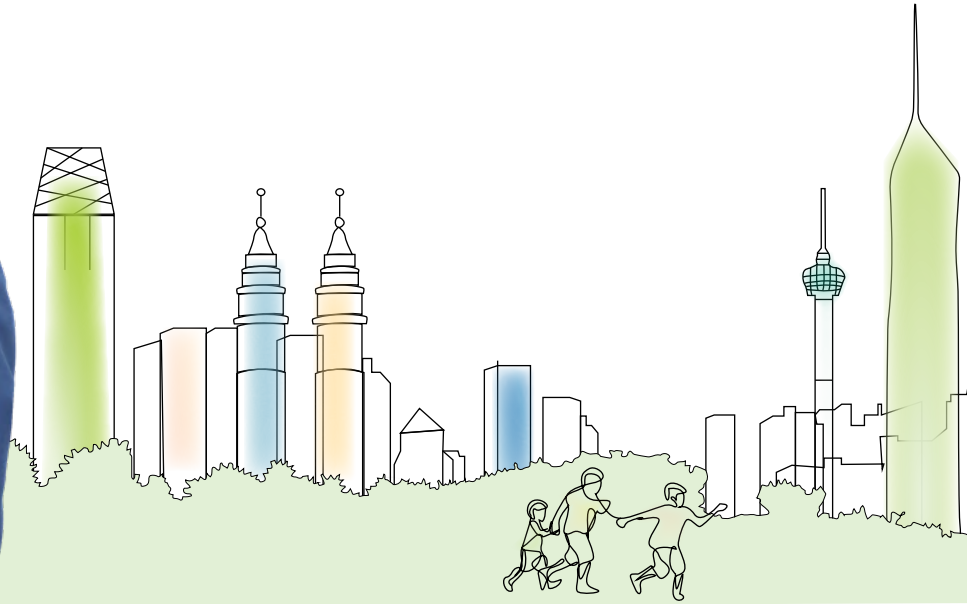


# CEO'S STRATEGIC & OPERATIONAL REVIEW



**DATUK IR. MEGAT JALALUDDIN BIN MEGAT HASSAN**

President/Chief Executive Officer



**Dear Valued Shareholders of Tenaga Nasional Berhad:**

**2023 was an exciting year for Malaysia as the nation made a firm commitment to accelerate a responsible Energy Transition with TNB at the forefront in driving the country's aspiration to achieve Net Zero Carbon Emissions by 2050. We at TNB are resolute in supporting the growth of the nation by creating further value for all our stakeholders by leveraging new opportunities and realise the nation's sustainability ambitions for a better and brighter future.**

**PERFORMANCE HIGHLIGHTS**

Malaysia's economy continue its growth trajectory in 2023 at a moderated pace of 3.7% compared to the robust 8.7% in 2022. The economic expansion was similarly reflected in the rise of Malaysia's electricity demand of 3.8% year-on-year (YOY) in Peninsular Malaysia and Sabah.

The increase in electricity demand directly contributed to TNB's top-line growth of 4.3% YOY in 2023, with revenue growing to RM53.07 billion. However, we recorded lower EBITDA and profit after tax (PAT) of RM18.6 billion and RM2.6 billion respectively, mainly due to the negative fuel margin. Our liquidity and cashflow position have improved significantly in 2023 as we recorded a 56% reduction in receivables, mainly through consistent cost recovery of Imbalance Cost Pass-Through (ICPT) as well as efforts made by TNB to improve our collection rate.

Operational excellence remains a cornerstone of our strategy, and we strive to ensure our infrastructure assets remain robust and available to serve our customers. We recorded a Transmission System Minutes of 0.48 minutes, while our Distribution System Average Interruption Duration Index (SAIDI) was 46.1 - which puts us on par with other global utilities. Our power plants recorded a solid 83.3% availability factor throughout 2023, a testament to the efforts of our employees in upholding world-class standards of operational excellence in the operation and maintenance of our electricity supply infrastructure.

