Transitioning The Nation Towards

Sustainable Energy

MALAYSIA

ROARING SUCCESS

The 5th International Sustainable Energy Summit (ISES) 2022 was the largest ever, bringing together energy experts, thought leaders, participants and visitors from 61 countries

International Sustainable Energy Summit
ISES 2022 Empowering Energy Transition

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NET-ZERO PATHWAYS

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YOUTH A VITAL CATALYST

There is a need for our youth and future generation to embrace the concept of sustainability and energy transition. P42-45

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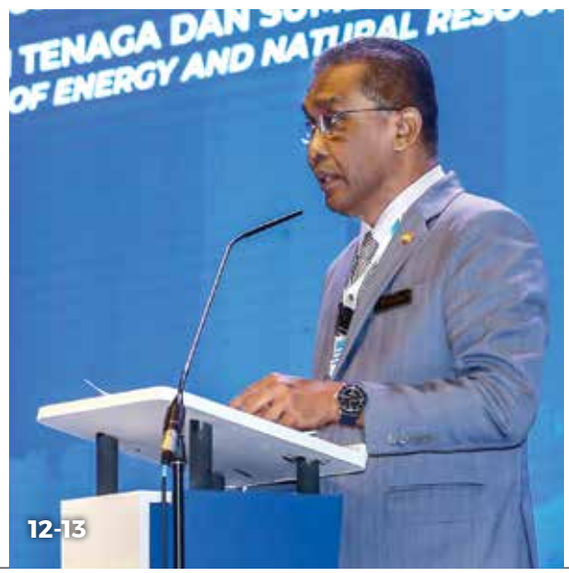

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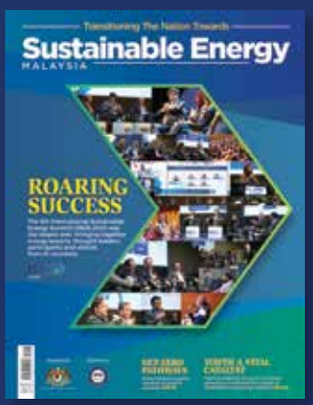

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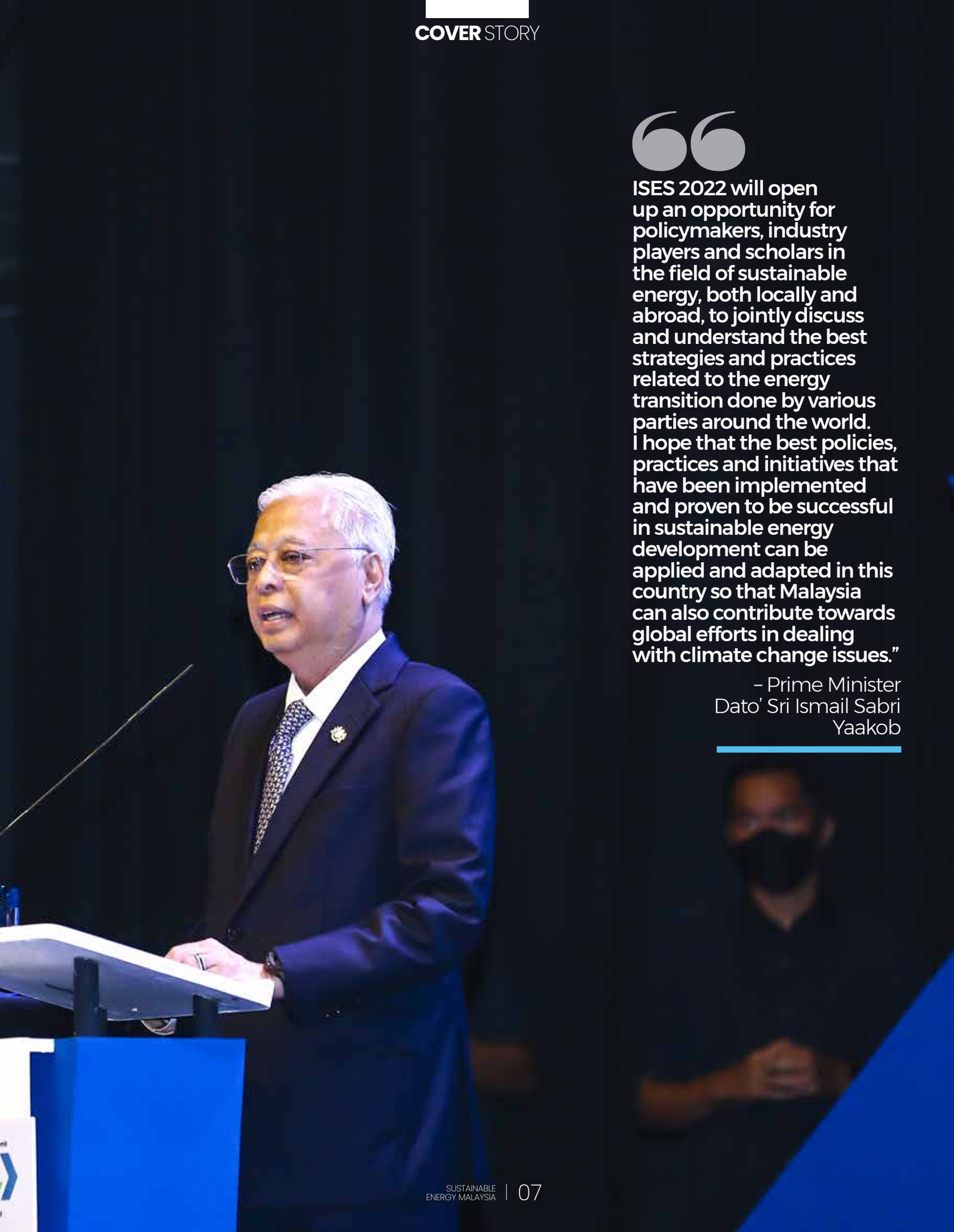
DRIVING A RESILIENT ENERGY TRANSITION

ISES 2022 was a resounding success with meaningful discussions and solutions to accelerate the nation's energy transition



ISES 2022 will open up an opportunity for policymakers, industry players and scholars in the field of sustainable energy, both locally and abroad, to jointly discuss and understand the best strategies and practices related to the energy transition done by various parties around the world. I hope that the best policies, practices and initiatives that have been implemented and proven to be successful in sustainable energy development can be applied and adapted in this country so that Malaysia can also contribute towards global efforts in dealing with climate change issues."

– Prime Minister Dato' Sri Ismail Sabri Yaakob

(from left): YBhg Dato' Haji Rosli Isa, Secretary General, Ministry of Energy and Natural Resources; YB Datuk Seri Takiyudddin Hassan, Minister of Energy and Natural Resources; YAB Dato' Sri Ismail Sabri Yaakob, Prime Minister of Malaysia; YB Datuk Ali Biju, Deputy Minister of Energy and Natural Resources; HE Francesco La Camera, Director General, IRENA.

WITH the theme 'Empowering Energy Transition', the 5th International Sustainable Energy Summit (ISES) 2022 was a resounding success. It brought together energy experts and thought leaders discussing pressing issues and solutions to accelerating the country's energy transition.

Energy transition is the primary driver that will help realise Malaysia's aspiration to be carbon-neutral by 2050. The rapid acceleration of the energy transition is needed, and this initiative requires joint efforts from all stakeholders.

ISES 2022 featured four plenary sessions and 10 Deep-Dive Workshops which enabled constructive discussions and knowledge sharing on various topics and strategic issues related to sustainable energy development.

The signature event, officiated by Prime Minister Dato' Sri Ismail Sabri Yaakob, was organised by the Sustainable Energy Development Authority (SEDA) Malaysia. It marked yet another milestone in Malaysia's sustainable energy industry as it was the largest sustainable energy conference in the country.

In his opening speech, Dato' Sri Ismail Sabri said the theme 'Empowering Energy Transition' for ISES 2022 was timely as the global community was actively discussing the energy transition and the shift to a sustainable and low-carbon energy system while addressing the energy trilemma.

"ISES 2022 will open up an opportunity for policymakers, industry players and scholars in the field of sustainable energy, both locally and abroad, to jointly discuss and understand the best strategies and practices related to the energy transition done by various parties around the world.

"I hope that the best policies, practices and initiatives that have been implemented and proven to be successful in sustainable energy development can be applied and adapted in this country so that Malaysia can also contribute towards global efforts in dealing with climate change issues."

ISES 2022 was held at the Kuala Lumpur Convention Centre from Aug 29-30, 2022. Over 5,529 participants and visitors from 61 countries attended the international summit, which also featured a large-scale exhibition with 40 exhibitors and generated 76 potential businesses.

Prime Minister Dato' Sri Ismail Sabri Yaakob launching ISES 2022.

SUSTAINABLE ENERGY AS MALAYSIA'S COMPETITIVE ADVANTAGE

Dato' Sri Ismail Sabri also took the opportunity at ISES 2022 to announce new programmes and initiatives by the government to reform the country's electricity supply and support the energy transition. They include:

i) The approval of the allocation and redistribution of the RE quota of 1,200 MW for solar under the following programmes:
   a. Existing mechanisms include the New Enhanced Dispatch Arrangement (NEDA) and the solar installation on roofs of buildings;
   b. Identify and explore new RE programmes such as the development of solar parks, the supply of green electricity for the use of further data centres as well as the generation of green hydrogen; and
   c. the implementation of a new option for the procurement of green electricity supply to corporate companies through the Virtual Power Purchase Agreement (VPPA), from the fourth quarter of 2022 with a 600MW quota offer.

ii) Implement the pilot initiative for the development of Green Energy Island in Redang Island and Perhentian Island, Terengganu, with an estimated cost of RM200 million under the Incentive-Based Regulation (IBR) mechanism This pilot project will be implemented by Tenaga Nasional Berhad (TNB) and will upgrade the electricity supply system in an integrated manner to provide a consistent, affordable and low-carbon electricity supply in these two leading resorts islands;

YB Datuk Seri Takiyuddin Hassan

YB Datuk Ali Biju

The opening ceremony was well attended.

iii) Develop a framework - Renewable Energy Certificate (REC) with clear and orderly governance and regulation to ensure that RECs produced in the country are credible, transparent and high in value;

iv) Establish a legal framework to regulate the safety of electric vehicle (EV) charging infrastructure development by providing EV Infrastructure Development Guidelines under the Electricity Supply Act 1990 [Act 447], which will be enforced in the fourth quarter of 2022.

"I was informed that in response to the government's call to increase EV use, TNB would sign a partnership with MySuri Biz Technologies Sdn Bhd, a 100 per cent Bumiputera-owned company, to provide 1,000 units of electric taxi services in the country. I hope such initiatives, especially those led by government-linked companies (GLCs), will increase," said the Prime Minister.

For ISES 2022, theme 'Empowering Energy Transition', is in line with the national energy transition agenda and the Prime Minister's aspiration for Malaysia to become a carbon-neutral country by 2050. To realise this aspiration of a carbon-neutral nation, the energy sector, especially the electricity supply industry, plays a critical role in contributing towards reducing the country's carbon footprint through the implementation of the energy transition agenda."

– Datuk Seri Takiyuddin Hassan

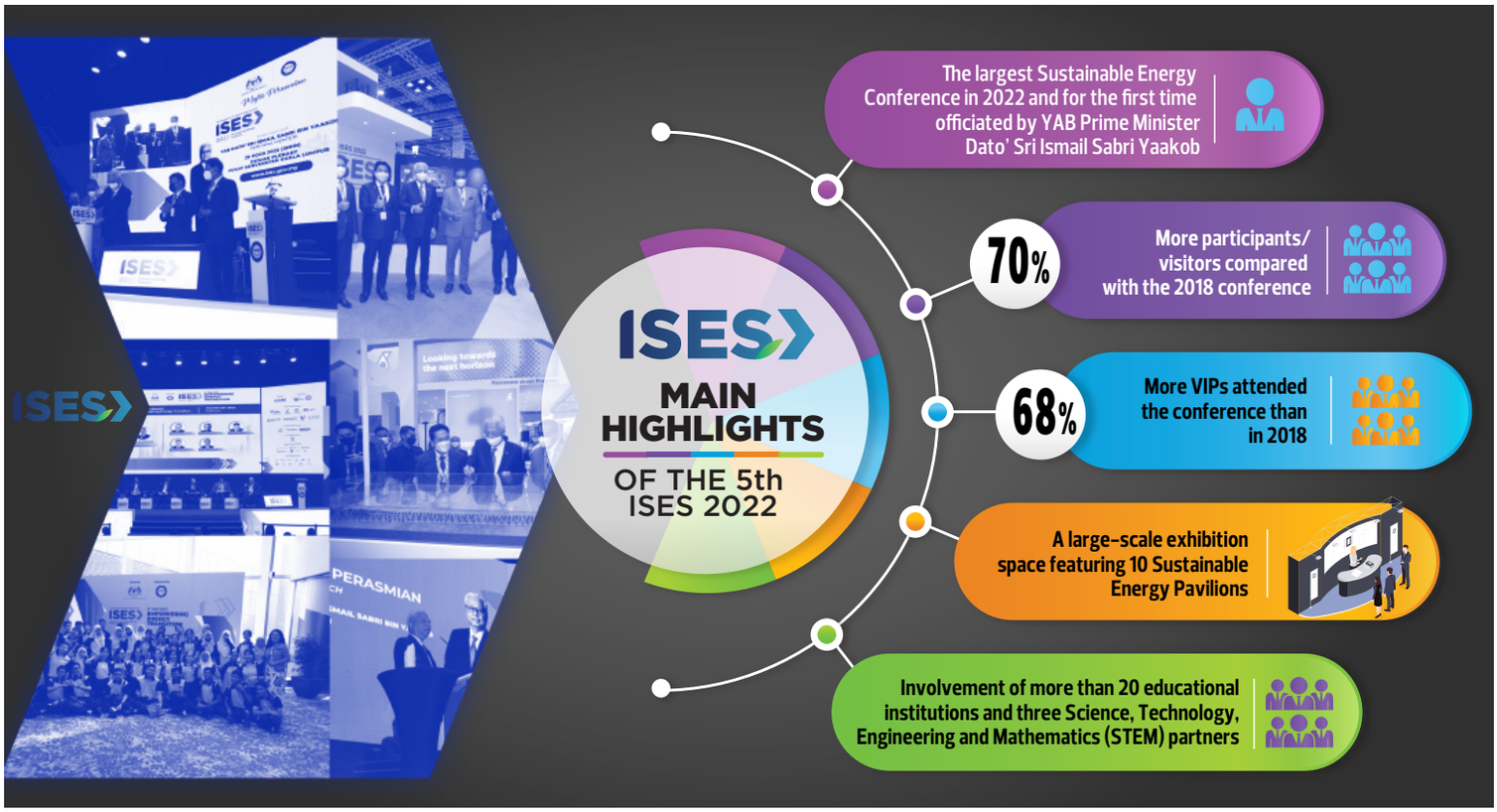
THE ENERGY SECTOR'S ROLE IN CARBON EMISSION REDUCTION

Minister of Energy and Natural Resources (KeTSA) Datuk Seri Takiyuddin Hassan in his welcoming speech said he was pleased with the response to ISES 2022 and hoped it would translate into efforts to support the country's energy transition agenda.

He noted that ISES was first held in 2012 as a platform created by the government through SEDA Malaysia to find stakeholders for the renewable energy (RE) industry.

"For ISES 2022, the theme 'Empowering Energy Transition', is in line with the national energy transition agenda and the Prime Minister's aspiration for Malaysia to become a carbon-neutral country by 2050.

"To realise this aspiration of a carbon-neutral nation, the energy sector, especially the electricity supply industry, plays a critical role in contributing towards reducing the country's carbon footprint through the implementation of the energy transition agenda," said Datuk Seri Takiyuddin.



He shared some commitments that the government had implemented in the national energy transition agenda, which include:

- Implementing active mitigation measures by increasing RE capacity in the country's electricity supply to 31 per cent by 2025 and 40 per cent in 2035 based on the Malaysia Renewable Energy Roadmap (MyRER);
- Developing programmes and initiatives to increase the participation of local industry in the generation and purchase of green electricity supply through programmes such as Feed-in Tariff (FiT), Net Energy Metering (NEM), Green Electricity Tariff dan New Enhanced Despatched Arrangement (NEDA);
- Reducing the intensity of GHG emissions from electricity generation by gradually reducing generation from coal sources (phase down), and no new coal-fired power plants will be built in the near future (phase out);
- Enhancing grid flexibility in stages through the integration of digitalisation and the development of the energy storage system to enable the inclusion of higher RE capacity through distributed generation.

