existing TNB tariff below RM0.40 per kWh

Consumer:

- Good historical bill payment
- Existing tariff more than RM0.50 per kWh
- RMR meter customer

Since the excess energy needs to be transferred between the prosumer and consumer, interim system access charge RM0.063 per kWh was approved by the Energy Commission for the purpose of this pilot run utilizing the grid. Furthermore, any untraded energy will be bought by TNB at zero cost. Therefore, it is important to find the prosumers and consumers with matching energy generations and demands.

Other important components to run the P2P energy trading pilot are the energy meter with remote meter reading (RMR) capabilities and billing system. TNB as a partner for this pilot project has provided both requirements and strong support towards this project.

Under this pilot project, Power Ledger, an Australian company, has provided the P2P energy trading platform with the blockchain technologies to process the meter data and trading logic. After four months of pilot run under the alpha phase, the outcome of the trading between the prosumers and consumers can be seen in Table 1.

No.	No of Prosumers	No of Consumer	Energy Generated (kWh)	Energy Traded (kWh)	Energy Spillage
November 2019	4	4	9,358	8,963	4%
December 2019	4	5	15,433	13,963	10%
January 2020	5	5	73,077	55,837	24%
February 2020*	4	6	50, 897	46,205	9%

Table 1: Summary of trading during alpha phase
**Estimates*

Trading dashboard of a prosumer

This is a snapshot of the P2P energy trading platform of a prosumer in November last year. The chart shows the amount of energy sold by a prosumer, the green bar indicates sale to P2P while the grey portion indicates spillage. This chart is quite good as it shows that most of the excess solar electricity is sold to P2P and only a little is spilled to the grid.

Moving forward, the pilot project will start the beta phase and look into matters relating to commercial implementation of the P2P energy trading in Malaysia. Beta phase is very important since it will conduct almost actual processes for the P2P energy trading. Several areas are aimed to be tested during the beta such as business model, trading logics, regulations, settlement process, risks and challenges.

COVID-19: As a result of the recent COVID-19 pandemic outbreak, the beta run has been postponed so as to prevent financial losses by the prosumers due to possible high volume of untraded electricity as a result of low economic activities from both the prosumers and consumers. Subsequently the alpha run will continue until such time when the economic activities in the country resume to normal before beta run will commence.

> P2P energy trading provides customers a choice to buy the green electricity from the market using a digital technology provided by the energy trading platform.

Reference

1. https://irena.org/-/media/Files/IRENA/Agency/Topics/Innovation-and-Technology/IRENA_Landscape_Solution_08.pdf?la=en&hash=90FF077D226D6985A0C0F00012E94E8FD745414D
2. https://www.infiniteenergy.com.au/peer-to-peer-energy-trading/
3. SEDA Malaysia Alpha report

SEDA MALAYSIA
TRAINING PROGRAMMES

Energy Management & Energy Efficiency

Awareness & Technical Trainings:

- **Energy Management in Building;**
  Eligible for 12 Hours CDP for Registered Electrical Energy Manager (REEM) by Energy Commission

- **Principles and Applications of Malaysia Standard MS1525: Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Buildings;**
  Eligible for 8 Hours CDP for Registered Electrical Energy Manager (REEM) by Energy Commission

- **Energy Efficiency Management for Air-Conditioning and Mechanical Ventilation (ACMV) System;**
  Eligible for 8 Hours CDP for Registered Electrical Energy Manager (REEM) by Energy Commission

- **Energy Audit in Building;**
  Eligible for 12 Hours CDP for Registered Electrical Energy Manager (REEM) by Energy Commission

- **Customise training in any combination of the above**

For more information, please visit our website

www.seda.gov.my

RESILIENCE OF SOLAR PV INDUSTRY IN TIMES OF COVID-19 PANDEMIC

Competing with conventional sources of energy on grid parity basis, solar PV technology has been starting to making a quickly growing mark in the global energy mix -and faster than any other energy source. 2019 was the first year when annual global installed solar PV capacity crossed the 100 GW milestone, by most estimates.