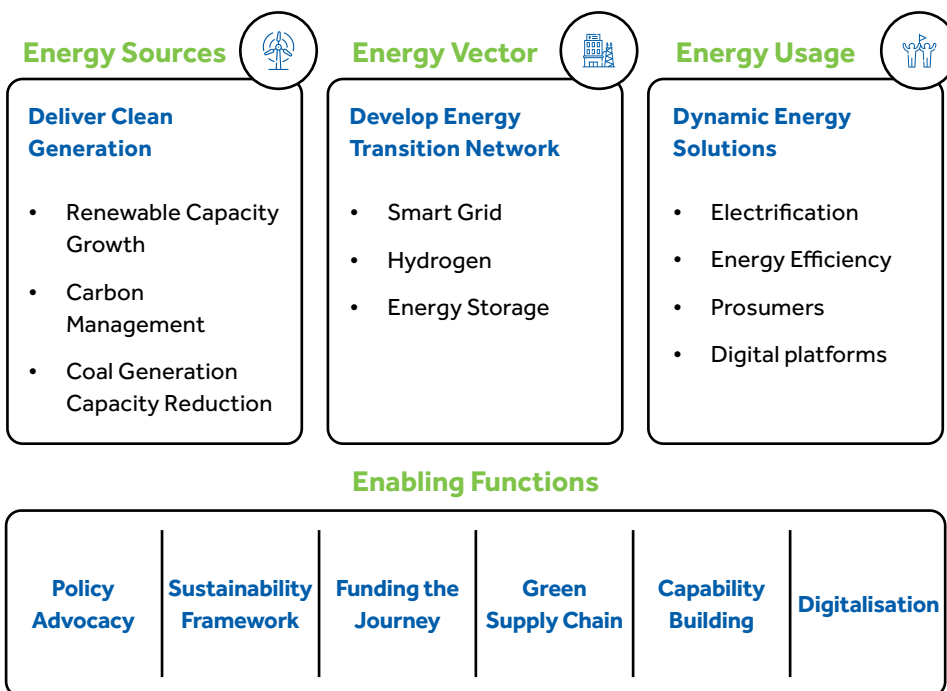
With regards to the safety and well-being of our employees and contractors, our Loss Time Injury Frequency (LTIF) was 0.74, a slight improvement from the 0.82 recorded in 2022. In 2023, we recorded the unfortunate loss of four lives - three employees and one contractor. We understand the gravity of the situation and are taking all the necessary preventive measures to ensure the safety of everyone with the enforcement of Tenaga Safety Culture and Life Saving Rules.

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On the customer front, our relentless pursuit of excellence has paid off, and in 2023, we achieved the highest recorded Customer Satisfaction Index (CSI) score of 88%. This was in tandem with our excellent Customer Experience Index (CEI) scores of over 90% across all our physical and digital touchpoints. These are truly historic achievements for TNB, and we are proud to continue delivering exceptional service to our customers. These successes are driven by continuous enhancements in our communications, our proactive approach in issue resolution, and robust digitalisation initiatives that significantly elevate the customer experience.

### STRATEGY

Building upon the foundational vision of the Reimagining TNB strategy, our approach remains unwaveringly rooted in the Energy Transition (ET) Plan we set forth in 2022. Our transformational journey continue in 2023 when we refresh our Reimagining TNB 2.0 by structuring around three key strategic pillars. They function as the primary drivers in our shift from a fossil-based energy mix to cleaner, more sustainable energy sources. These three pillars are supported by six core enabling functions that include policy advocacy, which helps us to navigate the regulatory landscape that TNB operates in.



Our aspiration has always been clear: to lead as a provider of sustainable energy solutions in Malaysia and expand our impact internationally. We have made substantive progress across each strategic pillar, ensuring that our progress aligns with the nation's mission as outlined within key policy documents like the National Energy Transition Roadmap (NETR). The full details of our strategic progress can be found in the Achieving our Strategic Ambitions section of this Integrated Report.

Our leadership position as the key driver in Energy Transition was further entrenched by the outcomes of the inaugural Energy Transition Conference 2023. The conference highlighted our thought leadership capabilities and unlocked a slew of business opportunities, initiatives and collaborations that have propelled Malaysia's Energy Transition (ET) journey forward significantly.

### The Energy Transition Conference 2023 - Powered by TNB

### Catalysing the Nation's Energy Transition Journey



The inaugural ET Conference 2023 which was held in Malaysia from 28-29 August 2023, emerged as the largest gathering dedicated to energy transition in the region. Hosted by TNB, the conference attracted more than 4,000 delegates from over 16 countries and featured 68 conference speakers during the two days of insightful sessions. The conference became the launchpad for one of Malaysia's most important energy transition blueprints, namely the National Energy Transition Roadmap, which was launched by Malaysia's Prime Minister, YAB Dato' Seri Anwar bin Ibrahim.