"These sustainable energy development policies and initiatives are expected to reduce the GHG emission intensity of the electricity supply sector by 45 per cent in addition to generating economic spillovers through investments of up to RM33 billion and creating 47,000 direct job opportunities.

"This commitment requires the combined efforts of all stakeholders in the field of sustainable energy, and I hope this year's ISES will open the room for discussions and create new cooperation in supporting the efforts to empower the energy transition agenda in our country."

MEASURES TO ADAPT TO NEW INNOVATIVE TECHNOLOGIES

ISES 2022 successfully wrapped up its two-day event on Aug 30, 2022, with KeTSA Deputy Minister Datuk Ali Biju delivering the closing speech. He thanked conference participants, speakers, exhibitors, and visitors who contributed to making the organisation of ISES 2022 a success.

He said: "The sustainable energy plan and development in Malaysia started since the Eighth Malaysia Plan. Through various policies and initiatives introduced by the government, we have successfully built an excellent foundation in transforming the energy system into a more sustainable generation."

He said the next decade will focus on efforts and measures to adapt to new innovative technologies to support the transition to a low-carbon energy supply chain.

"However, the effort to achieve this pure dream requires solid support from all parties to ensure that the country's energy transition can be balanced and effective. In this connection, joint effort between the public and private sectors are important so that the applied energy transition model is not only sustainable but promising and will not cause an increase in the cost of supplying electricity beyond the means of the people."

In addition, he also touched on Prime Minister Dato' Sri Ismail Sabri's announcement during his opening speech, saying that the initiatives have received positive reactions from various parties.

"The Prime Minister's announcement I believe has given a new injection of confidence to the sustainable energy industry in this country in its efforts to support the energy transition agenda as well as the country's carbon neutral aspirations.

"Hopefully, the benefits and relationships established through this conference will last and can be translated into implementing new RE development programmes and projects towards realising the country's energy transition agenda. It is important to ensure that the challenges and threats of climate change can be dealt with holistically, thus guaranteeing a better future for future generations," he said. SEM

A TREMENDOUS OPPORTUNITY

YB Datuk Seri Takiyuddin says ISES 2022 was an ideal stage to interact and collaborate with industry players

THE 5th International Sustainable Energy Summit (ISES) 2022 has demonstrated to be a powerful and growing knowledge-based platform focusing on renewable energy and energy efficiency.

This was emphasised in Parliament recently by the Minister of Energy and Natural Resources (KeTSA) YB Datuk Seri Takiyuddin Hassan.

ISES 2022 was organised by the Sustainable Energy Development Authority (SEDA) Malaysia and hosted by KeTSA.

Datuk Seri Takiyuddin said ISES 2022 was an ideal stage to interact and collaborate with participants, industry players and local and international energy authorities.

"ISES 2022 proved a tremendous success. Thought leaders and global thinkers from both public and private sectors in the international arena gathered to address critical issues and facilitate widespread deployment of sustainable energy – all to accelerate sustainability and the transition to clean energy," said Datuk Seri Takiyuddin.

He said ISES 2022 featured a large-scale exhibition with 10 pavilions related to sustainable energy. In addition, it involved 12 educational institutions and three Science, Technology, Engineering and Mathematics (STEM) partners.

THREE MAIN FRAMEWORKS

ISES 2022 also featured 70 presenters, 40 exhibitors, and 14 presentation sessions which involved representatives from 61 countries.

"International participants, industry players, game-changers and even local authorities shared their expertise, learnt during the conference, and conducted business interactions via business exhibitions and business matching sessions.

"With knowledge-exchanging opportunities presented for businesses, the conference was a portal that inspired findings on current and future developments in renewable and sustainable energy from various aspects," added Datuk Seri Takiyuddin.

To realise the government's desire to achieve net-zero carbon country status by 2050, Datuk Seri Takiyuddin outlined three main frameworks:

> **"With knowledge-exchanging opportunities presented for businesses, the conference was a portal that inspired findings on current and future developments in renewable and sustainable energy from various aspects."**
>
> — Datuk Seri Takiyuddin

- Maximise and enhance Malaysia's natural assets – preservation and conservation of forests;
- Decarbonise the energy sector – stop the construction of new coal plants, take advantage of Malaysia's gas, invest in grid development and technology transition (hydrogen, carbon storage, energy storage); and
- Deploy low-carbon transport technologies – penetration of EVs and charging facilities, clean fuels for ships and aircraft.

"To increase the competitiveness of the entire hydrogen value chain, especially in the development and application of clean hydrogen, there was an urgent need to establish a long-distance transport method with a choice of liquid hydrogen carrier medium, ammonia or methylcyclohexane (MCH).

"Various studies are underway on carbon recycling, with the main focus to provide sustainable government policies to encourage the transition from fossil fuels to clean hydrogen use," said

Datuk Seri Takiyuddin.

HYDROPOWER INITIATIVES

Meanwhile, to keep the temperature control below 2°C, he said hydro energy was one of the main routes in addition to solar energy. Among the hydropower initiatives towards decarbonisation include:

- Carrying out co-firing with power plants with other greener energy such as hydrogen, ammonia or biomass;
- Hydropower project for generation and flood mitigation in Kelantan (300MW in 2027); and
- A vital enabler towards increasing the competitiveness of green hydrogen, pumped hydro energy storage sources and the development of floating solar at hydropower stations.

Datuk Seri Takiyuddin also announced that five Memoranda of Understanding (MoUs) were signed between SEDA Malaysia and the Japanese Business Alliance for Smart Energy Worldwide (JASE-W), Kuala Lumpur City Hall (DBKL), the Pahang Skills Development Center (Pahang Skills), Universiti Teknikal Malaysia Melaka (UTeM) and Universiti Kuala Lumpur (UniKL).

Three MoUs were signed with stakeholders such as KPower RE Sdn Bhd, Menteri Besar Kedah Incorporated and Smart Sabah RE Sdn Bhd. In addition, Tenaga Nasional Berhad (TNB) has also signed an MoU with MySuri Biz Technology Sdn Bhd to supply 1,000 electric vehicles (EV) taxi units in line with decarbonisation efforts in Malaysia. SEM

A SUCCESSFUL 5th ISES 2022

The Summit, which started from humble beginnings in 2012, has grown exponentially over the years

THE 5th International Sustainable Energy Summit (ISES) 2022, successfully organised by the Sustainable Energy Development Authority (SEDA) Malaysia, brought together experts and thought leaders to discuss and address various topics relevant to its central theme of 'Empowering Energy Transition'.

SEDA Malaysia Chairman YB Lukanisman Awang Sauni, in his opening speech at the Summit's Gala Dinner, said: "Suffice to say, I am beyond proud to be part of this event.

"The Summit started from humble beginnings in 2012 and has grown exponentially over the years."

The Gala Dinner, held at the Kuala Lumpur Convention Centre (KLCC) on Aug 29, 2022, celebrated 10 years of ISES's enlightening knowledge-sharing collaboration and the success of its 5th instalment this year.

YB Lukanisman said: "There is another dimension to this year's ISES 2022 which brings significant changes compared to previous ISES.

"I'm pleased to share that this year's ISES Deep-Dive Workshop (DDW) mechanism has changed through strategic partnerships in which esteemed organisations act as co-hosts at few selected workshops in the road towards sustainability and energy security."

CONFERENCE HIGHLIGHTS

The 5th ISES featured 14 plenary sessions and DDWs, featuring 70 speakers.

Overview from key presentations and discussions during the conference highlights that Malaysia can learn from the United States and Europe on the energy transition, and the steps taken to achieve the energy transition target must be pragmatic for Malaysia, businesses and individuals.

> **"I'm pleased to share that this year's ISES Deep Dive Workshop (DDW) mechanism has changed through strategic partnerships in which esteemed organisations act as co-hosts at a few selected workshops in the road towards sustainability and energy security."**
>
> — YB Lukanisman

According to the International Renewable Energy Agency (IRENA), US$378 billion investment is needed for the energy transition until 2050, with the majority of investments amounting to US$183 billion needed for efforts to upgrade and increase the flexibility of the electricity supply grid system.

New technologies such as green hydrogen and Carbon Capture Utilisation Storage (CCUS) require governmental support such as incentives to make their usage cost competitive during the transition process.

Meanwhile, renewable energy technologies such as biomass, hydro and biogas must be facilitated to encourage technological development.

5TH INTERNATIONAL SUSTAINABLE ENERGY SUMMIT (ISES)

5,529	70	40	14	76	61
PARTICIPANTS AND VISITORS	PRESENTERS	EXHIBITORS	SESSIONS	BUSINESS POTENTIALS	COUNTRIES

89% **Respondents** were satisfied with the exhibition

83% **Respondents** suggested that the exhibition activities continue at the next ISES

98% **Responded** they would recommend future ISES to their friends

SEDA CEO Dato' Hamzah Hussin (left) with Brian D. McFeeters, US Ambassador to Malaysia (right).

Dato' Haji Rosli Isa, Secretary-General, Ministry of Energy and Natural Resources (KeTSA) during ISES 2022's Gala Dinner.

Lastly, grid resilience is the backbone of the energy transition, and battery technology can help with the challenges of grid instability.

MALAYSIA'S RENEWABLE ENERGY TRANSITION

The World Economic Forum's Energy Transition Index for 2021 places Malaysia 39th out of 115 nations.

While 92 of the 115 countries evaluated in this index saw an improvement in their score over the previous 10 years, only 10 per cent of the countries made steady gains, demonstrating the need for renewed focus and resiliency to meet the climate goals of the coming decade.

"This has proven that Malaysia is proactive in achieving net-zero greenhouse gas emissions as early as 2050, contributing to the nation's climate change commitment under the Paris Agreement, similar to other

WAY FORWARD

5TH ISES 2022 CONFERENCE SUMMARY

1. Malaysia can learn from the United States and Europe on energy transition
2. US$378 billion investment is needed until 2050 for the energy transition. – IRENA
3. Green hydrogen and Carbon Capture Utilisation Storage (CCUS) need support and incentives to make usage cost-competitive
4. Existing renewable energy technologies such as biomass, hydro, and biogas must be facilitated to encourage technological development
5. Grid flexibility is the backbone of the energy transition, and battery technology can mitigate grid instability

DIRECTION OF ISES 2024

MyRER

- **Drive action to achieve energy sustainability for all**
- **Information and smart technology, policy framework and financing facilities as supporting initiatives**
- **Commitment and achievement towards 2025 & 2035 targets**

countries globally.

"Climate change is an undeniable reality, and if we want to manage its impact, we need to implement balanced and efficient approaches.

"Achieving a sustainable energy transition is an effort that can only work if all nations and stakeholders play their part. We should move ahead each with our responsibilities, but with the same goal in mind," YB Lukanisman said.

LARGEST SUSTAINABLE CONFERENCE

Apart from the plenary sessions and several deep-dive workshops (DDWS), the Summit also featured a large-scale exhibition space with 10 sustainable energy pavilions, the involvement of more than 20 educational institutions and three Science, Technology, Engineering and Mathematics (STEM) partners.

"I want to express my cordial gratitude to ISES 2022 partners and stakeholders for their unwavering support and readiness to collaborate."

YB Lukanisman also expressed his gratitude to ISES's strategic partners who made the Summit financially possible. SEM

STRONG POLITICAL WILL AND RIGHT POLICIES NEEDED

IRENA identifies electrification and energy efficiency as the main drivers for decarbonisation

THE Ukrainian crisis, energy market volatility and the consequent wave of inflation have highlighted the vulnerabilities of a centralised energy system based on fossil fuel. Further investing in and continuing to subsidise fossil fuels instead of renewables will only result in future stranded assets that will continue to wreak havoc on the environment and impact vulnerable communities across the globe.

"If we want to build a more sustainable and equitable future, this system must change, and it can change," said Francesco La Camera, Director-General of the International Renewable Energy Agency (IRENA), during his keynote address at the 5th International Sustainable Energy Summit (ISES) 2022.

Sharing the inputs from the agency, Francesco La Camera presented IRENA's World Energy Transition Outlook (WETO) 2022 and its Renewable Power Generation Costs. He also shared a preliminary overview of its work in ASEAN and Malaysia's Energy Transition Outlook.

"While renewable electricity is now the cheapest power option in most regions of the world, dominating new energy additions year-on-year, the energy transition is far from being on track. Anything short of radical and immediate action will diminish – and may eliminate – the chance of staying on the 1.5°C or even a 2°C path," stressed Francesco La Camera.

IRENA's WETO provides policymakers with the most realistic technological avenue and priority actions required till 2030 to meet the 1.5°C climate goal. The agency identifies that electrification and energy efficiency will be the main drivers for decarbonisation, enabled by renewables, green hydrogen and sustainable biomass.

Francesco La Camera

"The technologies we need to get to 2030 are available. What is required now is a strong political will and well-targeted policy packages."

PRIORITY ACTION MUST BE TAKEN BY 2030

Francesco La Camera, said achieving the 2050 climate target depends on sufficient actions by 2030. The coming eight years will be critical.

IRENA has identified priority actions, including:

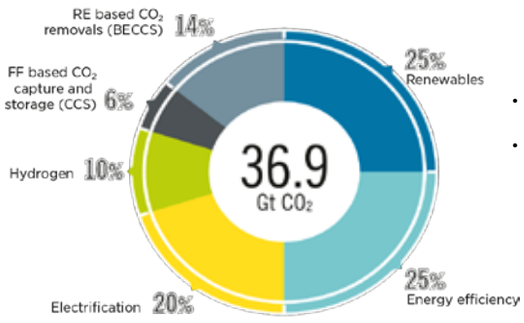
1. Coal should be completely replaced by renewables.
2. Fossil fuels should no longer be subsidised, and people should no longer invest in the fossil fuel supply.
3. The pace of renewable deployment must triple.
4. Efficient energy use across all sectors must increase through innovation and demand-side management.
5. The decarbonisation of end-uses sectors through electrification, green hydrogen and the direct use of renewables should be prioritised.
6. A comprehensive set of policies is needed to achieve the necessary deployment levels by 2030.

"Electricity generation capacity will need to expand drastically by 2030, with 76 per cent of the total capacity from renewables in 2030. Specific policies and measures such as renewable energy targets, tax incentives, and pricing mechanisms, among others, are needed to increase the deployment of renewables. Finally, an annual investment of more than US$1 trillion by 2030 is required.

"Decarbonisation of end-uses is the next frontier of energy transition, with many solutions provided, most notable is green hydrogen. The latest numbers suggest that the annual capacity installation of electrolysers is projected to grow from 0.5 GW in 2021 to 18 GW in 2026.

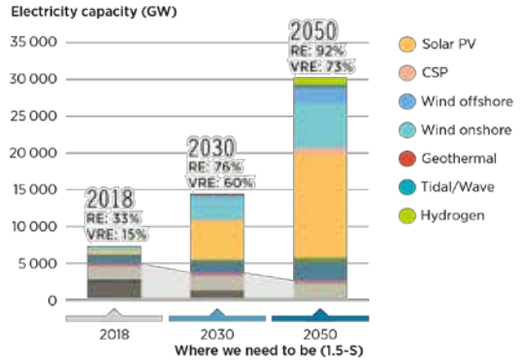
"Green hydrogen needs to move from niche to mainstream by 2030, and IRENA identifies that green hydrogen as an imperative technology to ensure we remain on a 1.5°C pathway. An installed capacity of at least 350 GW electrolysers by 2030 is needed. Policymakers should identify priorities for indirect electrification using

Renewables, efficiency and electrification dominate energy transition

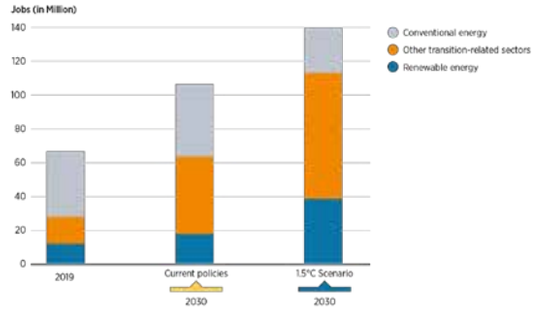


- Reducing emissions by 2050 through **six technological avenues**
- **90% of all decarbonisation in 2050 will involve renewable energy** through direct supply of low-cost power, efficiency, electrification, bioenergy with CCS and green hydrogen.

Renewables could decarbonise 90% of the power sector by 2050



An additional 85 million energy-transition related jobs could be created by 2030



- Newly created jobs requires a **scaling up of education and training programmes**
- Measures must be aimed at building an **inclusive and gender-balanced transition workforce**

green hydrogen with a focus on hard-to-abate sectors such as industry, shipping and aviation and devise strategies for its deployment."