After a stellar performance the recent years, based solely on its low prices and technological innovation, global solar PV industry is now facing 'unprecedented' times. Looking at the current situation created by the COVID-19 pandemic, global solar PV analysts have already lowered their installation estimates for the year 2020. IHS Markit has reduced its previous expectation from a robust 142GW to a cautious 105 GW now. In mid-March 2020, BloombergNEF reduced its annual guidance for the current year to between 108 GW to 143GW, which is a downer from the range of 121 GW to 154GW it shared previously. This could be the first year in history demand for solar is notably going down.

By
Anu Bhambhani
Senior News Editor
TaiyangNews

The global solar market is in a dramatic flux right now. When China was battling the pandemic, the sector was worried about the supply end since the Asian giant holds key to global manufacturing of solar PV technology – from silicon to modules as well as processing materials, such as encapsulation foils. But that issue has already overcome, after the virus has spread beyond Chinese borders, the fear is now much more about demand taking a hit as several of the key solar markets are in a lockdown mode, practicing social distancing (a word that never existed in my dictionary earlier), and stopping practically all activities, except for essential services to their people.

Though some markets have allowed construction activities – thus including solar PV - considering these as critical, more or less the demand is down across the world. Buying power of end consumers, from private to commercial, is expected to take a hit with the changing economics bringing tough times for most businesses and industries. Job cuts are already being implemented/expected across the supply chain in the solar industry as well. Access to financing for projects is also a challenge in the near term, with general demand for power and electricity being lower, resulting in reduced wholesale electricity prices and decreasing solar profit margins for projects competing in the free market.

In the USA, Wood Mackenzie Power & Renewables sees up to 5GW of utility scale solar power capacity under fire from logistics delay due to the pandemic outbreak, global analytical firm CRISIL expects 3GW capacity in India could derail due to the same reason as India depends on imported solar modules for its projects. IHS Markit expects Europe, India and the rest of Asia that were hitherto the largest regions of growth to be hit hardest by the pandemic crisis. Spanish solar PV association UNEF forecasts Spain, which was Europe's largest solar market last year, to add around 2GW of new solar in 2020, lowering its previous expectation of between 2GW & 4GW. Most impact will be felt by companies with not so deep pockets.

This episode of virus has strengthened the need for local markets to boost their own supply chains locally, but for now it is heartening to see the epicenter of the COVID-19 China having harnessed the pandemic earlier than the rest and cautiously resumed socio-economic activities. The market is up and running with several big producers having even pledged to expand capacity in the near future. While this is a good sign of normalcy to return to the world soon, in the short term, experts caution this could aggravate to overcapacity in the market as buying capacity takes a hit.

At a recent TaiyangNews webinar, BloombergNEF's Yali Jiang pointed out that installation numbers for the year 2020 will depend on the world's largest solar market, China's ability to commission its projects on time. Many analysts believe that China will even increase its global market share during the crisis, with IHS Markit being the most optimistic, raising its estimate to 45GW for China in 2020, that would be a 50% YoY increase. Nonetheless, auction schedules and project commissioning deadlines may be rejigged in several countries to provide a breather to the industry.

Currently, it is difficult to see how the world will change with regard to the situation created by COVID-19 especially since things are changing by the minute. But belief is as restrictions are gradually lifted by 3rd or 4th quarter this year, things will eventually change for better – in the end solar is the most versatile and even lowest cost power generation source in the world today. In the meantime, many solar industry associations are lobbying its governments to support solar in these tough times, in particular as part of recovery stimulus packages, to make sure people will benefit from clean energy and high tech jobs in an industry that will be the world's largest power generation source in the long run in any case.

GREEN HYDROGEN

A POTENTIAL ENERGY TRANSITION GAME CHANGER

The importance of green hydrogen (H2) as an enabler for global decarbonisation has been recognised by the participants of the Ministerial Roundtable of the 10th Assembly of International Renewable Energy (IRENA).

In his keynote address at the event, International Energy Agency (IEA) Executive Director Fatih Birol said that green H2 can help overcome many difficult energy challenges.

"It can decarbonise hard-to-abate-sectors like steel, chemicals, tugboats and planes. Hydrogen can also enhance energy security by diversifying the fuel mix and providing flexibility to balance grids," he added.