With the world moving in unison towards achieving net zero targets, the conference focused on the future of energy, green mobility, sustainable cities, digitalisation and data infrastructure. The event developed into a unifying platform for thought leaders, experts, industry players, policymakers, and communities across the energy value chain to formulate collaborative efforts, solutions, strategies and policies to accelerate energy transition effectively and responsibly.

## CEO'S STRATEGIC & OPERATIONAL REVIEW

### DELIVER CLEAN GENERATION



**Our approach to transforming the energy generation landscape is three-fold: significantly increasing our renewable energy capacity, improving our carbon management, and a gradual reduction of our coal generation capacity. We own and operate 198 power plants with an installed capacity of 16,283MW and we are cognisant of the need for us to decarbonise our generation fleet in a sustainable and responsible manner.**



*Renewable energy and low-carbon energy sources are shaping the future, driven by a commitment to decarbonisation and climate action.*

In the context of our domestic renewable energy (RE) capacity, we have continued to grow from strength to strength in the year under review. Domestically, we have seen increased generation at TNB Sepang, Selangor, which provided an uplift to earnings. We are happy to report that we received the Commercial Operations Date (COD) earlier than expected for the TNB Bukit Selambau Solar Dua asset under LSS4, which added 75MWp of operational solar asset at the end of 2023. More positive news were recorded when we successfully secured solar asset development rights amounting to 135MWp through the Corporate Green Power Programme (CGPP) under the New Enhanced Dispatch Arrangement framework, providing more revenue upside going forward.

As part of Malaysia's NETR, TNB is spearheading three key large-scale RE and clean technology initiatives, namely Centralised Large-Scale Solar (LSS) parks, Hybrid Hydro Floating Solar (HHFS), and hydrogen and ammonia co-firing projects. Collectively, these initiatives have the capability to deliver over 3,000MW of renewable energy capacity by 2040 of which around

2,500MW are from HHFS technology, while an additional 500MW are sourced from five different LSS parks. Under the HHFS, we plan to install up to 230MW capacity at the Temenggor and Chenderoh hydro plants by 2025. In Perak, we have embarked on exploring a potential partnership to develop a 100MW ground-mounted solar project. These projects are integral to TNB's ET Plan and are expected to generate significant RE capacity, foster greater participation in the development of the RE sector and contribute to the nation's goal of accelerating decarbonisation.

In our mission towards decarbonising conventional thermal plants in Malaysia, we recognise that one of the pathways identified is through Carbon Capture & Storage (CCS). As a key ET technology, CCS holds significant potential in decarbonising our generation capacity. Mindful of the technical and commercial challenges to achieve meaningful scale, we have entered into collaborations with leading domestic and international companies to explore the implementation of CCS technology in our thermal plants. A key component of the collaboration includes knowledge transfer with our engineers receiving specialised training to enhance their technical capabilities.

To further support our decarbonisation efforts, we are actively repowering existing plants with cleaner fuels, integrating green technology, and exploring the possibility of early retirement for coal plants domestically and internationally to ensure our operations are both efficient and reduce our environmental footprint. In 2023, we completed the disposal of our power generation assets in India, which included 1,650MW of coal generation. This divestment aligns with our intention to gradually reduce our coal generation capacity.

In 2023, we successfully made inroads into the Australian RE market through the acquisition of Spark Renewables Australia, which has around 120.5MWp of operational solar assets and 4.2GW of RE pipeline. We expanded our RE footprint in Europe, namely in the Republic of Ireland, which includes the acquisition of operational solar assets with 276MWp capacity. This underscores our commitment to growing our international RE assets, enabling us to bring back technologies and implement new business models that benefit Malaysia.

CEO'S STRATEGIC & OPERATIONAL REVIEW

DEVELOP THE ENERGY TRANSITION NETWORK



**At TNB, we strongly believe that there is no transition without transmission. This motivates us in building and maintaining intelligent, resilient and flexible electricity grids that enable the faster adoption of more RE sources.**

We have been making steady strides in Develop the Energy Transition Network. In 2023 we expanded and upgraded our transmission and distribution network via a CAPEX investment of RM7.3 billion.