CREATING JOBS AND STRENGTHENING ECONOMIC GROWTH

WETO shows that with a holistic policy framework, serious investment and international cooperation, the energy transition can be a means for job creation and economic growth. Francesco La Camera shared that IRENA's 1.5°C scenario would require investments of US$5.7 trillion annually until 2030.

"It also estimates that US$0.7 trillion in annual investments should be redirected away from fossil fuels to avoid stranded assets. But investments in the energy transition are a no-regrets strategy.

"It massively pays off, adding 85 million jobs worldwide in renewables and other transition-related technologies between today and 2030, more than offsetting the 12 million jobs lost in the fossil fuel industry. Newly created jobs require a scaling up of education and training programmes.

"Measures must be aimed at building an inclusive and gender-balanced transition workforce. Of course, the imperative of a just transition remains, which must be carefully managed to minimise risks in pursuit

ASEAN'S 1.5°C SCENARIO

DEMAND of electricity in ASEAN is projected to increase substantially four to five-fold by 2050. Phasing out coal power must be a top priority. Around 10 per cent of today's global coal power generation capacity is in Southeast Asia, with Indonesia being the world's largest coal exporting nation.

Francesco La Camera, Director-General of the International Renewable Energy Agency (IRENA) said: "Coal retirement, coupled with the continued expansion of renewables, is an important step to aligning with net-zero targets. In IRENA's upcoming 2nd Renewables Outlook for ASEAN, we have explored several pathways towards decarbonising the energy system in Southeast Asia."

"Solar PV will be the critical technology in a deep decarbonisation pathway across a 1.5°C scenario, where it will need to grow significantly to 800 GW by 2040, while wind to 60 GW. Variable Renewable Energy generation is expected to meet one-third of electricity demand. This means around 40 GW of Solar PV needs to be deployed annually until 2040.

"The need for clean dispatchable power in the 1.5°C scenario will need to be supported by battery storage, hydropower, and sustainable biomass-based generation. The regional interconnection will be key in enabling high shares of renewables."

According to him, large Solar PV and wind rollout in the region implies a significant need for flexibility (such as demand side management) and storage.

Therefore, the benefits of regional interconnection can play a crucial role in a highly interconnected power system, drawing out complementarities between some national systems, tackling issues of land constraints and domestic renewable energy potential to achieve high renewable energy integration.

"In Southeast Asia, for the period to 2050, US$6 trillion to almost US$8 trillion will be needed to boost the share of renewables in national energy mixes and to electrify and digitalise demand sectors. This is a tripling compared to the reference scenario – Planned Energy Scenario (PES).

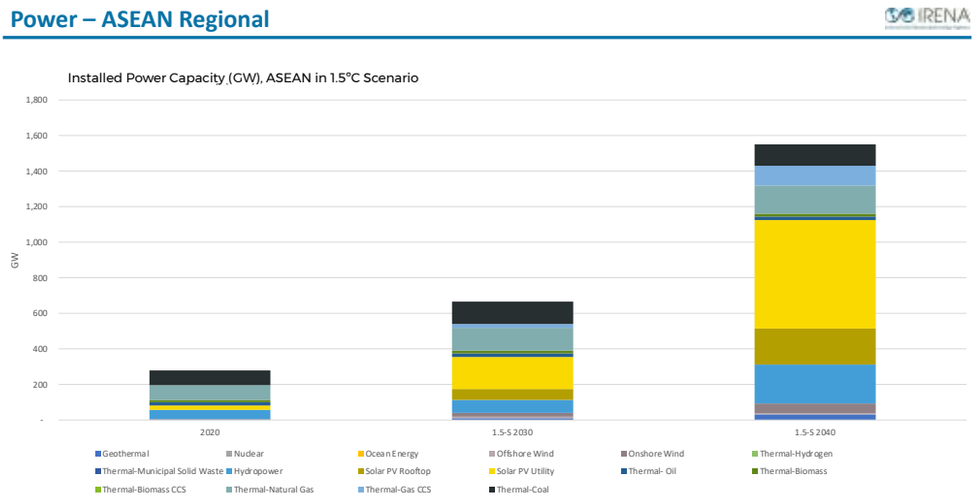
"Higher investment costs are balanced by substantial fuel cost savings, a growing key concern amidst the volatility of fossil fuel prices. To ensure Southeast Asia meets its net-zero targets, planning for enhancing national and regional integration would need to start today," he said.

of a more inclusive and equal world," he added.

MALAYSIA'S ENERGY TRANSITION

According to Francesco La Camera, IRENA has identified six key insights in its upcoming Malaysian Energy Transition Outlook report, which are:

- Energy demand growth in Malaysia is projected to double by 2050. With electrification & aggressive energy efficiency policies, a one-fifth demand reduction can be achieved in the 1.5°C scenario compared to the Planned Energy Scenario (PES).
- Renewable energy share grows to 16 per cent of total final energy consumption in 1.5°C from less than one per cent in 2018. In the power sector, RE is expected to reach 70 per cent of power capacity, achieving 51 per cent of Variable Renewable Energy generation share by 2050.
- Solar PV & hydropower will be Malaysia's key technology for renewable energy power acceleration. US$30 billion RE investments are required, or 1.6 GW Solar PV annual deployment until 2030. Sixty-seven per cent of new renewable energy is to be concentrated in Peninsular Malaysia.
- Key technology steps include accelerating EV uptake alongside its infrastructure and supply chain, expanding the current biofuels programmes, and paving the path for green hydrogen production.



- US$378 billion would need to be invested for the energy transition until 2050, with around US$183 billion in the power sector, grid and flexibility.
- High investments in RE & energy transition technologies will be offset by savings in total system cost, phasing out the need for fossil fuel & subsidies.

"To achieve 17 GW solar PV capacity by 2030, US$1.1 billion annual investments are required in solar PV technologies in the next decade, alongside hydropower investments across the region. Accelerated annual deployment of 1.6 GW of Solar PV is needed for the next decade.

"In this regard, the current Solar PV rooftop Net Energy Metering (NEM) programme in Malaysia's successes should be further expanded to encourage energy savings and create more job opportunities across the supply chain."

In the renewable energy sector, the energy transition could substantially boost employment in Southeast Asia, up from around 0.2 million to about 0.35 million by 2030 and approximately 0.5 million by 2050 under the 1.5˚C scenario (around a three-fold increase by 2050 from today's values). Many renewable energy jobs in a 1.5˚C scenario are in sustainable bioenergy and solar.

"On average, over the 2021-2050 period, the 1.5˚C scenario estimates 3.5 per cent higher GDP in Malaysia; 1.2 per cent more economy-wide jobs; and 53.0 per cent higher social welfare than those predicted under current policies." SEM

RENEWABLE ENERGY IS COST-COMPETITIVE

IRENA recently released its Renewable Power Generation Costs in the 2021 report. Its findings underscore that RE is cost-competitive and increasingly undercutting fossil fuel generation.

According to Francesco La Camera, Director-General of the International Renewable Energy Agency (IRENA), two-thirds of newly installed renewable power in 2021 had lower costs than the cheapest fossil fuel-fired option in the G-20. He said costs for renewables continued to fall in 2021 as supply chain challenges and rising commodity prices have yet to impact project costs fully.

"The cost of electricity from onshore wind fell by 15 per cent, offshore wind by 13 per cent and solar PV by 13 per cent compared to 2020.

"The benefits from renewables in 2022 will be unprecedented, given the fossil fuel price crisis. The new renewable capacity added in 2021 could reduce electricity generation costs in 2022 by at least US$55 billion.

"In addition to being cost-competitive, renewable energy can be deployed relatively fast compared to coal fire powered and nuclear plants and have the advantage of empowering vulnerable rural communities."

In 2021, the global weighted average Levelised Cost of Electricity (LCOE) of new utility-scale solar PV and hydropower was 11 per cent lower than the cheapest new fossil fuel-fired power generation option, and that of onshore wind 39 per cent lower."

Francesco La Camera stated that geothermal and sustainable bioenergy globally remain, on average, more expensive than the cheapest fossil fuel-fired option. However, these technologies provide a sustainable and secure supply and can be very competitive in non-Organisation for Economic Co-operation and Development (OECD) regions.

"Renewable energy costs across Southeast Asia experienced a similar trend. The cost for hydropower, utility-scale solar and onshore wind for projects commissioned in 2021 are increasingly below 0.05 US$/kWh.

"When considering the climate crisis, energy crisis and economic impacts of the Covid-19 crisis, renewable energy is now more than ever our best bet for a sustainable future," he said.

Nikmati Kedamaian, Lestarikan Kehidupan

Dapatkan panel solar di kediaman anda

2.62% setahun

Pembiayaan Peribadi-i

Pandu pulang kenderaan '*EEV*'**

2.15% setahun

Pembiayaan Kenderaan-i

Miliki kediaman berciri '*Green Homes*'

Skim Rumah Pertamaku

Margin Pembiayaan sehingga **110%**

Pembiayaan Perumahan-i

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NET-ZERO PATHWAY

Bursa Malaysia supports the transition to a greener economy

ENVIRONMENTAL Social and Governance (ESG) components are increasingly becoming critical considerations when it comes to investment and risk management decisions.

In December 2014, Bursa Malaysia Berhad launched the FTSE4Good Bursa Malaysia (F4GBM) Index to measure the performance of public-listed companies (PLCs), demonstrating strong ESG practices.

This introduction of the F4GBM Index is crucial in supporting the transition to lower carbon and a more sustainable economy as it actively promotes sustainability among Malaysia's PLCs.

Chairing the main plenary session during the 5th International Sustainable Energy Summit (ISES) 2022, prominent corporate leader Tan Sri Abdul Wahid Omar, Chairman of Bursa Malaysia Berhad, shared that the Paris Agreement signed by 196 parties at COP21 on Dec 12, 2015, set the goal to limit global warming to below 2°C, preferably to 1.5°C compared to pre-industrial levels.

These parties or countries will have to reach the global peaking of greenhouse gas (GHG) emissions as soon as possible to achieve net-zero GHG emissions by mid-century, i.e. by 2050 or 2060.

"We are glad Prime Minister Dato' Sri Ismail Sabri Yaakob announced that Malaysia is committed to being a net-zero GHG emissions nation as early as 2050 when he tabled the 12th Malaysia Plan

in Parliament last September 2021, ahead of the COP26 meeting in Glasgow in November that year.

"This makes Malaysia among the countries that contribute to more than 90 per cent of global GDP that commit to net-zero by mid-century. Such a commitment is also supported by businesses similarly committed to being net-zero in their operations under the Race-To-Zero initiative, which has been mooted for quite some time.

"At the same time, we can also see significant investments in ESG assets, whereby by 2025, we expect some 38 per cent of global investments to be in the ESG sector," said Tan Sri Abdul Wahid.

MALAYSIA'S NET-ZERO PATHWAY

Based on Malaysia's Third Biennial Update Report to the UNFCCC (2020), Tan Sri Abdul Wahid shared that 75 per cent of the country's GHG emissions were contributed by the energy and transport sectors, whilst 18.2 million hectares of Malaysia's forest cover were able to sequester some 259 MT CO2eq.

"Therefore, if we are going to achieve the net-zero target, the biggest impact would come from decarbonising the energy sector and preserving our forests," he highlighted.

He then stated that the Boston Consulting Group (BCG) and World Wildlife Fund-Malaysia (WWF) had released a report entitled Securing our Future: Net Zero Pathways for Malaysia on the side-lines of COP26 in Glasgow in November 2021. The report identified, among others, 10 suggested priorities for Malaysia's climate agenda.

"Let me highlight the top three priorities. First - Maximise and enhance Malaysia's natural assets; Safeguard our current forest cover as a comparative advantage; expand reforestation; safeguard biodiversity, preserve forest quality. And unlock the full potential of nature-based solutions for mitigation and adaptation.

"The announcement by YAB Prime Minister to increase forest cover in Peninsular Malaysia from 43 per cent to 50 per cent of the land mass is most welcome. This will be the Ministry of Energy and Natural Resources (KeTSA) initiative to plant 100 million trees, which I think is a great initiative to be undertaken.

"Second, it is very relevant for our discussion to decarbonise the power sector. To phase out coal; scale renewables with storage; leverage Malaysia's gas advantage to complement renewables as a transition fuel; invest in the grid; and scale up energy efficiency and demand side management.

"Previously, there were plans to build three coal-fired power plants in 2031, 2034 and 2037. This is now off the table.

"Third - Accelerate low carbon transportation. To scale public transport infrastructure; scale EV penetration by enabling the EV ecosystem (EV manufacturing, charging infrastructure, early incentives etc.); sustainable biofuels in heavy transport, aviation, maritime etc."

A DOABLE EFFORT

Tan Sri Abdul Wahid also shared that a study by WWF-BCG stated that Malaysia needed RM350 million to RM400 million in cumulative investments to achieve the Net Zero target by 2050. It sounds like a huge amount, but he said the figure represented less than one per cent of the country's annual GDP, making it an achievable target.

In addition to the FTSE4Good Bursa Malaysia (F4GBM) Index, Bursa Malaysia and FTSE Russell in July 2021 launched the FTSE4Good Bursa Malaysia Shariah (F4GBMS) Index to cater to investor demand for ESG and Shariah-compliant index solutions. The F4GBMS Index is designed to track constituents in the F4GBM Index that are Shariah-compliant.

Aside from supporting the low carbon transition, these Indices aim to support investors in making ESG investments in Malaysian listed companies, increase the profile and exposure of companies with leading ESG practices and encourage best practice disclosure. SEM

> **The announcement by YAB Prime Minister to increase forest cover in Peninsular Malaysia from 43 per cent to 50 per cent of the land mass is most welcome. This will be the Ministry of Energy and Natural Resources (KeTSA) initiative to plant 100 million trees, which I think is a great initiative to be undertaken.**
> — Tan Sri Abdul Wahid

WALKING ON THE SAME PATH

Malaysia and the United States aim to be carbon-neutral by 2050

MALAYSIA has set an ambitious target to become a carbon-neutral nation by 2050. With this goal in mind, the government has devised various programmes and initiatives to accelerate efforts toward attaining it.

US Ambassador to Malaysia Brian D. McFeeters, was a panellist at the main plenary session titled 'Empowering Energy Transition' at the 5th International Sustainable Energy Summit (ISES) 2022.

He expressed his excitement about Malaysia's carbon neutrality and climate ambitions and said the US also aspires to reach carbon neutrality by 2050.

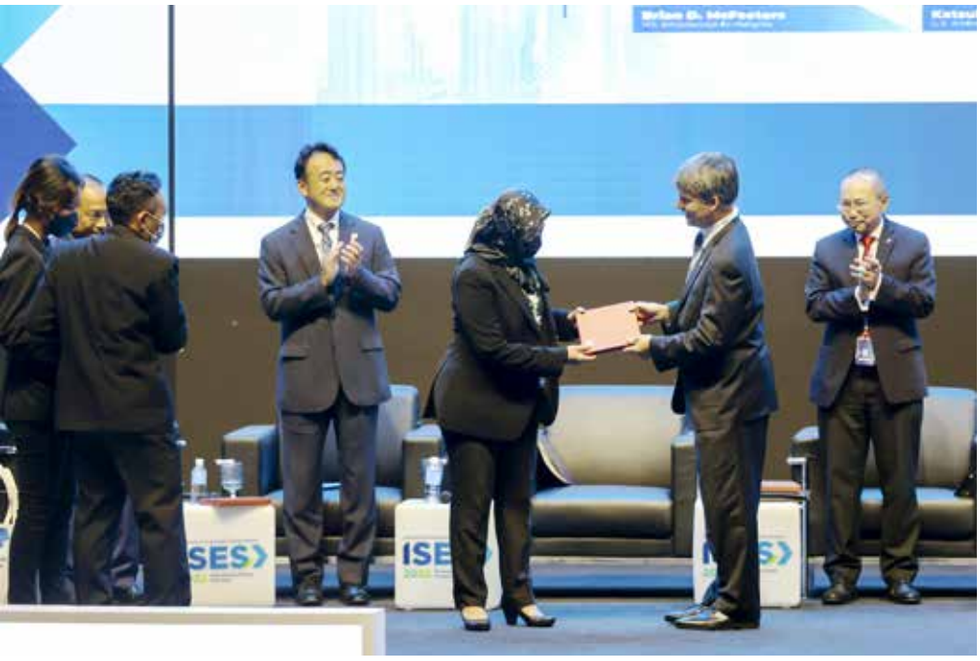
"We hope to be able to partner Malaysia on all the steps that are needed. The US is already partnering with Malaysia in several ways. For example, we have the power sector programme, which is technical cooperation between US and Malaysian experts.