Meanwhile, IRENA Director-General Francesco La Camera said at the opening of the assembly that policies and projects on green H2 around the world are expanding rapidly signalling that green H2 is gaining unprecedented political and business momentum.

Japan took the opportunity at the Assembly to reiterate the importance of green H2 to the country, and plans to make it a marketable tool are in the pipeline.

"Hydrogen is very important for us. We want to make it a marketable tool for the future. For that we need infrastructure and pipelines. Furthermore, hydrogen can be a tradable energy of the future," said Japan Ministry of Economy, Trade and Industry's Energy Conservation and Renewable Energy Department Director-General Yasuhiro Matsuyama.

Towards this end, efforts to increase the capacity to produce hydrogen from electrolysis are increasing worldwide. The output is meant for domestic consumption by the industrial and transport sectors as well as for gas system injection.

EU Energy Commissioner Kadri Simson echoed this sentiment, saying that: "Hydrogen is a key instrument for meeting the Green Deal objectives and Europe is leading on its industry development."

Participants of the Assembly also noted that efforts to promote the production of green H2 need to be accelerated as this is critical to ensure that green H2 has a major share in the energy system in the future.

According to the World Energy Council, hydrogen can be produced using a number of processes. It is then named by colours — grey, blue or green — based on the source of energy used and the method to produce the gas. Currently, more than 90% of hydrogen is produced from fossil fuels. This is grey H2. For green H2, which is the cleanest among the three, the production uses electrolysers and renewables. For the green H2 production to increase, the capacity of the electrolysers has to increase too. With the advent of better technologies in the system, the cost to produce green H2 is anticipated to go lower.

Acknowledging this rationale, United Arab Emirates Environment Minister Dr Thani Al Zeyoudi said he foresees green H2 production to be cost competitive in the next five years with further investment in the area.

He told the Assembly that, "In the UAE we are building the region's first solar-driven hydrogen electrolysis facility."

Global energy player ENGIE has its own plan for the green H2. ENGIE's Hydrogen Business Unit Chief Executive Officer Michèle Azalbert said the company's vision of hydrogen is to store large quantities of renewables.

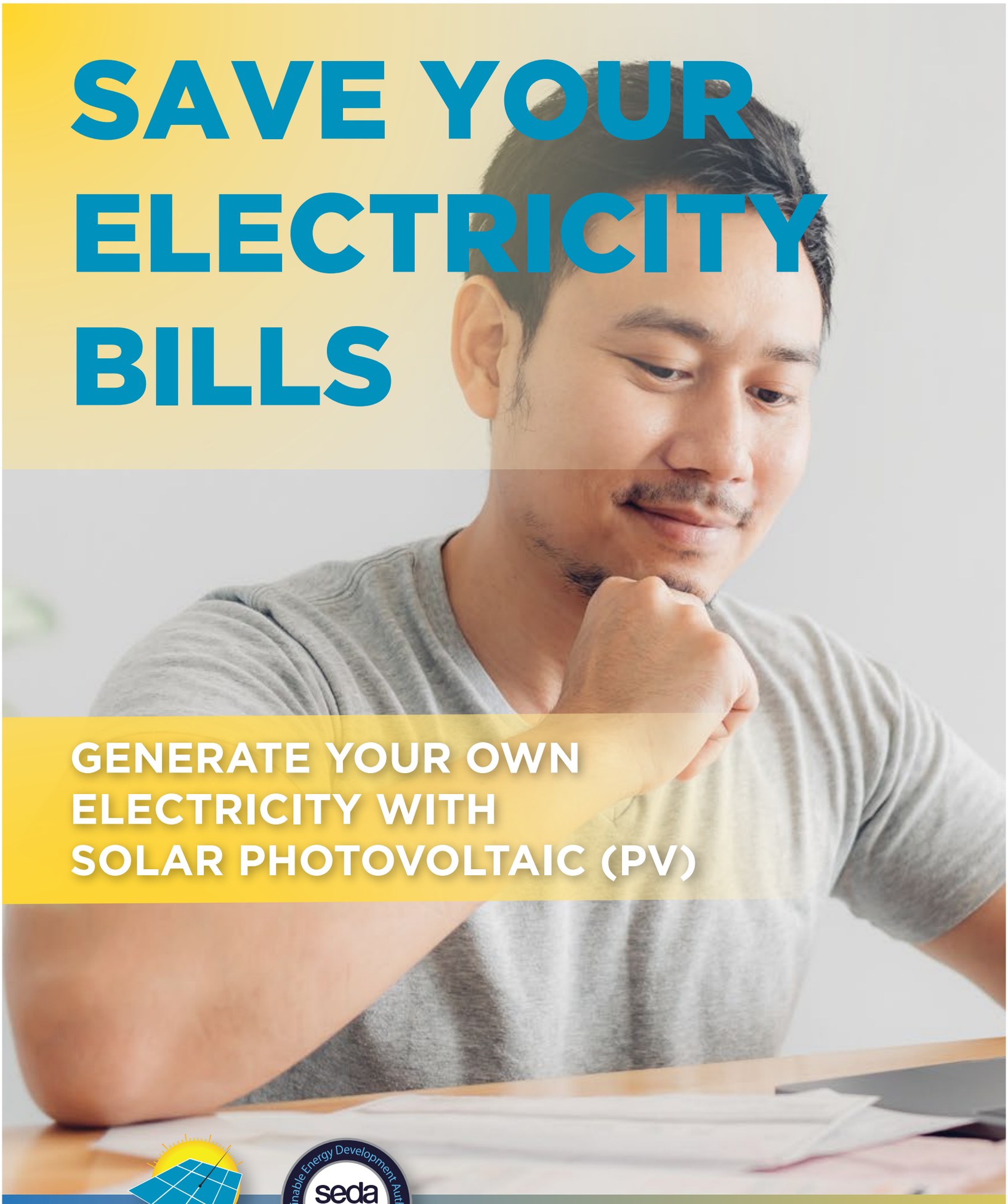
"We want to develop different types of solutions to increase the demand and scale the production of hydrogen solution together with complementary partners."