The investment includes building a smart grid and deploying smart meters under the national Advanced Metering Infrastructure (AMI) programme. We installed 873,740 more smart meters, surpassing our target of 600,000 units for 2023. This outstanding achievement brings the total to over 3.5 million smart meters across the Klang Valley, Melaka, Kedah, Johor, and Penang.

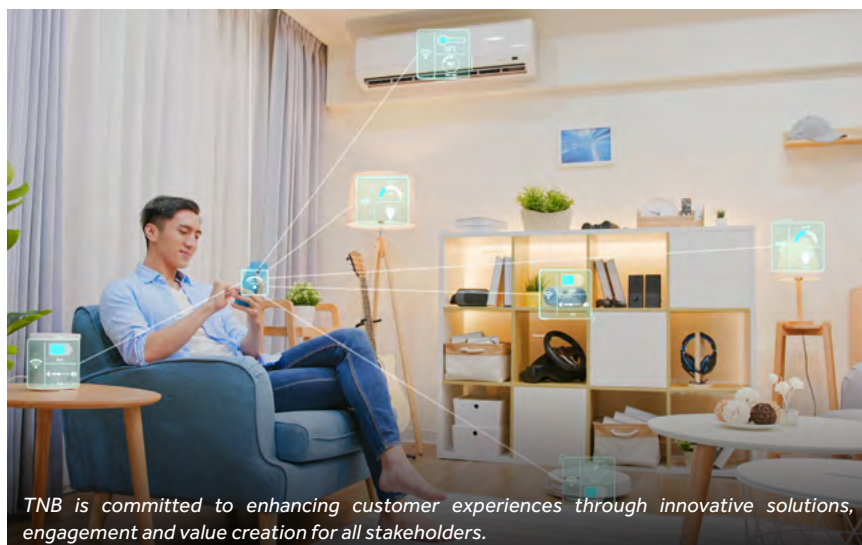
To enhance automated network control and fast supply restoration, we continued the rollout of Distribution Automation (DA). Approximately 4,000 substations were successfully installed and commissioned with DA, covering about 2.6 million customers. This brings our total to 28,340 distribution substations, accounting for 34% of total distribution stations in Peninsular Malaysia. For our transmission network, we enhanced our Advanced Automatic Fault Analysis (AFA) system to improve response and restoration time during outages.

Another aspect of developing the ET network is cross-border interconnections as they help in achieving ASEAN's ET and decarbonisation targets. At TNB, we are constantly exploring opportunities to expand our regional interconnections through Memorandums of Understanding (MOUs) with ASEAN neighbours such as Indonesia, Thailand, and Singapore. These agreements are strategic stepping stones towards the development of interconnection projects that are expected to strengthen the ASEAN power grid. A key milestone was achieved with the completion of a joint feasibility study with EGAT Thailand in 2023, paving the way forward for the expansion of the interconnection between Peninsular Malaysia and Thailand.

As a responsible grid owner, TNB carefully tracks and analyses electricity demands in anticipation of new and emerging economic growth in the country. In recent years, we have seen a significant surge in demand from hyperscale co-location data centres in Malaysia. In response to this growing market, we introduced the Green Lane Pathway in 2023 to fast-track the on-boarding process and significantly reduce the time taken for the supply connection of electricity to data centres. As of April 2024, we have managed to complete the power supply connection to 11 data centres totaling 1,156MW.

In anticipation of increasing energy demands in the future, we identified hydrogen and energy storage as promising domains to be explored. Preliminary efforts to explore the adoption of these technologies in Malaysia were made such as advancing the studies for hydrogen business development and completing a feasibility study of potential sites for a large-scale battery energy storage system (BESS) flagship project in Malaysia by our Grid division.

DYNAMIC ENERGY SOLUTIONS



TNB is committed to enhancing customer experiences through innovative solutions, engagement and value creation for all stakeholders.

**At TNB, our journey to empower customers and deliver exceptional services continues to evolve, reflecting our enduring commitment to create relevant value that are appreciated by our customers, who are slowly embracing a smarter and greener lifestyle.**

TNB continues to encourage our customers to be engaged in our collective journey towards a sustainable energy future. We have stayed on course with our initiatives to elevate customer engagement and satisfaction, widened the use of rooftop solar panels nationwide and invested significant resources to boost the electrification of Malaysia's transport sector.