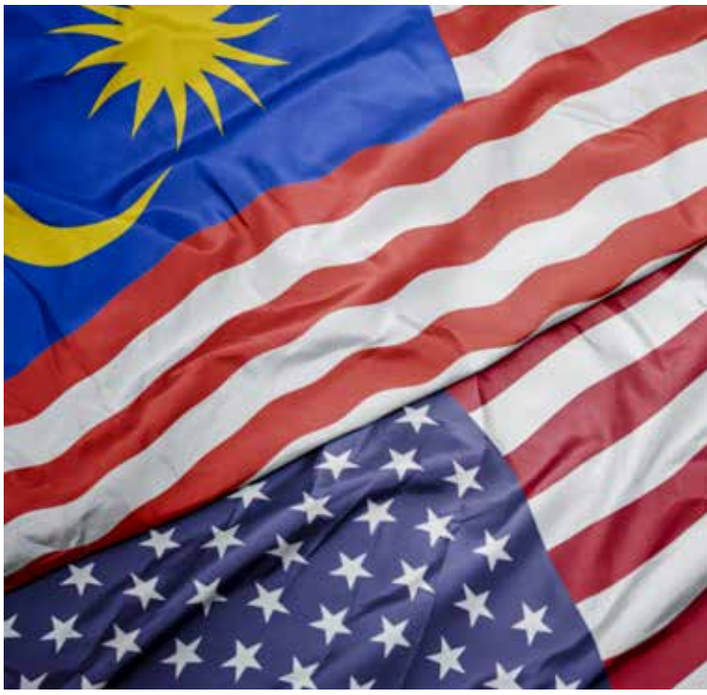
"They met recently to talk about how to make new regulations and new arrangements for a grid that can handle renewable energy. These are the technical questions that are involved with energy transition."

He shared that over 50 US electricity regulators had a virtual meeting with Malaysia's Energy Commission, the Ministry of Energy and Natural Resources (KeTSA) and Malaysian regulators to talk about the capacity and challenges of renewable energy and how to improve the national grid.

"We're looking for further cooperation in this area, with the same mechanism, working with KeTSA on how to attract a specific clean energy investment needed to replace diesel reliance in Borneo."

Speaking during the panel discussion, McFeeters said the US prioritised the





Brian D. McFeeters receiving a token of appreciation.

climate crisis – an international and national security issue. He stated that the country had an exciting and relevant development regarding renewables and climate actions.

THE US' AMBITIOUS CLIMATE LEGISLATION

According to McFeeters, the ability of the US to take meaningful action on the climate crisis got a considerable boost recently on Aug 16, when US President Joe Biden signed the Inflation Reduction Act, justifiably referred to as the Climate Crisis Bill.

"This is the US' most ambitious climate legislation ever passed. The essence is to use the US government policy to foster and reward the private sector's energy innovation. It includes US$369 billion in funding for climate and clean energy investments for over 10 years.

"The policies under this legislation, in terms of the incentives and tax breaks, are for 10 years, giving businesses a horizon to do some planning. This legislation is expected to stimulate a 10 times greater impact on climate than any other single piece of US legislation enacted, and there have been previous ones. The idea is to invest in the private sector's ability to innovate, build what is needed to put our climate goals within reach," he said.

The Inflation Reduction Act is a massive one that will enable the improvement of efficient commercial buildings and individual homes. Under the legislation, the electric vehicle charging infrastructure will be incentivised further. It also provides tax credits for wind, solar, nuclear energy, clean hydrogen, energy storage technology and carbon capture.

> **The US is with Malaysia as it goes forward. And we're happy to see that Malaysia is also treating the renewable energy transition as the priority it needs to be."**
>
> — Brian D. McFeeters

"We're sitting here in August 2022, not knowing precisely what the impact of this will be. The law will stimulate the development of new clean energy systems and promote investment in renewables.

"It should continue the trend since 2009. The incentives already put in place have driven the cost of wind and solar down by 70 to 90 per cent.

"The American Clean Energy Association projects that this law will result in 550 gigawatts of clean energy in the next decade. Now, that's about a 60 per cent increase over what's there. It is significant growth," shared McFeeters.

STRENGTHENING ENERGY SECURITY

Turning to the central issue of greenhouse gasses, he explained that the Inflation Reduction Act set the US on a path to meet the US goal of reaching net-zero emissions no later than 2050 and getting halfway there within this decade.

"Summing up, this law will help increase global energy security by developing clean energy manufacturing in the US. It will strengthen energy supply chains, accelerate innovation, and enhance our ability to support energy security in our partner countries, including Malaysia.

"As Malaysia goes forward on its journey to have all these innovations in terms of more electric vehicles, the system's efficiency, more solar, etc, in each of those areas, there's a potential for the US government's assistance in some measures.

"The US is with Malaysia as it goes forward. And we're happy to see that Malaysia is also treating the renewable energy transition as the priority it needs to be," he said. SEM

TAKING OFF TO A GREENER FUTURE

Malaysia doing well in climate mitigation measures, but much work needed in its adaptation

CLIMATE change is a global issue which affects people and the economy. Addressing the climate crisis goes beyond just mitigation, requiring countries worldwide to adapt. Malaysia must address energy transition and climate adaptation to move toward a greener and more sustainable future.

Lead Economist for Malaysia at the World Bank, Dr Apurva Sanghi said, the world must address three transitions for it to take off to a cleaner and greener future, including a just transition, the economic transition and the technology transition.

He agreed that renewables' costs had decreased significantly over the past few years. However, the issue most countries face is not the cost but the barriers to entry. He noted that the real technological breakthrough in renewables would be energy storage, e.g., solid-state batteries, pumped-hydro storage, etc.

Thus, public and private sector collaborations must be intensified in this

area to push energy transition to the next level.

"Low carbon technologies such as hydrogen, carbon capture utilisation & storage, and solar, mostly reside in the US, Europe or China. There are other countries too, but these are where they mostly reside," shared Dr Apurva during the main plenary session titled 'Empowering Energy Transition' at the 5th International Sustainable Energy Summit (ISES) 2022.

"So, what mechanisms should be in place to spur the diffusion to the rest of the world? The private sector will play a significant role once those mechanisms are implemented to distribute such technologies."

PROGRESS IN GREEN INITIATIVES

He said that Malaysia was doing well in mitigation, good in the sustainable financing space and could improve in adaptation.

Dr Apurva elaborated: "As for mitigation, it was mentioned that about 75 to 80 per cent of Malaysia's greenhouse gas emissions comes from energy and transport.

"This large share should make Malaysia's target more achievable because managing and controlling emissions from agriculture and industrial processes is much more challenging. So, in principle, the silver lining is that it should be easier to manage.

"We found that Malaysia has more than doubled its spending on mitigation

Dr Apurva Sanghi (right).

Dr Apurva Sanghi receiving a token of appreciation.

measures between the 10th and 11th Malaysia Plan. This is even more than neighbouring Philippines, Vietnam, etc. We also found that financing for renewable energy (RE) and energy efficiency (EE) is broadly appropriate.

"Indeed, Malaysia has exceeded these RE and EE targets despite being higher than every Asian country except Vietnam. Let's credit Malaysia's Sustainable Energy Development Authority (SEDA) for achieving these targets."

In broader terms, from policies, targets and outcomes, Dr Apurva believes that Malaysia has set the proper motion on mitigation. However, there are challenges. What might have worked in the past might not work in the future. Malaysia needs to have some reality check.

He noted that Malaysia was the third largest producer of solar panels. The country also has the region's highest vehicle ownership per capita due to its lack of adequate transport and cheap fuels. This scenario is not suitable for mitigation.

"A developed country is not a place where the poor have cars; it is a place where the rich use public transportation," he said, quoting a saying he heard when attending a conference a few years ago.

Dr Apurva highlighted that on top of the existing instruments and policies, adopting carbon tax and emissions trading systems could play an essential role in reducing emissions.

MALAYSIA'S GREEN FINANCING AND ADAPTATION

According to Dr Apurva, Bursa Malaysia Berhad and Bank Negara Malaysia (BNM) have done excellent work putting out quality and comparable data, which is crucial for investors to make informed decisions.

"BNM established the Climate Change and Principle-Based Taxonomy, planned to conduct Climate Risk Stress Testing Exercise, etc. So, all these initiatives are great. In this regard, Malaysia is doing well."

However, on the topic of adaptation, Dr Apurva pointed out the flood incident in Malaysia last December. The climate crisis in Malaysia goes beyond just the flood crisis, he said, as there are issues in the agriculture sector, plantation and coastline that make the country vulnerable to climate change.

"The climate cost is increasing for the people and the Malaysian economy. In the case of adapting to current and future climate shocks, this was a no-brainer. Primarily because, unlike mitigation, the benefits of adaptation are captured locally.

"We find that adaptation expenditure in Malaysia has remained unchanged between the 10th and 11th Malaysia Plan. Malaysia still hasn't put out the publicly available national adaptation plan.

"Therefore, I would stress that it's great that you're talking about energy transition and mitigation, but do not leave off adaptation because if you fail to adapt, you'll be forced to adapt to failure." SEM

VALUABLE EXCHANGE OF THOUGHTS

The plenary sessions at ISES 2022 evoked meaningful discussions on climate and the energy crisis

THE discussion on energy transition goes beyond the development of sustainable energy. It often also highlights the overall effort to tackle climate change which is crucial in building a climate-resilient electricity system. Such discussions also emphasise the many factors that will help accelerate just energy transition without compromising energy security, affordability, and reliability.

Realising the importance of those discussions, the 5th International Sustainable Energy Summit (ISES) 2022 included the related topics in its four plenary sessions. The speakers at the sessions, including ambassadors, energy players, professionals and academicians, shared their thoughts and experience with the conference participants.

More than mere discussions, the plenary sessions sought solutions that could be translated into substantial effort and practices. Each plenary session highlighted the critical components relevant to the energy transition, such as policies, innovations, financing, investment and low-carbon initiatives.

Main Plenary: **'Empowering Energy Transition'**

Chaired by Tan Sri Abdul Wahid Omar, Chairman of Bursa Malaysia Berhad, the main plenary session at ISES 2022 focused on the central theme of ISES 2022, 'Empowering Energy Transition.'

The session featured Ir Ts Abdul Razib Dawood, Chief Executive Officer, Energy Commission; Dr Apurva Sanghi, Lead Economist for Malaysia, World Bank; HE Brian D. McFeeters, US Ambassador to Malaysia; HE Katsuhiko Takahashi, Japan Ambassador to Malaysia; and HE Michalis Rokas, EU Ambassador to Malaysia.

They touched on new technologies in the power sector, such as energy storage, green hydrogen, carbon capture and utilisation storage. The Energy Commission revealed it was looking into future-proofing its regulatory framework to enable these technologies into the system. Aside from energy transition, the conference participants were also exposed to discussions on just transition and also transitions on economics and technology, and presented with the low-carbon practices and initiatives in the United States, Europe and Japan.

In realising the government's desire to become a net-zero carbon country by 2050, in line with the reports of the world's leading agencies and worldwide practices, Malaysia needs to focus on three main frameworks, namely:

I, Maximising and enhancing Malaysia's natural assets – preservation and conservation of forests.

II. The decarbonisation of the energy sector – stop building new coal plants, harness the benefits of Malaysia's gas, and invest in grid development & technology transition (hydrogen, carbon storage, energy storage).

III. Deploying low carbon transport technologies – electric vehicles (EVs) and charging facilities, clean fuels for ships & aircraft.

Plenary 1: **'Sustainable Energy-Low Carbon Development: Where Are We Now and The Way Forward.'**

The first plenary session was held on Day 1 of ISES 2022, discussing sustainable energy-low carbon development, probing further into where we are now and the way forward.

This session was chaired by Dr Renato Lima de Oliveira, Fellow at Institute for Democracy and Economic Affairs (IDEAS-Malaysia). The panellists were Datuk Amran Hafiz Affifudin, Executive Director Head, Energy, Iskandar, Leisure & Tourism, Khazanah Nasional Berhad; Ir James Ung, Group Chief Operating Officer, Sarawak

Energy Berhad; Mazuin Ismail, Senior Vice President, Corporate Strategy, PETRONAS; Dr Noor Miza Razali; Project Director, Energy Transition, Tenaga Nasional Berhad; and Dr Nuki Agya, Executive Director, Asean Centre for Energy.

The session participants were enlightened on ASEAN's energy transition plan and the importance of policies that enable it. The session also highlighted TNB's efforts to make the transition happen in Malaysia by adopting renewable energy.

The key takeaway from the session is that the increased technological advancements are required to ensure system availability and grid infrastructure upgrade to accommodate the entry and penetration of variable renewable energy and even higher EV technologies in the future. Grid availability will be vital in ensuring the energy transition's success and supporting renewable energy sources' contribution to the future energy mix.

Plenary 2: **'Financing Energy Transition: Unlocking Opportunities and Enabling Impact Investments.'**

Green financing is one of the most popular topics relating to energy transition. The topic was highlighted in the second plenary session of ISES 2022, which was chaired by Datuk Ir Ahmad Fauzi Hasan, Authority Member, SEDA Malaysia.

The panellists were Azmir Abdullah, Head of Group Sustainability, CIMB Malaysia; Prajakta Ajit Chitre, Infrastructure Finance Specialist, The World Bank; Shahazwan Harris, Head of Strategic Investments, Employees Provident Fund (EPF); and Siti Safinah Salleh, Chief Executive Officer, MyPower Corporation.

The session discussed the gap in investments in the sustainable energy space, challenges to financing the sustainable energy sector, stranded assets, and considerations needed before investing or financing renewable energy projects.

It can be concluded from the session that the Malaysian government needs to establish a policy framework to drive the acceleration of the energy transition. A review of energy subsidies is necessary to protect the people in overcoming the global energy crisis.

Targeted subsidies are one of the initiatives in rationalising energy subsidies to consumers. Malaysia needs accurate price signals to ensure the people have access to a modern energy system, fair competition, and sustainable development in supporting the country's energy policy development.

Plenary 3: **'Green Circular Economy Empowers Innovation & Prosperity'**

Focusing on sustainability, ISES 2022's third plenary session discussed how the green circular economy can empower innovation & prosperity. The session was chaired by Pam Lee Wen Ai, Executive Director, Advisory BDO Malaysia.

It featured Dr Adlansyah Abd Rahman, Associate Professor, Herriot-Watt University; Datuk Khairuddin Mohd Hussin, Chief Executive Officer, Concord Group; Ir Ts Dr Muhammad Mahadi Mohamad, Independent Non-Executive Director, KPower Berhad and Dr Rezal Khairi Ahmad, Chief Executive Officer of NanoMalaysia.

As the world's second-largest palm oil producer, Malaysia has vast potential to utilise bioenergy resources and improve environmental sustainability through the circular economy. The need to develop bioenergy technology is essential, but it is necessary to consider the main challenges in the energy sector, such as:

I. The high budget needed for the project
II. Having extensive knowledge and expertise about bioenergy and how to do related things smoothly and efficiently
III. Having sufficient sources and supply of raw materials and workforce

Discussing the concept of circular economy, it was noted that the basic idea of a circular economy is responsible consumption. It helps protect and future-proof the environment.

It can also be defined as the activity of recycling and upcycling. In addition, children need to be educated about the circular economy to make it part of their habit and lifestyle. SEM

INSIGHTFUL SHARING OF IDEAS

The Deep-Dive Workshops proved to be an excellent avenue for thought leaders to discuss sustainability and energy transition issues

THE Deep-Dive Workshops (DDWs) were part of the 5th International Sustainable Energy Summit (ISES) 2022's knowledge-sharing component which convenes leaders and global thinkers to share ideas on accelerating sustainability and the transition to clean energy.

This year's DDWs saw strategic partnerships in which esteemed organisations co-hosted selected workshops on the road towards sustainability and energy security.

For the first time, SEDA Malaysia introduced a DDW dedicated to youth empowerment in the energy transition agenda which featured youth thought leaders.

Co-host organisations included PETRONAS, Tenaga Nasional Berhad, the Australian High Commission, the British High Commission, Sarawak Energy Berhad, Huawei & JJ-Lapp, Cenergi-SEA Berhad, and Institute of Energy Policy and Research (IEPRe) - UNITEN.

The panel forum-styled workshops

comprised various topics surrounding the sustainable energy transition agenda, including clean energy, digital innovations, sustainable solutions, and transition impacts.

Some topics aligned with the Malaysia Renewable Energy Roadmap (MyRER), published by SEDA, which accelerates the energy transition agenda, especially in the post-Covid-19 economic recovery measures.