Meanwhile, Siemens Middle East senior Vice-President for strategy and business development, Manuel Kuehn, said: "We target decentralised and large-scale application. It's important to leave the pilot phase and scale up projects that are viable."

- Source: IRENA

> Hydrogen is a key instrument for meeting the Green Deal objectives and Europe is leading on its industry development.

SAVE YOUR ELECTRICITY BILLS



GENERATE YOUR OWN ELECTRICITY WITH SOLAR PHOTOVOLTAIC (PV)

NEM
Net Energy Metering

Sustainable Energy Development Authority
seda
MALAYSIA

Do your part to save the environment
www.seda.gov.my/reportal/nem

PVMS
PV MONITORING SYSTEM

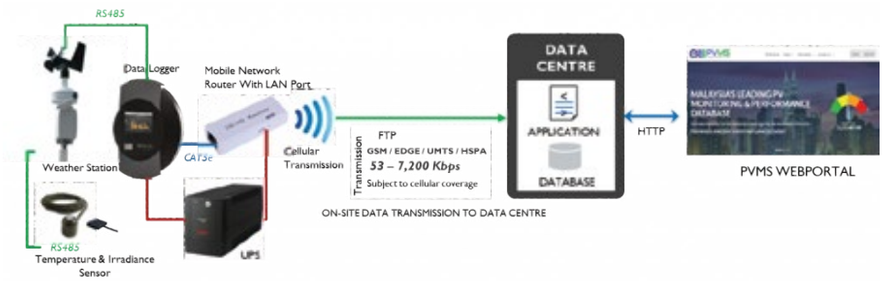
MALAYSIA'S LEADING PV MONITORING & PERFORMANCE DATABASE

Up-to-date information, real-time monitoring and reports on solar photovoltaic (PV) in Malaysia. Harness and energise tomorrow's energy, today.

The National PV Monitoring & Performance Database via the PV Monitoring System (PVMS) is an initiative to monitor selected grid-connected solar PV systems for performance and reliability. This programme is funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE) or the Malaysian Electricity Supply Industries Trust Account (MESITA).

For a start, 148 grid-connected solar PV systems (up to 1MW capacity) throughout Malaysia are being monitored on a real-time basis. Both data and system performance analyses are available upon subscription. The Database will become the reference for designing national energy policies and programmes in the future.