## CEO'S STRATEGIC & OPERATIONAL REVIEW

TNB remains at the forefront of the electrification of the transportation sector, which continues to grow at a rapid pace here in Malaysia and regionally. As of end-2023, the number of Electric Vehicles (EVs) on the road jumped to 10,159 units from 2,631 in 2022, while the total number of Direct Current (DC) fast EV charge points has increased to 503, bringing the total number of charge points to 2,288 as of April 2024. To meet this growing demand, we have significantly expanded the TNB Electron charging network to 32 charge points at strategic locations across Peninsular Malaysia. These include PLUS/LPT2 highways, commercial buildings, and TNB Premises, providing greater convenience for EV owners.

Beyond our borders, we have signed a Memorandum of Understanding (MOU) with Chargeplus (Charge+) to facilitate cross-border EV charge points across Malaysia and Singapore. This MOU forms the foundation to develop a seamless cross-border network of 30,000 charge points by 2030 spanning 5,000km of highways across Singapore, Malaysia, Thailand, Cambodia and Vietnam.

Additionally, TNB is focused in engaging our customers to understand the means of managing their energy consumption better. To accomplish this objective, we elevated the Malaysia Energy Literacy Programme (MELP) to a national-level initiative with oversight by the Ministry of Energy Transition and Water Transformation (PETRA). MELP aims to support the national ET agenda by improving the energy literacy of Malaysians. A significant milestone for MELP was reached in 2023 when Universiti Tenaga Nasional and Universiti Kebangsaan Malaysia (UKM) decided to incorporate energy literacy modules into their curriculum. Both tertiary institutions have agreed to enhance energy literacy through programmes, initiatives, publications, and research.

In the rooftop solar PV space, GSPARX continues to play a significant role in transforming TNB's customers into prosumers. By the end of 2023, GSPARX secured a cumulative 340MWp of solar capacity, including a nationwide project involving AEON shopping centres and AEON BiG supermarkets with a total capacity of 78MWp. Meanwhile, TNBX, a wholly-owned subsidiary of TNB, focuses on sustainable energy solutions. It launched several innovations such as SuriaShield residential solar PV insurance and the Virtual Energy Manager solution to assist commercial and industrial customers in managing their electricity usage.

Digitalisation has been a key lever in helping us deliver exceptional customer experience, particularly through the wider adoption and greater functionality of the award-winning myTNB app. myTNB currently has over 6.7 million subscribers with features aimed at promoting customer empowerment and sustainable practices. The features we have introduced continue to delight our customers and as proof of its user-friendliness and relevance, it was recognised by a leading technology publication, PC.com for being the Best Public Utility App in 2023.

### DRIVE REGULATORY EVOLUTION



**In addressing the future of the electricity industry within Malaysia, TNB is strategically navigating the evolving regulatory and policy landscape to ensure the best outcomes for its business, stakeholders, and the broader community. It is here that we recognise the symbiotic relationship between government support, TNB's proactive measures, and the collective move towards a sustainable energy transition.**

In 2023, we continue to see our Malaysian government's steadfast support for the Incentive Based Regulation (IBR) framework, which has been governing our electricity sector since 2014. We recovered about RM16 billion of fuel costs via the Imbalance Cost Pass-Through (ICPT) mechanism, which helped improve our financial liquidity.

As a key enabler of Malaysia's ET journey, TNB has been an active participant at global meetings such as COP28 and organising our own Energy Transition Conference. The government's bullish stance on the ET is evident with the multitude of supportive policy announcements and blueprints launched over the past two years, including the Low Carbon Mobility Blueprint 2021-2030, National Energy Policy 2022-2040, Malaysia Digital Economy Blueprint 2021-2030, New Industrial Master Plan 2030, the Malaysian Energy Transition Outlook and the NETR. This is in addition to the enhancement of existing programmes such as increased quotas for the Corporate

Green Power Programme (CGPP) and the Net Energy Metering (NEM) scheme.

TNB has collaborated with relevant stakeholders to drive the ET journey. For instance, we collaborate with the Zero Emissions Vehicle Association (ZEVA) which actively advocates for the development of related legislation, policies, and standards for electric vehicles (EVs). Furthermore, we continue to be involved in the MyPOWER-led MESI (Malaysian Electricity Supply Industry) study, ensuring that we are contributing to a future-proof MESI, capable of addressing the challenges of decarbonisation while maintaining energy security, equity, and sustainability. The results of the study, which was completed in 2022, provided valuable insights and opportunities for further discussion.