Here are the summary and key takeaways from each DDW session;

DDW 1: Clean Hydrogen: Fueling A Low Carbon Energy Future

- To increase the competitiveness of the entire hydrogen value chain, especially in the development and application of clean hydrogen, where there is an urgent need to establish a long-distance transport method with a choice of a liquid hydrogen carrier medium, ammonia or methylcyclohexane (MCH).
- Various studies are being carried out on carbon recycling, focusing on providing sustainable government policies to encourage the transition from fossil fuels to clean hydrogen.

DDW 2: Powering a Sustainable Future: Enabling Low Carbon Transition of Urban Energy System

- The transition towards a low-carbon city and urban energy system will be a public-private partnership as the transition to renewables is currently costly. In addition, demand management and energy efficiency play an essential role in realising low-carbon cities.

DDW 3: Managing High Penetration of Variable Renewable Energy (VRE) in the Electricity Grid

- The maximum level of penetration of RE changes into the Peninsular Malaysia grid network, based on the latest study from the Grid System Operator (GSO), is as much as 45 per cent by the year 2025. Among the primary enablers to ensure grid stability are as follows:

  I. Energy storage
  II. Solar restrictions
  III. Demand response

DDW 4: Navigating the Future of Energy: Carbon Tax and beyond

- A suitable business strategy for Malaysia to impose a carbon tax and at the same time subsidise fossil fuels to adopt a clean energy surcharge as carried out in several countries, including India.
- In adapting the carbon tax policy, among the relevant infrastructure and markets to be implemented is to provide different taxes according to the sector and design the carbon tax as revenue neutral where it produces many benefits for the country.

DDW 5: Hydropower: The Strategic Role of Hydro in Energy Transition

- Hydro energy is one of the main agendas in keeping the temperature increase below 2°C in addition to solar energy. Among the hydropower initiatives towards decarbonisation include:
  I. Implement co-firing with power plants with other greener energy such as hydrogen, ammonia or biomass.
  II. Hydropower project for generation and flood mitigation in Kelantan (300MW in 2027).
  III. An important enabler towards increasing the competitiveness of green hydrogen pumped hydro energy storage sources and the development of floating solar on hydropower stations.

DDW 6: Smart Energy Innovation via Digitalisation

- Digitalisation is the next frontier to help propel RE to the forefront, and it must be both hardware and software because they're not mutually exclusive but mutually dependent.
- Technology is the way forward to ensure a safe, reliable and efficient manner of managing the energy system.
- However, the energy industry is still lagging in digital transformation due to underdeveloped information technology applications and weak data network capabilities.

DDW 7: Bioenergy: Strategies to support Sustainable Business Models

- The Ministry of Environment and Water (KASA) and Ministry of Finance (MoF) are preparing Voluntary Carbon Markets (VCM) as a reference for international carbon credit transactions. The Domestic Level Carbon Trading Scheme (DETS), which will be done in phases, is to catalyse the carbon trading sector in Malaysia
- The advantage of using biogas from palm oil mill effluent (POME) as Bio-CNG provides added value in terms of economics and environment through:
  i. Improve the environmentally friendly image of palm oil
  ii. Adding value to POME Biogas
  iii. An environmentally friendly solution as a transport fuel

DDW 8: Youth Empowerment: Save for the Future

- Encouraging youth-adult partnerships to change traditional/conventional behaviour. Enacting two features of a practical development setting toward the energy transition is crucial.
- The energy transition plan must also be included in the education system to enlighten the younger generation.

DDW 9: Understanding ESG: Impact on Energy Transition

- Environmental, Social and Governance (ESG) principles are an essential component of energy investment in the future. Among the main challenges in mainstreaming ESG are the availability of data and frameworks, receiving funding and cross-industry collaboration. Four solutions for the energy transition in Peninsular Malaysia based on ESG principles are:
  i. Preparation of RE zone
  ii. Decarbonisation of industrial groups
  iii. Expanding the scope of energy efficiency policies
  iv. Promote self-use for distributed solar and green lifestyles

DDW 10: Carbon Capture Storage (CCS) – Solutions towards Sustainable Growth of Asia

- Government policy/assistance should ensure that the CCS project can be implemented successfully. Close cooperation between industry players and government and government-to-government (G2G) are among the key factors in creating a sustainable and viable market for CCS. The government must also provide appropriate and accurate policies for using CCS to produce conducive and competitive investments. SEM

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THE SUSTAINABLE WAY FORWARD

Countries need clear policies from the government to advance the energy transition

THE climate emergency has sped up the adoption of sustainable energy and low carbon development. To mitigate the effects of climate change which affect vulnerable lives, countries worldwide have come together and worked on solutions to limit global temperature rise. Some countries, including Malaysia, have carbon neutrality targets.

Whilst it just takes an announcement to set the goal, there is much work behind the shift towards a low-carbon economy. In the first of its plenary sessions, the 5th International Sustainable Energy Summit (ISES) 2022 highlighted the topic 'Sustainable Energy-Low Carbon Development: Where Are We Now and The Way Forward'.

The session was moderated by Dr Renato Lima de Oliveira, a Fellow at the Institute for Democracy and Economic Affairs (IDEAS-Malaysia).

NO ONE LEFT BEHIND

Dr Nuki Agya Utama, Executive Director, Asean Centre for Energy (ACE), said no one would be left behind in Southeast Asia's energy transition. Southeast Asian countries plan to achieve 35 per cent installed power capacity by 2035. Surprisingly, the region has reached 33.5 per cent renewable energy installed capacity. By 2040, it will have the world's 4th most significant energy demand.

"Southeast Asia does not want to be part of the problem, but rather to be part of the solution. Cambodia, Laos and Myanmar will contribute a lot to the energy mix in the future. The region will derive their energy in diversity and have borderless grid integration by having the ASEAN Power Grid," said Dr Nuki, emphasising the policy aspect.

Touching on how ACE supports the policy aspect, he shared about the ASEAN Interconnection Master Plan Study. The study on ASEAN Power Grid involves:

- The regulatory framework, economy part, grid code alignment, etc
- Government cooperation
- Carbon Gas Market - carbon trading
- Having affordable energy in the future

He said approximately 479GW will be in installed capacity by 2050, which converts to US$800 billion, requiring a lot of investment globally. The least cost optimisation study decreases the cost to US$300 billion. However, there is an increase in emission by 10 per cent.

GRID FLEXIBILITY IS KEY

Dr Noor Miza Razali, Project Director TNB Sustainability Pathway, Tenaga Nasional Berhad (TNB), said embedding renewable energy into the grid was a challenge to any utilities worldwide, and there are solutions in terms of technology.

She shared that TNB looked at the energy transition across the value chain - Generation (energy mix happens, capacity and dispatch), transmission, distribution network and customers.

"The challenges are an opportunity to look ahead and shift the value chain again. Energy transition had happened in Malaysia before, where Malaysia used to be powered by oil, then gas came in and then we had coal, and now we are transitioning to renewable energy.

"What remains intact is the system's security, stability, and reliability. So, we need to continue to serve our customers and the nation at large to maintain the security level and voltage reliability that we have been enjoying," she said.

With renewable energy becoming more prominent in the energy mix, Dr Noor Miza stated that grid flexibility would be the key.

"In terms of ramping up and down of the generation capacity, it has been well controlled, well managed over the years, but what's new here is that with more penetration of renewable energy, it now impacts the intermittency of supply.

"This is where flexibility comes in when fluctuation in terms of supply-side (generation) changes. It also ensures at a lower voltage level even when they are penetrated from the solar rooftop. It is one of the main initiatives now in Malaysia.

"This is about continuously investing in the grid, ensuring that the grid is adaptable, controllable, both from the centralised control centre system and the regional control centre."

CHALLENGES IN HYDRO PROJECTS

Ir. James Ung, Group Chief Operating Officer, Sarawak Energy Berhad (SEB), said Sarawak was suitable for large-scale hydropower plants. SEB has been committed to their business ambitions of 1.5 degrees, one of the earliest companies to do so.

Based on a sustainability study by the SEB team, the company is currently at 1.8/1.9 degrees. Widely powered by hydropower, Ung shared that solar power would also be introduced into Sarawak's energy mix soon.

"From the transition of hydrocarbons 10 years ago to what we are today, in terms of carbon emission reductions, we have correspondingly reduced 70 per cent of our hydrocarbons."

Hydro projects are socially challenging to execute. Commenting on this issue, Ung said: "As far as Sarawak Energy is concerned, we adopt the Environmental, Social, and Governance (ESG) principles when we develop our new hydro site, including our existing sites. We adopt the Hydropower Sustainability Assessment Protocol (HSAP), fulfilling the ESG requirements."

He said the company was working toward ensuring their ESG compliance and that their hydropower projects are sustainable.

SUPPLYING ENERGY TO THE WORLD

Mazuin Ismail, Senior Vice President, Corporate Strategy of PETRONAS, emphasised the effects of climate change and the energy crisis.

"In 2050, the world will be heading to US$170 trillion GDP by then. There will be a 10 billion population, 70 per cent of which will be urbanised. So, the power demand will increase. The key question is, how do we supply energy to the world without harming it? The energy transition must be effective, meaningful, progressive, and addressed in a tangible and orderly manner. It needs to be inclusive and just."

He noted that the oil and gas investment would remain in the future, but they will be cleaner and safer. Moving toward that, PETRONAS's operation efficiency at upstream parts has increased to 27.3 per cent. There's also a lot of push for decarbonisation where capability and competency must be improved.

PETRONAS recently established GENTARI, a company focusing on renewable energy, hydrogen and green mobility. PETRONAS also collaborates with TNB and Sarawak Energy in its renewables journey.

"There's a need for clear policy from the government, clear action from the industries and also help from our customers to be energy efficient."

ACCESS TO FUNDING

Datuk Amran Hafiz Affifudin, Executive Director Head, Energy, Iskandar, Leisure & Tourism at Khazanah Nasional Berhad, said looking into new investments was not tricky as renewables and decarbonisation were more mainstream now due to the 2050 target.

He shared that the main issue was how these projects get paid, and there's still a discussion on returns (fiscal or impact).

"Khazanah set aside RM6 billion but needs at least RM400 billion for the next 30 years. Impact fund is formed to tackle the current issues. Technologies are there (latest, complex), but the issue is how to fund the projects. For Malaysia, we need a lot of coordination with Southeast Asian countries."

He said there was a need for various external funding specific for energy transition and decarbonisation. Companies, stakeholders and government must come as one Malaysia Incorporation when trying to get funds externally.

From the session, it is learned that there's a critical need to work with other countries to achieve the climate agenda, and technological advancements are needed to ensure grid flexibility. Additionally, sustainability standards protocol must be incorporated in all implementations of projects. SEM

FACILITATING GREEN FINANCING

Financing energy transition unlocks opportunities and enables impact investment

ACCORDING to the Malaysia Renewable Energy Roadmap (MyRER), financing for renewables is obtained through equity participation in projects or debt such as loans from banks or bonds.

Projects involving renewable energy (RE) need high upfront capital investment, making financing an essential component to accelerate the energy transition. Therefore, improving access to green financing is crucial in the transition to renewable generation.

Realising the importance of green financing, the 5th International Sustainable Energy Summit (ISES) 2022 highlighted the topic in its Plenary Session 2.

The panel discussion titled 'Financing Energy Transition - Unlocking Opportunities and Enabling Impact Investments', featured panellists Azmir Abdullah, Head of Sustainable Finance, CIMB Malaysia; Shahazwan Harris, Head of Strategic Investments, Employees' Provident Fund (EPF); Siti Safinah Salleh, CEO, MyPower Corporation and Prajakta Ajit Chitre, Senior Infrastructure Finance Specialist, World Bank.

Datuk Ir Ahmad Fauzi Hasan, Authority Member, SEDA Malaysia, chaired the session.

To achieve the Paris Agreement goal of limiting global temperature rise to 1.5°C, the International Renewable Energy Agency (IRENA) estimates:

- The global renewable power sector has to double investment to over US$660 billion annually from 2016 through 2050.
- Southeast Asian countries would need US$490 million between 2025 and 2030, according to the International Energy Agency (IEA).
- MyRER would require US$12 billion to achieve 2035's 40 per cent renewable energy target from about 23 per cent today.

"The sustainable energy industry is capital intensive, fast evolving and shaped by new technologies, business models and policies. As such, ensuring the financial viability and bankability of sustainable energy projects and businesses is a big challenge to policymakers and industry players. Policy measures and financing ecosystems must continue to be improved to enable enhanced access to sustainable finance investment," said Datuk Ahmad Fauzi.

FUTURE TRENDS AND CHALLENGES

Prajakta Ajit said there were the same recurring themes regarding the challenges in investing in renewable energy, including project readiness, project bankability and credit quality of the off-takers.

She shared that the World Bank was always thinking about how to bridge the gap in investment matching, bringing more private capital into the sustainable energy space not limited to renewable energy.

She said the entity was doing it by categorising interventions into four pillars; reducing coal dependency, scaling up renewable energy, just transition and credit quality of the off-takers.

From the financial institution's perspective, Azmir Abdullah shared banks also considered the rising cost of materials when conducting credit assessments.

"However, the solutions are there. If the revenue is lost, there is now insurance to replace that part and insurance to cover the loss of revenue because we can't generate electricity for that time. Bank Negara Malaysia (BNM) has launched the low carbon transition facility, especially for SMEs."

THE COLLECTIVE GOAL OF EVERY STAKEHOLDER

Siti Safinah highlighted that providing reliable, affordable, clean energy must be the collective goal of all stakeholders, including investors. Among considerations in delivering reliable, affordable and clean energy, according to her, include:

- Policies that can balance how we generate electricity or power and channel new investments in the right direction in line with our energy transition plans.
- Understanding where to channel this capital/money.
- Understanding what equipment is required.
- How the clean energy generation is going to happen
- Distribution.
- Energy consumption.

"When we start looking at policies, we need to be clear. How do we, therefore, come up with the right structures, the right mechanisms, to incentivise the right kind of capital flows in each part of the strategy," she said, adding that the investment in human capital was also crucial.

Touching on stranded assets, she said companies must move on towards a different model where energy is procured in a more economically viable way, affordable, clean and reliable.

MORE DIVERSE POLICIES

Shahazwan Harris argued that policies for solar were well defined in Malaysia, and industry players must start thinking away from power purchase agreements (PPAs). He believes biomass, biogas, waste energy, and mini hydro should be given support to have much more diverse renewable energy policies.

"Policies that drive new technology will be key. Understanding how those policies provide sufficient risk/return. We can't expect everyone to have a pure guaranteed return because this is still a market that's driven by the private sector.

"So, the private sector needs to take risks, but policies by the government that drive capital in that direction, not necessarily guaranteed return, are what will do. And therefore, smart investors, smart players willing to understand the risk-reward, they will then place that capital." SEM

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CLEAN HYDROGEN FOR A LOW-CARBON FUTURE

Increasing policy support and decreasing renewable costs drive significant demand for clean hydrogen

GROWING concerns about climate change have pushed governments and industry players to commit to net-zero emissions as early as 2050. The world is today pivoting toward a low-carbon future.

Increasing energy efficiency, renewables and electrification will decrease emissions but it is still insufficient to reach full decarbonisation. Sustainable energy production is critical, and clean hydrogen is touted as the solution in the global transition toward sustainable energy and a low-carbon future.

Thus, increasing policy support and decreasin g renewable costs drive significant demand for clean hydrogen, particularly Green Hydrogen, which produces hydrogen by using electricity powered by renewable energy to split water into hydrogen and oxygen.

In this regard, more collaboration, partnerships and investments are expected for clean hydrogen, especially in hard-to-abate sectors, which include industrial feedstock, transport and power and industrial sectors.

The first Deep-Dive Workshop (DDW), 'Clean Hydrogen: Fueling a Low Carbon Energy Future', discussed the outlook, collaboration opportunities and cost for clean and green hydrogen.

It featured panelists Adlan Ahmad, CEO of Gentari Hydrogen Sdn Bhd (Gentari); Joseph Stroffolino, Director of Air Liquide's Energy Transition-APAC; Krishnan Narayanan, Senior Advisory of Bain & Company; and Yuichi Sotome, General Manager of Sumitomo Corporation.

The discussion was chaired by Abdul Rahim Mahmood, Head of Industry & Policy Advisory, Corporate Strategy, PETRONAS.

HYDROGEN MARKET AND DEMAND OUTLOOK

According to Adlan Ahmad, steady adoption was driven by early movers, influenced mainly by social and environmental reasons.