The PVMS system architecture



PVMS REPORTS What's included?

Summary
Energy Generation

Plant Performance
Performance Ratio, Reference Yield, Specific Yield & Final Yield

Meteorological Data
Global Irradiance, Ambient Temperature, Wind Speed, Wind Direction & PV Module Temperature

Irradiation Data
Daily Irradiation

SUBSCRIBE NOW
pvms.seda.gov.my

Digitalisation has changed the global energy system by raising its level of efficiency while having significant implications on the supply and demand scale.

DIGITALISATION

TRANSFORMS GLOBAL ENERGY SYSTEM EFFICIENCY

The International Energy Agency (IEA) in its article Energy Efficiency and Digitalisation said through data gathering and analysing technologies, digitalisation offers the potential to increase the energy system efficiency.

Sensors and smart meters are examples of data gathering technologies that process the collected data into useful information which another device will utilise to chart optimise energy use. This device could be a smartphone or an automatic switch which is part of the entire energy network that controls the flow of energy consumption.

Whenever there is a need for the system to stop the flow of electricity to prevent wastage, the switch could be activated via smartphones or manually and this will promote further efficiency in the energy consumption network.

All energy end-use sectors at present are widely equipped with such digital technologies for this purpose. Nowadays, the majority of residential and commercial buildings are equipped with smart appliances and intelligent energy management systems to capitalise on the digitalisation advantage.

Similarly, the industry sector is a beneficiary of the digitalisation era as it increases the use of advanced robotics and 3D printing. The same goes to the transport sector, where the transportation network increasingly becomes connected by digitalisation hence its energy consumption can be better monitored.

IEA said in the report that the world's energy systems are undergoing an immense transformation.

The grid continues to be added with variable renewables whether they are centralised or decentralised. This poses a challenge to the entire energy system. The flexibility of the demand side becomes more important for the system to run as efficiently as possible. The supply side then has to react in tandem with the demand without fail.

As digitalisation reduces losses that are linked to energy production and distribution, it creates a more efficient energy system supporting the emergence of more renewables in the system.

With improved end-use efficiency and system efficiency as a result of digital technologies, the overall energy system is free from unnecessary investments in energy infrastructure such as peaking plant.

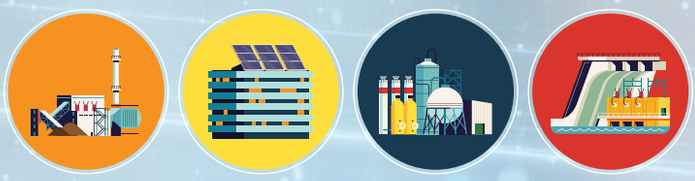
IEA said digital technologies expand our view of energy efficiency — from end-use efficiency to system efficiency.

"As the process of digitalisation is unlikely to stop, the key challenge for policy makers is to steer it in a way that maximises the benefits for the energy system and minimises negative impacts," says the agency in the report. **- Source: IEA**

…digitalisation reduces losses that are linked to energy production and distribution, it creates a more efficient energy system supporting the emergence of more renewables in the system.

WELCOME

TOGETHER WE LEAD MALAYSIA TO



Minister of Energy and Natural Resources, YB Dato' Dr Shamsul Anuar Nasarah made his maiden official visit to SEDA Malaysia headquarters on 13th April 2020. He was accompanied by the ministry's new Secretary-General YBhg. Datuk Zurinah Pawanteh.

During the visit, SEDA Malaysia CEO Ir. Dr Sanjayan Velautham had the honour to brief the new Minister and his delegation on the background and the progress of the core functions of the Authority.

The briefing was also attended by YBrs. Pn Noor Afifah Abdul Razak, the Ministry's Deputy Secretary-General of Energy and En Asdirhyme Abdul Rasib, Senior Under Secretary of Sustainable Energy. Dr Sanjayan covered the global status of energy transition and highlighted the timely need for a new renewable energy roadmap that will chart a pathway towards greater decarbonization of the electricity sector in Malaysia in order to meet the Nationally Determined Contribution (NDC) under the Paris Climate Agreement.

He also shared on the progress of the feed-in tariff (FiT) and net energy metering (NEM) schemes, the lessons learned and the on-going facilitation programmes on energy management with the State Governments and Local Authorities.