## CEO'S STRATEGIC &amp; OPERATIONAL REVIEW



*TNB's resilient and innovative grid system powers Malaysia's growing energy demands, shaping the future of electricity.*

## ACKNOWLEDGEMENTS

In closing, I would like to extend my deepest gratitude to my predecessor, Dato' Seri Ir. Baharin bin Din, who led TNB with distinction over the past three years since 1 March 2021. His leadership was instrumental in guiding our company through the difficult period of the global COVID-19 pandemic, as we adopted new norms and leveraged digitalisation for greater operational efficiency and customer service excellence. He held the ship steady and steered TNB towards becoming sustainable organisation, ensuring that we remain at the forefront of the energy sector in Malaysia and beyond.

It is with a heavy heart that we remember and honour the legacy of a remarkable individual, Ir. Dev Anandan MS Anandan, our Chief Grid Officer, whom we sadly lost in 2023. Ir. Dev began his illustrious career with *Lembaga Letrik Negara* in 1988. His absence leaves a void that is deeply felt by all who had the privilege of working alongside him.

To my fellow colleagues in TNB, always remember that you are the lifeblood of the company, and together, let us unlock our potential, power progress, and make the energy transition happen towards for a brighter future.

The progress that we experienced in 2023 was made possible with the support and guidance of the Board of Directors, ensuring that we are focused on delivering the right business outcomes. I would like to thank the Government, the ministries, the Energy Commission, and regulatory bodies for their contributions toward the continued enhancement of our electricity industry, and strong support of the Energy Transition.

Finally, to our valued shareholders, esteemed customers, and dedicated business partners - we extend our deepest gratitude for your unstinting support and trust in TNB. We are incredibly enthusiastic about the future growth prospects of our company and are eager to have you alongside us as we forge ahead in our journey to drive the Energy Transition in Malaysia and beyond. Together, we can unlock our full potential, propel progress, and play a pivotal role in facilitating the energy transition. Your continued partnership is key to our success, and we look forward to achieving these transformative goals with you.

**DATUK IR. MEGAT JALALUDDIN BIN MEGAT HASSAN**  
President/Chief Executive Officer

## OUTLOOK

As Malaysia steers into 2024, it is poised to be an exciting year with TNB at the forefront of the nation's ET journey. We are directing greater focus to our domestic businesses and investments in support of key initiatives to help achieve the goals outlined under the NETR.

In line with this, we are preparing to participate in the LSS Programme's fifth cycle (LSS5) which will see an expanded quota of up to 2GW, including a novel category for floating solar projects. Complementing this will be the Low Carbon Energy Generation Programme (LCEGP) with a 400MW quota, which opens up opportunities for other low-carbon power generation, such as small hydro, biogas, biomass, and hydrogen.

In terms of addressing the intermittency issues of RE sources, we are planning to initiate Malaysia's first utility-scale Battery Energy Storage System (BESS) project with 400MWh capacity. This pilot project, spearheaded by TNB and overseen by the Energy Commission, represents a pioneering step in enhancing grid stability and reliability, marking a significant milestone in Malaysia's journey towards a sustainable energy future. Regionally, we look forward to our collaboration with Laos' utility service provider, Electricite du Lao (EDL), which opens new possibilities for cross-border electricity trade within ASEAN.

On the regulatory front, as we move closer to the Regulatory Period 4 (RP4) 2025-2027, TNB's overarching goal is to continue supporting our customers' energy needs and facilitating Malaysia's Energy Transition. In this context, TNB is stepping up once again with significant CAPEX to maintain security of supply, meet the projected electricity demand growth of 1.6-4.3% and facilitate the Energy Transition. We aim to allocate a larger proportion of the CAPEX (compared to the previous year) for ET-related spending. Regarding the tariff structure, TNB is supportive of tariff reforms that ensure electricity costs are appropriately reflected on a fair and equitable basis, delivering positive results for the industry over the long term.

While 2023 was the year when ET really got started in Malaysia, 2024 and beyond are when we execute in earnest the exciting programmes within NETR. Indeed, TNB is perfectly primed to benefit from all the opportunities offered by NETR for we are fully committed to ensuring Malaysia achieves its ambitions. With TNB leading the charge, we are confident that we can facilitate the nation to achieving its energy transition goals, fostering a sustainable, resilient, and prosperous future for all.