> **A lot of effort needs to be put in place. Hydrogen is expensive. Therefore, government policies must encourage people to switch from fossil fuel to hydrogen, which is slowly happening.**
> — Adlan Ahmad

"A lot of effort needs to be put in place. Hydrogen is expensive. Therefore, government policies must encourage people to switch from fossil fuel to hydrogen, which is slowly happening.

"From now until 2030, the focus will be more on policies, and at the same time, Gentari is trying to create the market."

Gentari, a subsidiary of Petroliam Nasional Bhd (PETRONAS), is a clean energy company focused on providing net-zero solutions to the world's most pressing sustainability issues.

He continued: "The hydrogen market will mature in several phases with inflexion in 2030-2040s, where there will be an increased rate of switching, led by switchers who can justify higher costs."

Higher costs are due to:

- Competitive hydrogen costs plus overall hydrogen benefits vs substitutes,
- Hydrogen ready equipment & technology becoming commonplace,
- Unified standards being used widely, and large-scale projects sanctioned.

Yuichi Sotome said: "The essential point is that when we think about the total demand from the worldwide basis for green hydrogen, it's pretty challenging to find the location to produce the renewable energy.

"When you think about renewable energy production, it's not a good fit for the big size ammonia production like energy supply which is not stable so it's a little bit difficult to manage huge land of chemical facilities. So, we should also be careful about the technical background."

Yuichi Sotome

Krishnan Narayanan

Joseph Stroffolino

Adlan Ahmad

Yuichi shared that PETRONAS, Tokyo Gas Co. and Sumitomo Corporation had agreed to conduct a feasibility study to establish the supply chain of carbon-neutral methane to Japan. The carbon-neutral methane will be produced in Sarawak using green hydrogen from renewable energy and carbon dioxide.

"Malaysia has a lot of potential. We must cooperate not only with private companies but also with the government. We need some good collaboration ties in the future."

Regarding Malaysia's role in the hydrogen economy, Krishnan Narayanan said: "Malaysia is well-positioned in the hydrogen economy to serve both domestic and international demand.

"Existing resources and capabilities can be leveraged to develop the hydrogen market further. However, more will be needed from policymakers and industry participants."

GREEN HYDROGEN COST NEEDS TO REDUCE

"When we look for hydrogen production, we are always looking for the lowest cost of renewable electricity," said Adlan Ahmad.

"We know it needs to be very low between 0.02 – 0.03 US$ per kWh. Only then will you be able to produce green hydrogen at the price point the customers are willing to accept."

Joseph Stroffolino said there should be incentives, like in the United States, to make green hydrogen cheaper than it is today.

"Incentives or a subsidy programme allows the company to maintain a certain financial return without passing the costs to the consumer, so the government absorbs it.

"So, it's an exciting approach. It's different from other carbon taxation environments like the EU. But here in the Asia Pacific and particularly in Malaysia, you will see not a very high regulatory environment yet, which I think allows looking at how it works in the EU and US.

"Japan has an innovation funding, quite a lot of it. And you can adopt these, you have the opportunity to see what's working and what's not, and I think that could be very interesting in Malaysia."

The panel agreed that it was imperative to have hydrogen at a competitive price to encourage switching to meet the decarbonisation objective. SEM

GOOD CARBON TAX POLICY THE KEY

While complicated to design, it's achievable in the long run

A CARBON tax reflecting the social cost of carbon is viewed as an essential policy tool to limit carbon emissions and is generally levied on large emitters.

The 'Navigating the Future of Energy Carbon: Carbon Tax and Beyond' Deep-Dive Workshop 4, chaired by Climate Governance Malaysia Founder Datin Seri Sunita Rajakumar, discussed the implementation and opportunities of carbon tax and policies, especially in Malaysia.

The panellists were Benjamin William Cashore, Professor, Lee Kuan Yew School of Public Policy National University of Singapore; Hadrien Vivek, Manager Carbon Trust; and Dr Kong Min Teck, Partner, Boston Consulting Group.

Hadrien Vivek said: "It is a suitable business strategy for Malaysia to impose a carbon tax and at the same time subsidise fossil fuels to adopt a clean energy surcharge as carried out in several countries including India."

In adapting the carbon tax policy, among the relevant infrastructure and markets to be implemented is to provide different taxes according to the sector and design the carbon tax as revenue neutral, where it produces many benefits for the country.

"Politically, carbon taxes have been difficult. However, if designed well, it will be politically beneficial as it can be made revenue neutral, so there is no actual cost to the government, and the growth can be maintained," said Benjamin William.

Benjamin William Cashore

Dr Kong Min Teck

Hadrien Vivek

While it is complicated to design a good carbon tax policy that benefits all parties involved, it is also achievable in the long run.

ENSURING BUSINESSES ARE PROTECTED

"With a carbon tax, we do not necessarily need to go full throttle right away. The experience in Singapore is that you can start with carbon tax but at a low level as a kind of experimentation to identify which groups are affected and understand how they are affected. As such, the policy packages can be developed and tailored when we want to," said Dr Kong.

Hadrien Vivek affirmed that Malaysia is likely to adopt a carbon tax across the energy sector but stressed that the government has to ensure businesses are protected to ensure their revenue and trade are not impacted.

He also said there are lots of different policy options and different pricing instruments that can be implemented. Thus, it is vital to take structured thinking and identify what the choice of mechanism that we are trying to adopt is.

Engaging with the public, including government, private, public and non-governmental bodies, is essential to gather information on challenges and problems before designing a carbon policy tax.

Dr Kong believed as the country transitions, it is possible to reach net-zero emission, and the policies are there to support the change.

"But more importantly, the transition adds jobs, and it adds to the country's GDP. However, a progressive implementation in the transition is key to ensuring resources, capital and technologies to re-orientate themselves. Because if the transition is sudden, it will be quite disruptive."

Benjamin William shared: "I've never seen more interest in climate change issues and to get this done than I have now across the world. Action is happening like never before.

"We must take this energy and excitement into policy designs and decarbonisation pathways." SEM

CREATING A SUSTAINABLE AND VIABLE MARKET FOR CCS

Malaysia is to tap into global funds to deploy Carbon Capture Storage

GOVERNMENTS and industry leaders are committed to achieving net-zero emissions by 2050. They have been actively supporting and investing in solutions, such as Carbon Capture Storage (CCS), which is part of many promising innovations toward managing carbon emissions and energy transitions.

PETRONAS's Strategic Research Corporate Strategy Head Aizal Baharuddin who chaired the Deep-Dive Workshop 10, titled 'Carbon Capture Storage (CCS) – Solutions towards Sustainable Growth of Asia', said: "Without delivering CCS, it will be it a bit more challenging to deal with cleaner energy solutions."

The panellists were Emry Hisham Yusoff, Senior General Manager, Carbon Management Upstream, PETRONAS; Dr Tomomi Yamada, Executive Officer, Vice President of Overseas Business Division II JAPEX; Prof Ho Hiang Kwee, Lead Technologist, National Climate Change Secretariat, Prime Minister's Office – Strategy Group, Singapore; and Michael Harrison, Senior Partner Energy, Resources & Infrastructure, Ashurst.

CCS is needed for Malaysia to achieve net-zero emissions by 2050, and Malaysia is to tap into global funds to deploy CCS, especially storage, as an environmental tool for reducing emissions.

Emry Hisham said: "We need collaborations between industries and government and government to government to establish a sustainable and viable market for CCS, to create this conducive investment for providing fit and right policies for CCS deployment.

"CCS are not cheap. Eighty-three per cent of the projects worldwide have obtained government assistance in financing, funding, and grant."

Government policy and assistance must be in place to ensure CCS projects can be successfully implemented. And more projects need to be implemented to decrease the cost of projects. At the same time, creative funding scheme provisions are required to realise the projects which are coming in.

Dr Tomomi Yamada

Michael Harrison

Emry Hisham Yusoff

Ho Hiang Kwee

According to Michael Harrison, governments must provide appropriate and accurate policies for using CCS to produce conducive and competitive investments.

Sharing on Singapore's CCS implementation, Prof Ho said: "Singapore will pursue R&D and foster public-private partnerships PPP, as well as develop international collaborations with other countries to develop and adopt carbon capture, utilisation and storage (CCUS) solutions."

The workshop also discussed the technology to ensure safe CCS storage over hundreds of years.

"We can do that using technologies already established in the oil & gas industry," explained Dr Tomomi Yamada. SEM

YOUTH A VITAL CATALYST

There is a need for our youth and future generation to embrace the concept of sustainability and energy transition

THE 5th International Sustainable Energy Summit (ISES) 2022 recognised the significant role of youths in tackling climate change and catalysing energy transition. The two-day Summit inspired active participation and empowered youths to be the agents of change toward sustainable energy and a net zero emission world.

ISES 2022 engaged youth thought leaders to share and demonstrate their role and potential in the energy transition agenda through the Deep Dive Workshop 8 (DDW) session entitled 'Youth Empowerment: Save for the Future'.

Led by Dr Hezri Adnan (Adjunct Professor, UNITEN / Executive Director Malaysian Institute of Economic Research), the workshop featured five key speakers:

- Prof Ir Dr Izham Zainal Abidin (Dean, College of Engineering, UNITEN);
- Nor Shahida Razali (Research Analyst, Malaysian Industrial-Government Group for High Technology (MIGHT));
- Prof Madya Dr Mohd Mursyid Arshad (UPM/Institute for Youth Research Malaysia, Ministry of Youth and Sport (KBS)); and youth representatives
- Eqram Mustaqeem Muhamad (Capacity Building Member, Malaysian-Youth Delegation for Climate Change); and
- Ilanur Elyssa Bart Aswain (President, Economics, Energy, Environmental & Sustainable (3ESC), UNITEN).

YOUTH AND ENERGY TRANSITION

"Climate change issues and sustainable energy transition plans need to be integrated into the school and higher education curricula and out-of-class programmes. This will enlighten the younger generation, get them more involved, and impact the community," said Dr Izham Zainal.

He also shared that concepts of environmental awareness, renewable energy, and alternative energy sources have been taught since pre-school.

"And that is a good thing because it means we already have the basic understanding of these elements. So, now we need to enhance it further so that our youth and future generation will embrace the concept of sustainability and energy transition."

Ilanur Elyssa said youth representation created an organisation's diverse and agile talent pool. It is an added value because they bring in fresh and out-of-the-box ideas and new solutions to complex problems.

She added that the sustainability-themed clubs in campus settings provide an avenue for members to collaborate in executing activities within academia. The 3ESC Club in UNITEN, which Ilanur Elyssa presides on, is one example, and it promotes green construction via its STEMBox Initiatives.

EMPOWERING YOUTH TO ENHANCE PARTICIPATION

Youths are a critical group that is effective in formulating, adapting, mitigating, and implementing energy transition decisions. Youth empowerment is, therefore, essential to increase participation in the formulation of climate change and energy transition policy.

"Youth participation is important for us to intensify youth advocacy movements in the climate action scene. Not only should a token youth quota be implemented at the meeting table, but their inputs should be heard and given legitimate consideration. This can only happen if solid communication and partnerships are built between governments and youth," said Eqram.

Dr. Mursyid pointed out that the Malaysian Youth Policy, established in 2015, promoted positive youth development in green movements and sustainable energy sectors in terms of knowledge, skills, and external support from the environment and community.

"It increased the involvement of responsible young citizens on green awareness and energy transition.

"Young people need to be the agent of change and get involved in the decision-making process," said Dr. Mursyid.

Nor Shahida shared that the MIGHT-UNIDO Smart Grid project provided a platform to empower youths towards energy transition and the project's Technical Training programme helped develop youth human capital.

"We received around 50 per cent of youth

Dr Izham Zainal

Dr Mohd Mursyid

Ilanur Elyssa

Eqram Mustaqeem

Nor Shahida Razali


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> **Climate change issues and sustainable energy transition plans need to be integrated into the school and higher education curricula and out-of-class programmes. This will enlighten the younger generation, get them more involved, and impact the community."**
>
> – Dr Izham Zainal

participation, and we introduced them to the current technologies and innovations related to the Smart Grid Project. I believe this will nurture youth talent as enablers towards energy transition."

She added that MIGHT, since the launch of the Smart Grid Project in September 2020, had actively conducted various awareness activities for youths, such as the Smart Grid Virtual Run 2021, Smart Grid talk show, and Smart Grid competitions for school children.

ENGAGING STUDENTS

Besides the DDW 8, ISES 2022's exhibition also successfully garnered youth participation from more than 20 educational institutions and three Science, Technology, Engineering and Mathematics (STEM) partners.

Youth visitors and students from participating secondary schools and higher learning institutions explored and interacted with the exhibitors and learned about sustainable energy development and the energy sector landscape, as well as the transition efforts and latest innovations.

The exhibition hall also featured interactive activity space by the STEM partners; Petrosains, Techlympics and the Malaysian Association of Creativity & Innovation (MACRI), which included sustainable energy explore race, robotics showcase, drone competitions, and STEM-based problem-solving games and activities.

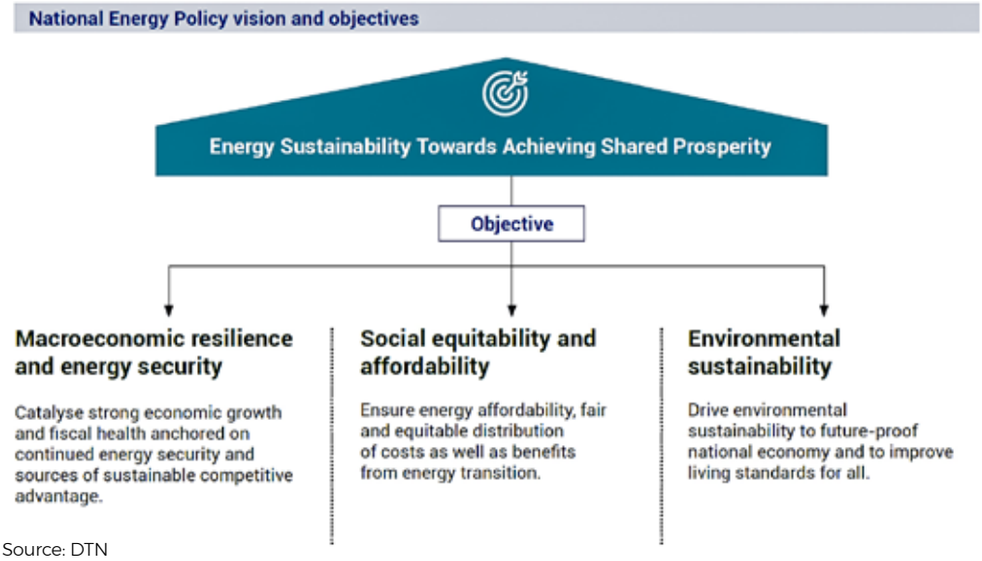
Apart from that, ISES 2022 also featured two SEDA SEED Ambassador Talk sessions at the mother booth's Main and Hotspot areas.

SEDA Malaysia engaged schools and students through the SEDA SEED Ambassador Programme to help create awareness of renewable and sustainable energy and increase interest in STEM subjects and fields among the younger generation.

Student ambassadors Eimaan Daniel and Muhammad Zafir Khan from SM Sains Alam Shah, Cheras shared their Solar Energy Ideas for their school. Meanwhile, student ambassadors Prisha Kumaran and Mira Praveena from SMK Raja Mahadi Klang shared their experience at the SEDA SEED Programme 2021. SEM

A HOLISTIC PLAN FOR MALAYSIA'S ENERGY SECTOR

The implementation of Low Carbon Nation Aspiration under the National Energy Policy 2022-2040 will increase Malaysia's GDP to RM13b per year



Source: DTN

THE energy sector has always contributed significantly to the Malaysian economy. It acts as a catalyst for Malaysia's overall gross domestic product performance (GDP) by becoming the key enabler and driving factor of production for numerous major sectors in the country.

A future-proof and competitive energy sector is crucial as it possesses positive spill-over effects, which are beneficial for Malaysia to escape the middle-income trap. A significant transformation in the energy sector will significantly improve people's socioeconomic and quality of life.

Launched on Sept 19, 2022, the Dasar Tenaga Negara (DTN) or National Energy Policy, 2022-2040 strategically charts the way forward and outlines key priorities for the energy sector in the coming years. It will position the energy sector as a catalyst for socioeconomic development and harmonise existing energy-related policies to clarify the sector's future direction.

The DTN's progressive Low Carbon Nation Aspiration will also ensure that the energy sector fully capitalises on the opportunities brought about by the energy transition and ensure that the industry is future-proof and strategically positioned to meet subsequent challenges.

It establishes the vision of energy sustainability towards achieving shared prosperity, reflecting the role of energy as a significant contributor that enables other critical sectors of the economy to thrive on the country's economic development.