ABOARD SUSTAINABLE ENERGY

Meanwhile on 9th May 2020, Deputy Minister of Energy and Natural Resources, YB Tuan Ali Anak Biju, made his official visit to SEDA Malaysia. Once again, Dr. Sanjayan Velautham took the lead in hosting the visit where he briefed the Deputy Minister on SEDA Malaysia's vision and mission as well as the Authority's functions in promoting a healthier economy for Malaysia through sustainable energy developments.

SEDA Malaysia has a strong focus on training with various training partners spanning from both renewable energy sectors and energy demand management.

Dr. Sanjayan took the opportunity of the two official visits to inform both the Minister and his Deputy that there was minimal disruption to office operations during the Movement Control Order (MCO) period as all the Authority' s staff were working from home. Furthermore, SEDA Malaysia's office processes are almost fully digitalised which allow the core functions of the Authority to operate as usual.

Aside from the daily virtual meetings among management and the individual teams, other MCO activities included organising virtual meetings with the various RE industries to learn of the impact of MCO to their business, Working Groups of various activities including virtual trainings to internal and external stakeholders and several corporate social responsibility (CSR) contributions to hospitals, frontliners and the welfare homes.

CALENDAR
OF EVENTS

JANUARY 2020

6 PUTRAJAYA

LAUNCHING OF THE LARGEST SOLAR PV SYSTEM UNDER THE NEM SCHEME

The official launch of Xinyi's solar PV system - the largest under the Net Energy Metering (NEM) scheme in Malaysia. SEDA Malaysia CEO Ir. Dr. Sanjayan Velautham and senior representatives of the then Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) attended the event.

9 PUTRAJAYA

SOLAR POWER & BUDGET 2020 TALK

SEDA Malaysia gave a briefing on NEM to participants of the Solar Power & Budget Talk at the Dewan Seri Cempaka MPKJ, Saujana Impian, Kajang.

10 PUTRAJAYA

BRIEFING OF P2P ENERGY TRADING PILOT RUN SESSION

SEDA Malaysia conducted a briefing on P2P Energy Trading Pilot Run session to prosumers and consumers. In P2P energy trading, consumers with solar photovoltaic (PV) systems on their premises can sell the excess of electricity generated from their solar PV systems to other electricity consumers, at prices agreed by both sellers and buyers. Malaysia is the second country in ASEAN that has moved into P2P energy trading.

TALK ON SUSTAINABLE DEVELOPMENT MANAGEMENT

SEDA Malaysia Chief Strategic Officer Ts. Dr. Weinee Chen gave a talk on Sustainable Development Management to postgraduate students of Sunway University which currently houses the Jeffrey Sachs Centre on Sustainable Development. Photo taken with Prof Dr Leong Choon Heng and Prof Dr Fun Woh Peng.

11 SELANGOR

One of SEDA Malaysia's roles is to implement measures to promote public participation and to improve public awareness on matters relating to sustainable energy Section 15(i) of SEDA Act 2011. In this regard, SEDA Malaysia endeavours to develop and implement strategic communication programmes to reach our stakeholders.

The primary objective of such programmes is to raise greater acceptance and participation by the general public as well as the private sector in the sustainable energy initiatives administered by SEDA Malaysia.

In addition to the awareness programmes, the initiatives include stakeholders' engagements via seminars/workshops, open days, exhibitions and collaboration with NGO partners as well as international liaisons.

PUTRAJAYA

16

16KWP SOLAR PANEL INSTALLED AT SEDA MALAYSIA'S OFFICE

SEDA Malaysia Market Operations Team held a briefing for the authority's staff on the 16kWp solar panel installed at the Galeria PjH Putrajaya.

The project is another effort by SEDA Malaysia to lead by example in promoting solar PV rooftop for commercial building.

VISIT TO THE 20MW WASTE-TO-ENERGY (WTE) PLANT

SEDA Malaysia CEO Dr Sanjayan Velautham led the team of SEDA Malaysia to visit the Cypark Smart Sdn Bhd's 20MW Waste-to-Energy plant.

The visit is to assess the project status as well as sharing knowledge on the project.