To realise this vision, progress needs to be made in three DTN objectives - enhancing

macroeconomic resilience and energy security, achieving social equitability and affordability, and ensuring environmental sustainability.

DTN also highlights the critical role of technology in exploring opportunities in areas along the energy transition, such as renewable energy, low carbon mobility and hydrogen. Priorities for national energy sector technological development should be determined to provide stakeholders with guidance.

These will guarantee a coordinated and integrated approach to the energy transition. The technology focus areas, among others, should be oriented to where Malaysia has opportunities for long-term competitive advantage and value creation for the country, including sectors such as oil & gas, hydroelectric, solar ecosystem, bio-based energy, energy efficiency smart devices, low carbon mobility and hydrogen.

LOW CARBON NATION ASPIRATION 2040

The development of Low Carbon Nation Aspiration (LCNA) 2040 is based on the existing strategies in the energy sector. The Government will undertake a more proactive role by identifying and developing selective leadership in the areas of the low carbon economy, which will be aligned with the areas where the country has high potential and competitive advantage.

The Government will provide appropriate incentives to attract investments in low-carbon technologies development. This initiative will enable the country to take the lead in areas with great potentials, such as renewable energy, energy storage, low-carbon mobility, hydrogen economy, etc.

Impact of Low Carbon Nation Aspiration 2040

Low Carbon Nation Aspiration 2040	Impact of implementation	
Emphasis on low carbon **policies and investments to increase adoption and pursue selective leadership in low carbon sectors**, such as: • Endeavour to **no new coal power plant** amid increasing renewables share • Provide financing and incentives to drive **energy efficiency practices** to meet the targets • Incentivise **adoption of EVs**, increasing public transport modal share, and fuel economy standards	**Contribution to GDP** (RM/year)	**13 billion**
	Total job creation	**207,000**
	CO_2 emissions reduction	**will be aligned with LT-LEDS targets***
	Energy self-sufficiency	**48% to 72%**
	Fiscal outlay (RM/year)	**4.3 bilion**
	Total Investments (RM/year)	**9.2 billion**

*To be finalised by the Ministry of Environment and Water by end-2022

Source: DTN Project Team Analysis

Implementation of LCNA 2040

Twelfth Plan (2021-2025)

- Improve rural electricity supply to achieve 99% coverage
- Implement step change in industry energy efficiency (EE) through enforcement of Energy Efficiency and Conservation Act (EECA), energy audits and Minimum Energy Performance Standards (MEPS)
- Increase usage of smart meter and smart grid as well as upgrade grid
- Improve Sabah power supply reliability
- Improve fuel economy standard for vehicle

Thirteenth Plan (2026 – 2030)

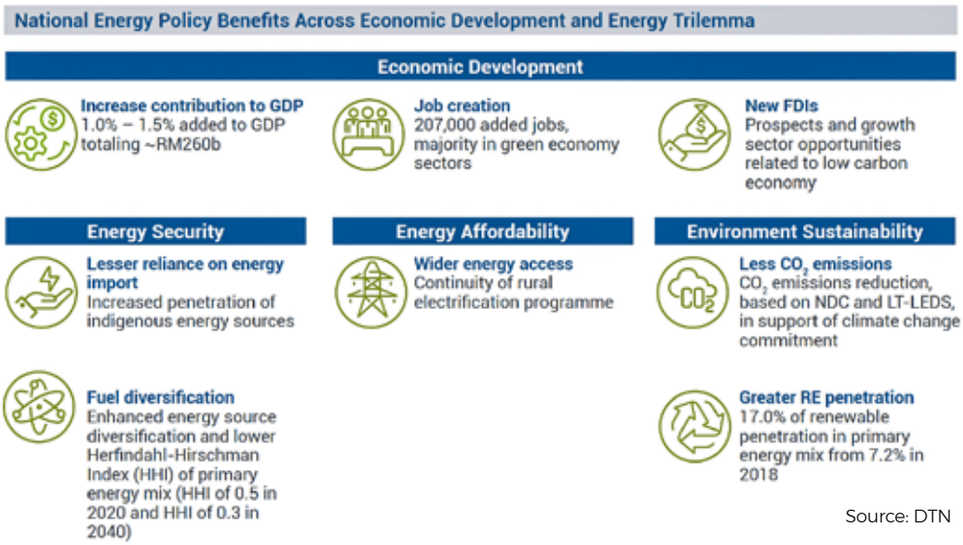
- Grow gas-based petrochemical hubs
- Thrive Third-Party Access (TPA) gas market, investments in regasification terminal (RGT) for energy security
- Increase upstream investments to develop deepwater, marginal and sour gas fields[1]
- Enhance OGSE players capacity through consolidation and international participation
- Phase down broad-based energy subsidies, move to market-based pricing
- Capture growth with LNG uptake in marine bunkering

Fourteenth & Fifteenth Plans (2031 – 2040)

- Thrive domestic EV ecosystem, with at scale EV penetration
- Adopt large scale energy storage for RE
- Implement pilot and market entry programmes of hydrogen as well as next generation bioenergy
- Establish globally competitive hydrogen export hub in Sarawak
- Enhance energy efficiency with digital technology adoption
- Capture growth opportunities of biofuels in marine and aviation sectors

1. Fields with high carbon dioxide (CO_2) and hydrogen sulphide (H_2S) contents

Source: DTN



Source: DTN

The LCNA 2040 seeks to meet several energy-related objectives, including electrical and non-electrical components in transport, industrial, residential and commercial. It aims for a higher level of urban public transport modal share, electric vehicle (EV) penetration, the share of alternative lower carbon fuels in heavy vehicles and marine transport and enhanced energy efficiency in industrial, commercial and residential sectors. It also calls for no new coal power plants and a higher level of renewable energy penetration in the installed capacity and total primary energy supply (TPES).

DTN, through LCNA 2040, aims to achieve nine selected targets by 2040, including:

- 50 per cent of urban public transport modal share
- 38 per cent of EV share
- B30 mixed fuel as the alternative fuel for heavy transport
- 25 per cent of Liquefied Natural Gas (LNG) as the alternative fuel for marine transport
- 11 per cent of industrial and commercial energy efficiency savings
- 10 per cent of residential energy efficiency savings
- 18,431 MW total installed capacity of renewable energy
- 18.6 per cent of coal in installed capacity
- 17 per cent of renewable energy in TPES

IMPACT AND IMPLEMENTATION OF LCNA 2040

In line with DTN's vision, LCNA 2040 is projected to impact the country's economic development positively, leading to higher GDP and job creation. It will also encourage the upcoming green foreign direct investment (FDI) surge into the nation. Improvements are also anticipated along each energy trilemma's dimensions, including carbon emissions reduction, in line with Long-Term Low Emission Development Strategies (LT-LEDS) to achieve net-zero GHG emissions by 2050.

The implementation of LCNA 2040, among others, will expand Malaysia's GDP growth by RM13 billion a year and create 207,000 jobs. Its implementation is supported by various actions, which will be executed within the timeframe of the DTN to achieve the selected targets.

Key actions and targets for the DTN were set based on short-term (2021-2025), medium-term (2026-2030), and long-term (2031-2040) horizons to ensure effective implementation. These include enhancing the energy sector governance and implementing other initiatives identified in the DTN.

To ensure the smooth implementation

DTN'S STRATEGIC THRUSTS AND ENABLERS

FOUR strategic thrusts and five enablers have been identified to realise the DTN vision and ensure its successful implementation. Supported by 12 strategies and 31 action plans, these strategic thrusts and enablers are designed from the situational analysis of Malaysia's current position, its socioeconomic aspirations and the global energy transition megatrends.

The strategies and action plans are created to provide balanced benefits in achieving DTN's main objectives following the government's financial capability. Ministries and agencies must periodically review and refine the measures to ensure that the impact on the government's financial position is managed and rationalised accordingly.

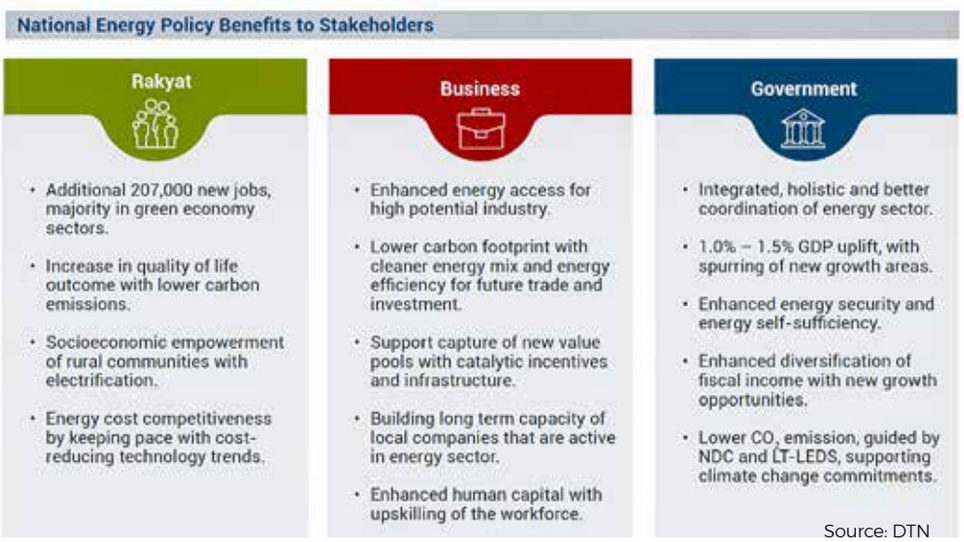
Strategic Thrust 1 is to optimise energy resources to stimulate sustainable socioeconomic growth. The objective is to leverage and optimise the use of energy resources to support economic development and equitable distribution of benefits to the rakyat. The strategies under this thrust include optimising the position of petrochemicals, optimising country value-add in the energy sector and enhancing demand-side management.

Strategic Thrust 2 focuses on capturing growth, market opportunities and cost advantage for the economy and people. It aims to create benefits for both the economy and the people by capturing the benefits of rapidly evolving technology and global policy megatrends driven by energy transition and nurturing energy-related innovation to unlock new value pools and growth opportunities.

Capturing domestic market opportunities, complying with and capturing market opportunities from international regulations and optimising the power generation mix are strategies laid out under this second strategic thrust.

Strategic Thrust 3 enhances the energy sector's contribution towards environmental sustainability. It targets to improve the energy sector's contribution to environmental sustainability in supporting the country to meet international climate change obligations and ambitions.

Considering current global ESG investing trends, the strategic thrust also ensures the Malaysian economy is competitively positioned and



Source: DTN

of the LCNA 2040, private and public investments must be made promptly to facilitate the transition. The government needs to establish catalytic incentives and supportive regulatory frameworks to spur investments and transition in low-carbon economy growth ecosystems. Additionally, it is essential to keep an eye on how technology and legislation are developing to reassess the targets in the future.

BENEFITS OF DTN

The country will reap significant benefits from the prompt and efficient execution of the DTN initiatives. It includes economic development benefits such as increased GDP, job creation and FDI inflows. A wide range of stakeholders, including companies in the energy sector and supply chains, energy-intensive industries and broader economic impact through induced multiplier effects, will also benefit from the economic development. On top of the economic growth, benefits are also expected along all dimensions of the energy trilemma over time.

DTN's economic prospects will improve social outcomes for Malaysians by fostering balanced regional development and securing future-proof jobs. The combination of these benefits is expected to position the energy sector as a catalyst for socioeconomic sustainability to achieve shared prosperity. These benefits will be shared by many stakeholders, including the rakyat, businesses and the government.

To realise the objectives of DTN, effective and timely implementation of related initiatives must be prioritised. Given the high degree of the energy sector's interconnectedness with other sectors and multiple energy-related stakeholders, the implementation of DTN will need to be effectively coordinated to ensure optimised impacts.

In this regard, the National Energy Council will be established to steer and guide energy sector strategic decisions. This establishment is essential in ensuring the strong accountability of relevant ministries and agencies in implementing DTN initiatives.

Prime Minister Dato' Sri Ismail Sabri bin Yaakob will chair the Council, to be represented by all ministries and agencies related to the energy sector, with the Economic Planning Unit, Prime Minister's Department (EPU) being the Secretariat.

The EPU will review DTN every three years, considering the latest internal and external developments. Opinions of energy-related stakeholders from the public and private sectors, including civil society organisations, will be accommodated to enhance further and refine the DTN initiatives. SEM

Source: DTN

continues to be attractive for foreign investments by implementing strategic enablers and enhancing carbon footprint tracking.

Strategic Thrust 4 will ensure energy security towards fiscal sustainability. This fourth strategic thrust aims to contribute to fiscal stability by optimising fiscal inflows and outflows in the energy sector while ensuring the energy supply's continued security. The strategies under this thrust consist of conducting rationalisation of energy subsidies, providing smart and timely investments, and establishing energy supply boundary conditions.

On top of the strategies of these four strategic thrusts is a cross-cutting strategy with three Action Plans. This strategy aims to enhance governance and increase energy sector competitive advantage and value-add whilst ensuring a fair energy transition.

These strategic thrusts are driven by Actions plans or initiatives and supported by five enablers: Governance, Policy and Regulation, Financing and Investment, Human Capital and Capabilities and Technology and Infrastructure.

ABUNDANT BUSINESS INTERACTIONS AND KNOWLEDGE-SHARING SESSIONS

5th ISES 2022's Exhibition, Pocket Talk sessions and MoUs were a prominent feature of the Summit

AS a knowledge-based platform focusing on renewable energy and energy efficiency, the 5th International Sustainable Energy Summit (ISES) 2022 emphasised two main components– knowledge-sharing sessions and business interactions.

ISES 2022's knowledge-sharing sessions through conference and pocket talks received overwhelming response from the participants while its business interactions component also demonstrated to be a proven success. These business interactions, conducted via business networking sessions and a large-scale exhibition featuring 40 exhibitors, led to around 76 potential business deals.

5th ISES 2022's exhibitors ranged from government-linked companies (GLCs), private companies, financial institutions, universities, and other agencies keen to promote and pioneer the country's sustainable energy and energy transition agenda.

GOOD RESPONSE

Gracing ISES 2022's mother booths were the Ministry of Energy and Natural Resources (KeTSA), Sustainable Energy Development Authority (SEDA) Malaysia and the Energy Commission (EC).

Prominent exhibitors were national utility giant Tenaga Nasional Berhad (TNB), national oil corporation Petroliam Nasional Berhad (PETRONAS), Cenergi SEA Bhd, Concord Renewables Energy Sdn Bhd, Malakoff Corporation Berhad, OHP Ventures Sdn Bhd, MBSB Bank Berhad, Sarawak Energy Berhad, ILSAS – TNB and the Technical Development and Facilitation (TECH) Division, SEDA Malaysia.

The Energy Efficient Pavilion was spearheaded by SEDA Malaysia Technical Development and Facilitation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(TECH) Division and featured six agencies, namely the Japanese Energy Service Companies (MAESCO), the Malaysian Industry-Government Group for High Technology (MIGHT) and FRIM Inc.

The exhibition attracted 5,529 visitors, and also highlighted youth participation and featured Petrosains, Techlympics, and Malaysian Association of Creativity & Innovation (MACRI). In addition, 12 schools and 14 higher education institutions participated in the event.

KNOWLEDGE-SHARING SESSIONS ATTRACT KEEN INTEREST

Besides the exciting exhibition, 5th ISES 2022 featured Pocket Talk sessions covering various topics surrounding renewable energy, the environment, electric vehicles (EV), sustainability, investments, energy efficiency and many more.

One of the speakers at the Pocket Talk sessions was Ts. Mohd Khairil Rumli, Analyst, Energy Efficiency & Renewable Energy Division at the Malaysian Green Technology And Climate Change Corporation (MGTC). He spoke on Energy Management Gold Standard (EMGS) under the ASEAN Energy Management Scheme (AEMAS).

Ir. Tengku Kahar Muzaffar, Vice President, Strategy and Special Projects Office of NanoMalaysia, also made a presentation during the session, touching on national EV and hydrogen programmes and initiatives under NanoMalaysia Berhad.

Representing the Concord Group, Farouk Aizat, the Corporate Affairs Manager of the group, also participated in the session, elaborating on the development of the Malaysian government initiatives in promoting the biogas industry.

Ahmad Syihan Abdullah, Manager, Business Development of Cenergi SEA Berhad, was another participant at the Pocket Talk session. He presented a case study entitled "Integrated Solutions for Energy Efficiency & Sustainability".

FORGING STRATEGIC COLLABORATIONS

5th ISES 2022 also became a platform for companies and agencies to exchange Memoranda of Understanding (MoUs), which indicate a commitment to future strategic cooperation. A total of nine MoUs were exchanged at ISES 2022, five


MAJLIS PERTUKARAN
MEMORANDUM PERSEFAHAMAN (MOU)


MAJLIS PERTUKARAN
MEMORANDUM PERSEFAHAMAN (MOU)


MAJLIS PERTUKARAN
MEMORANDUM PERSEFAHAMAN

of which involved SEDA Malaysia.

The MoU signing between SEDA Malaysia and the Japanese Business Alliance for Smart Energy Worldwide aims to promote and develop the Zero Energy Building Programme. At the same time, the MoU exchange between SEDA Malaysia and Kuala Lumpur City Hall (DBKL) focuses on matters related to sustainable development between both parties.

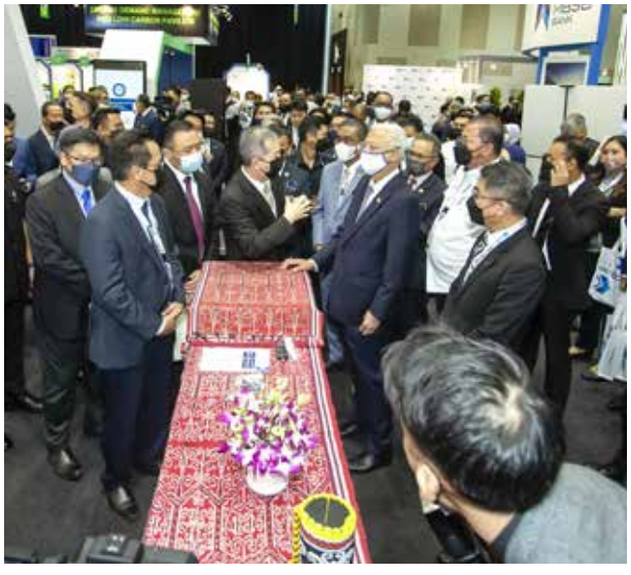
MoUs were also signed between SEDA Malaysia and the Pahang Skills Development Centre, Universiti Kuala Lumpur British Malaysian Institute (Unikl BMI) and Universiti Teknikal Melaka (UTeM) Malaysia to become training partners for competency and renewable energy courses.

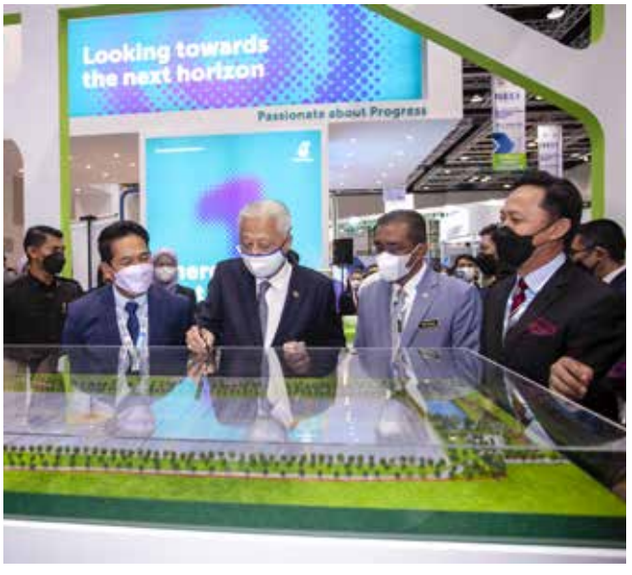
5th ISES 2022 also witnessed the exchange of MOUs between Renueco Bhd and Menteri Besar Kedah Incorporated and Smart Sabah RE Sdn Bhd, which focuses on the development of biomass and small hydropower plants in Kedah and small hydropower plant development in Sabah, respectively.

Renueco Bhd also inked an MoU with Menteri Besar Kedah Incorporated and First Solar Malaysia Sdn Bhd to enhance project implementation, with the combination of skilled workforce, technology and experiences from all three parties, in the floating solar project.

OHP Ventures Sdn Bhd, Pinggao Group Co Ltd and Myriad Prolifique Sdn Bhd exchanged an MoU for the development of small hydropower plants in Malaysia. SEM

EXHIBITION SEES KEEN INTEREST



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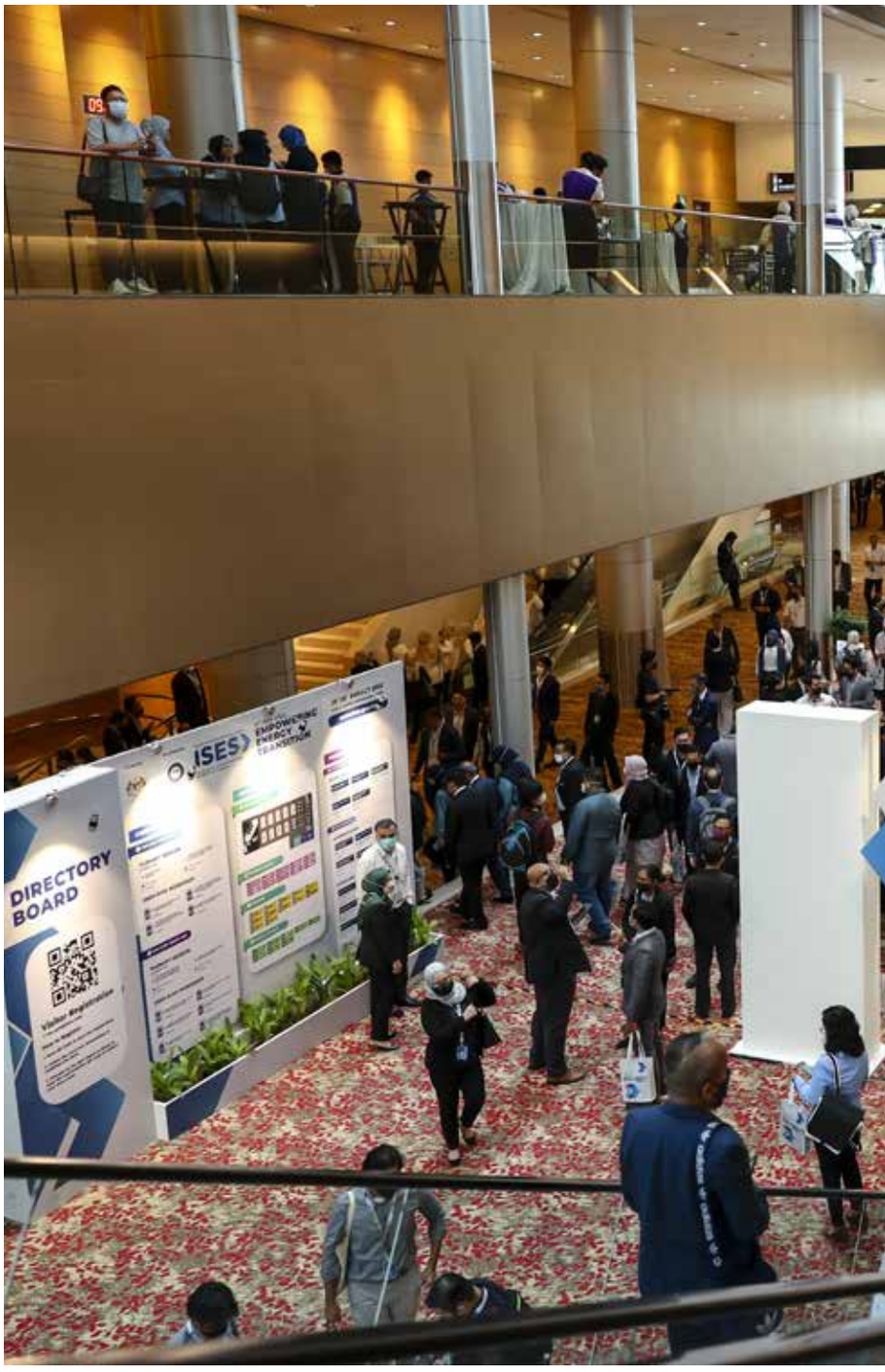
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Maximum Demand
462kW
Janakuasa Diesel Persendirian
Private Diesel Generators
2,724kW (53 unit)
Pengurangan Pelepasan CO2
2025 ~ 8,430 Tan
CO2 Emission Reduction
2025 ~ 8,430 Tonnes
PROJEK PULAU TENAGA HIJAU
GREEN ENERGY ISLAND PROJECT
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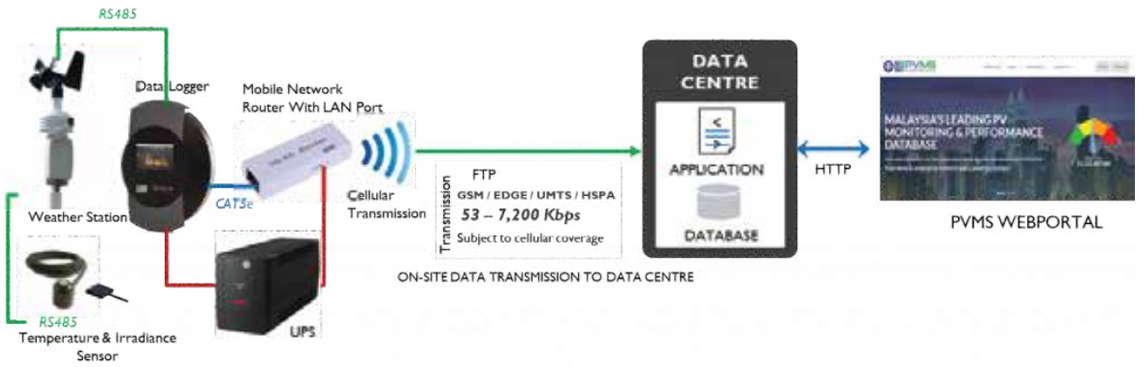
The National PV Monitoring & Performance Database via the PV Monitoring System (PVMS) is an initiative to monitor selected grid-connected solar PV systems for performance and reliability. This programme is funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE) or the Malaysian Electricity Supply Industries 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



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Awareness Trainings:

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

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A TIMELY SUMMIT

THE two-day 5th International Sustainable Energy Summit (ISES) 2022 ended on a high note at the Kuala Lumpur Convention Centre on Aug 30, 2022. It was the largest ever ISES organised by the Sustainable Energy Development Authority (SEDA) Malaysia and was hosted by the Ministry of Energy and Natural Resources (KeTSA).

Sustainable Energy Malaysia (SEM) compiled quotes and the views of some key participants and attendees on their take during the signature event. SEM

YAB Dato' Sri Ismail Sabri Yaakob,
Prime Minister

"ISES 2022 will open up an opportunity for policymakers, industry players and scholars in the field of sustainable energy, both locally and abroad, to jointly discuss and understand the best strategies and practices related to the energy transition done by various parties around the world.

I hope that the best policies, practices and initiatives that have been implemented and proven to be successful in sustainable energy development can be applied and adapted in this country so that Malaysia can also contribute towards global efforts in dealing with climate change issues."

YB Datuk Seri Takiyuddin,
Minister of Energy and Natural Resources

"I'm pleased with the response to ISES 2022 and hope it would translate into efforts to support the country's energy transition agenda.

The Government's sustainable energy development policies and initiatives requires the combined efforts of all stakeholders in the field of sustainable energy, and I hope this year's ISES will open a room for discussion and create new cooperation in supporting the efforts to empower the energy transition agenda in our country."

YB Datuk Ali Biju,
Deputy Minister of Energy and Natural Resources

"I thank the conference participants, speakers, exhibitors, and visitors who contributed to making the organisation of ISES 2022 a success.

Hopefully, the benefits and relationships established through this conference will last and can be translated into implementing new RE development programmes and projects towards realising the country's energy transition agenda. It is important to ensure that the challenges and threats of climate change can be dealt with holistically, thus guaranteeing a better future for future generations."

YB Tuan Lukanisman Awang Sauni,
Chairman SEDA Malaysia

"I'm pleased to share that this year's ISES Deep-Dive Workshop (DDW) mechanism has changed through strategic partnerships in which esteemed organisations act as co-hosts at a few selected workshops in the road towards sustainability and energy security

Achieving a sustainable energy transition is an effort that can only work if all nations and stakeholders play their part. We should move ahead each with our responsibilities, but with the same goal in mind. I want to express my cordial gratitude to ISES 2022 partners and stakeholders for their unwavering support and readiness to collaborate."

HE Brian D. McFeeters,
United States Ambassador

We are excited about Malaysia's carbon neutrality and climate ambitions. As Malaysia goes forward on its journey to have all these innovations in terms of more electric vehicles, the system's efficiency, more solar, etc, in each of those areas, there's a potential for the US government's assistance in some measures.

The US is with Malaysia as it goes forward. And we're happy to see that Malaysia is also treating the renewable energy transition as the priority it needs to be."

HE Francesco La Camera,
Director General of the International Renewable Energy Agency (IRENA)

The technologies we need to get to 2030 are available. What is required now is a strong political will and well-targeted policy packages.

The current Solar PV rooftop Net-Energy-Metering programme in Malaysia's successes should be further expanded to encourage energy savings and create more job opportunities across the supply chain.

When considering the climate crisis, energy crisis and economic impacts of the Covid-19 crisis, renewable energy is now more than ever our best bet for a sustainable future."

Dr Apurva Sanghi, *Lead Economist for Malaysia, World Bank*

Indeed, Malaysia has exceeded these renewable energy (RE) and energy efficiency (EE) targets despite being higher than every Asian country except Vietnam. Let's credit Malaysia's Sustainable Energy Development Authority (SEDA) for achieving these targets.

The climate cost is increasing for the people and the Malaysian economy. In the case of adapting to current and future climate shocks, this was a no-brainer. Primarily because, unlike mitigation, the benefits of adaptation are captured locally.

Bursa Malaysia Berhad and Bank Negara Malaysia (BNM) have done excellent work putting out quality and comparable data, which is crucial for investors to make informed decisions."

Ir James Ung,
Sarawak Energy's Group Chief Operating Officer

"The International Sustainable Energy Summit (ISES) is a great knowledge-based platform that brings together like-minded organisations in conversation and commitment to action in the energy transition, especially in highlighting the opportunities and necessity for collaboration and the respective roles that everyone can play.

"It's been a pleasure to share with delegates at ISES about SEB's energy transition journey over the past 100 years. From a utility provider of fossil-fuelled electricity in Sarawak with 84 customers in the 1920s, we have grown and transformed into Malaysia's largest renewable energy and hydropower developer, benefiting our 750,000 account holders with the lowest average unsubsidised tariffs in the region. We are also advancing our vision to achieve sustainable growth and prosperity for Sarawak by meeting the region's need for reliable, sustainable energy. "

Encik Shahazwan Harris,
Head, Strategic Investments of Employees Provident Fund (EPF)

"Policies that drive new technology will be key. Understanding how those policies provide sufficient risk/return. We can't expect everyone to have a pure guaranteed return because this is still a market that's driven by the private sector.

"So, the private sector needs to take risks, but policies by the government that drive capital in that direction, not necessarily guaranteed return, are what will do. And therefore, smart investors, smart players willing to understand the risk-reward, they will then place that capital."

Dr Raslan Ahmad,
Senior Vice President of Malaysian Industry-Government Group for High Technology (MIGHT)

"We took up a booth at ISES 2022. The summit created opportunities for all the key stakeholders, not just for gathering or networking, but most importantly, to exchange ideas and best practices and demonstrate how stakeholders can work together.

"It is a platform of networking and sharing. It is a platform for stakeholders to reflect their commitment and interest in making things happen."

Encik Hairol Azizi Tajudin,
Group CEO, Cenergi SEA

"Cenergi has been participating in ISES since 2018. This year was our second time participating in ISES as one of the main sponsors. It was a pleasure to have had the opportunity to work closely with SEDA's team during ISES 2022. Indeed, the exhibition and its accompanying programmes ran smoothly and as planned.

"The support we received from SEDA during the exhibition was also unmatched. From the exhibitor's point of view, the quantity and quality of the visitors have been excellent and consistent across the two-day event. The number of leads we collected was impressive. We are exploring the next steps with them. We look forward to the next ISES event."

Pam Lee Wen Ai,
Executive Director, Advisory (BDO Malaysia)

"I have three hopes - to see concerted efforts from all stakeholders, policymakers, businesses, and investors to realise Malaysia's aspirations for Renewable Energy target of 31 per cent by 2025, and 40 per cent by 2035. My second hope is for carbon transition, or energy transition pathway, to happen in a just, inclusive and equitable manner. Lastly, all stakeholders here can explore different technologies to combat climate change, such as energy storage, hydrogen, and carbon capture."

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