17

NEGERI SEMBILAN

BRIEFING ON SUSTAINABLE ENERGY LOW CARBON BUILDING ASSESSMENT (GREENPASS) AND BUILDING ENERGY DATA ONLINE MONITORING SYSTEM (BEDOS)

Mr Steve Lojuntin, Director of Technical Facilitation & Services Division, SEDA Malaysia gave a briefing to representatives from local authorities and private companies on Sustainable Energy Low Carbon Building Assessment (GreenPASS) and Building Energy Data Online Monitoring System (BEDOS). The attendees were also briefed on NEM programme.

21 PUTRAJAYA

22

SETAPAK, KUALA LUMPUR

NEM BRIEFING AT SRJK C CHONG HWA

SEDA Malaysia gave an NEM briefing to teachers and students of SRJK C Chong Hwa, Setapak Kuala Lumpur. SEDA Malaysia Market Operations Acting Director Koh Keng Sen who gave the briefing told the attendees of the benefits and advantages of NEM.

CNY AND STAFF'S BIRTHDAY CELEBRATIONS

Warga SEDA Malaysia ushered in the Year of the Rat with an early festive & staff's birthday celebrations at SEDA Malaysia HQ. Gong Xi Fa Cai!

23

PUTRAJAYA

FEBRUARY 2020

BRIEFING ON NEM TO OFFICERS OF HOME AFFAIRS MINISTRY (KDN)

SEDA Malaysia Strategic Communications Director En Roslan Ali@Hassan gave a briefing on NEM programme to Home Affairs Ministry officers. The briefing also covered SEDA Malaysia's contribution and effort towards the development of RE in Malaysia.

4

PUTRAJAYA

E-BIDDING BRIEFING ON BIOGAS (30MW) & SMALL HYDRO (116MW)

SEDA Malaysia held a briefing on e-bidding requirements and system guidelines. It also released the quota for biogas (30MW) and small hydro (116MW) through this e-bidding briefing was given by SEDA Malaysia Market Operations Acting Director Mr. Koh Keng Sen.

12 PUTRAJAYA

18 PUTRAJAYA

THE LAUNCHING OF BUYSOLAR- MALAYSIA'S FIRST ONE-STOP ONLINE SOLAR MARKETPLACE

OpenSys Technologies, a subsidiary of OpenSys (M) Bhd, has launched Malaysia's first one-stop online solar marketplace, buySolar, to drive the adoption of solar energy. buySolar will be useful in facilitating more Malaysians to commit in using RE. SEDA Malaysia CEO Ir. Dr. Sanjayan Velautham attended the launch to support the buySolar platform.

MARCH 2020

BLOOD DONATION AND LEARNING SE CAMPAIGN

SEDA Malaysia organised the Jom Amalkan Hidup Sihat programme to promote healthy living and sustainable energy. SEDA Malaysia CEO Ir. Dr. Sanjayan Velautham attended the programme which also included a blood donation drive.

9 PUTRAJAYA

25 PUTRAJAYA

"FORUM BANDAR HIJAU KARBON RENDAH 2020"

SEDA Malaysia participated in the "Forum Bandar Hijau Karbon Rendah 2020" hosted by the Putrajaya Corporation.

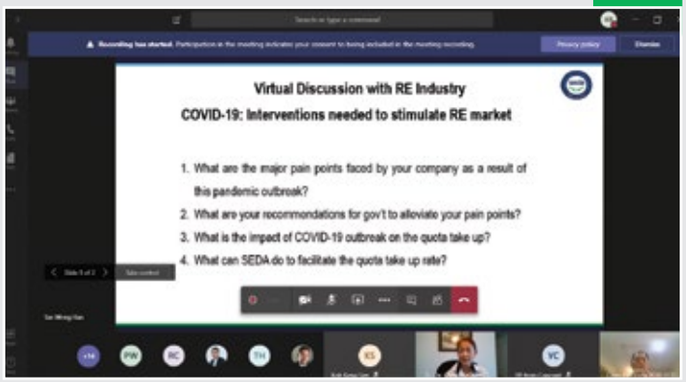
SEDA Malaysia has set up a booth to promote latest sustainable energy programmes to the public.

APRIL 2020

PUTRAJAYA **9**

SEDA MALAYSIA HOSTS VIRTUAL DISCUSSION WITH RE INDUSTRY PLAYERS

It was business-as-usual for SEDA Malaysia despite the COVID-19 pandemic challenge. SEDA Malaysia held virtual meetings with the biogas, solar PV and small hydro industries. The objectives of the virtual meetings were to understand the impact of Movement Control Order (MCO) on these industries and the possible interventions by Government to help stimulate the green economy. The virtual session was aptly called "Virtual Discussion with RE Industry COVID-19: Interventions Needed to Stimulate RE Market" provides a platform for SEDA Malaysia to assess the industry players' feedback on what is required to overcome the unprecedented challenges.

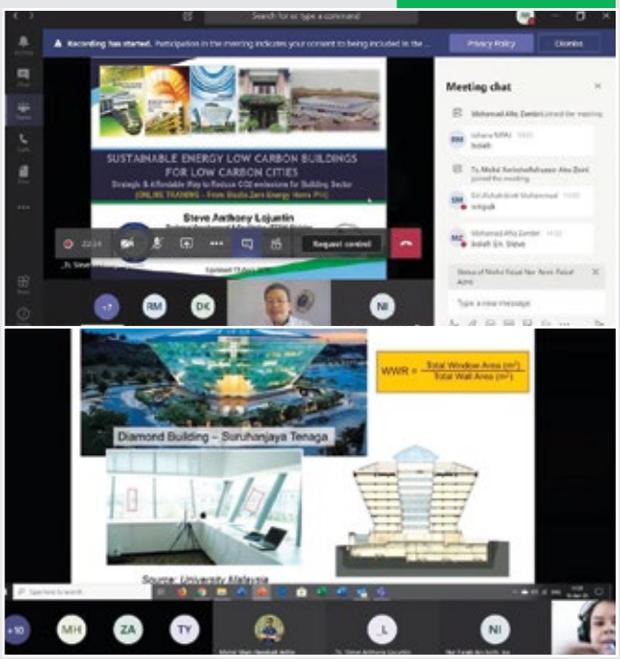


PUTRAJAYA **13, 15 & 16**

ONLINE TRAININGS AMIDST MCO AND PANDEMIC VIRUS

SEDA Malaysia continues with its role in educating its stakeholders even while the MCO is in place. During the MCO period, its Technical Facilitation & Services Division carried out three online trainings, namely on Sustainable Energy Low Carbon Building, GHG Inventory for Cities; and Principles, Calculations and Applications of the Malaysian Standard (MS) 1525. The training was led by SEDA Malaysia Technical Facilitation & Services Director Mr. Steve Lojuntin.

(Picture) On the 15th April 2020, SEDA Malaysia organised a two-day online training on the principles, calculations and applications of the MS 1525 — a standard that covers the Code of Practice in energy efficiency and use of renewable energy for non-residential buildings. A total of 17 participants attended the training where they learnt in details about the Overall Thermal Transfer Value (OTTV) and Roof Thermal Transfer Value (RTTV) In Building.



23 PUTRAJAYA

IEM (EETD), TEEAM AND SEDA MALAYSIA HOLD THIRD DIALOGUE SESSION

SEDA Malaysia has led a virtual dialogue session to discuss possible collaborations for the year 2020 with the ultimate aim to bring Malaysia's sustainable energy agenda to greater heights. Representatives from the Institution of Engineers, Malaysia, (IEM) Electrical Engineering Technical Division (EETD); and the Electrical and Electronics Association of Malaysia (TEEAM) were also present at the session. SEDA Malaysia was led by its CEO Ir. Dr. Sanjayan Velautham.

Sustainable Energy Development Authority
seda
MALAYSIA

SALUTE TO OUR FRONTLINERS BATTLING AGAINST COVID-19

WITH ALL THE

LOVE, BLESSINGS & PEACE

ON THIS JOYOUS DAY

Sustainable Energy Development Authority MALAYSIA

seda

WWW.SEDA.GOV.MY

@SEDAMalaysia sedamalaysia SEDA Malaysia

SustainableEnergyDevelopmentAuthoritySEDAMalaysia