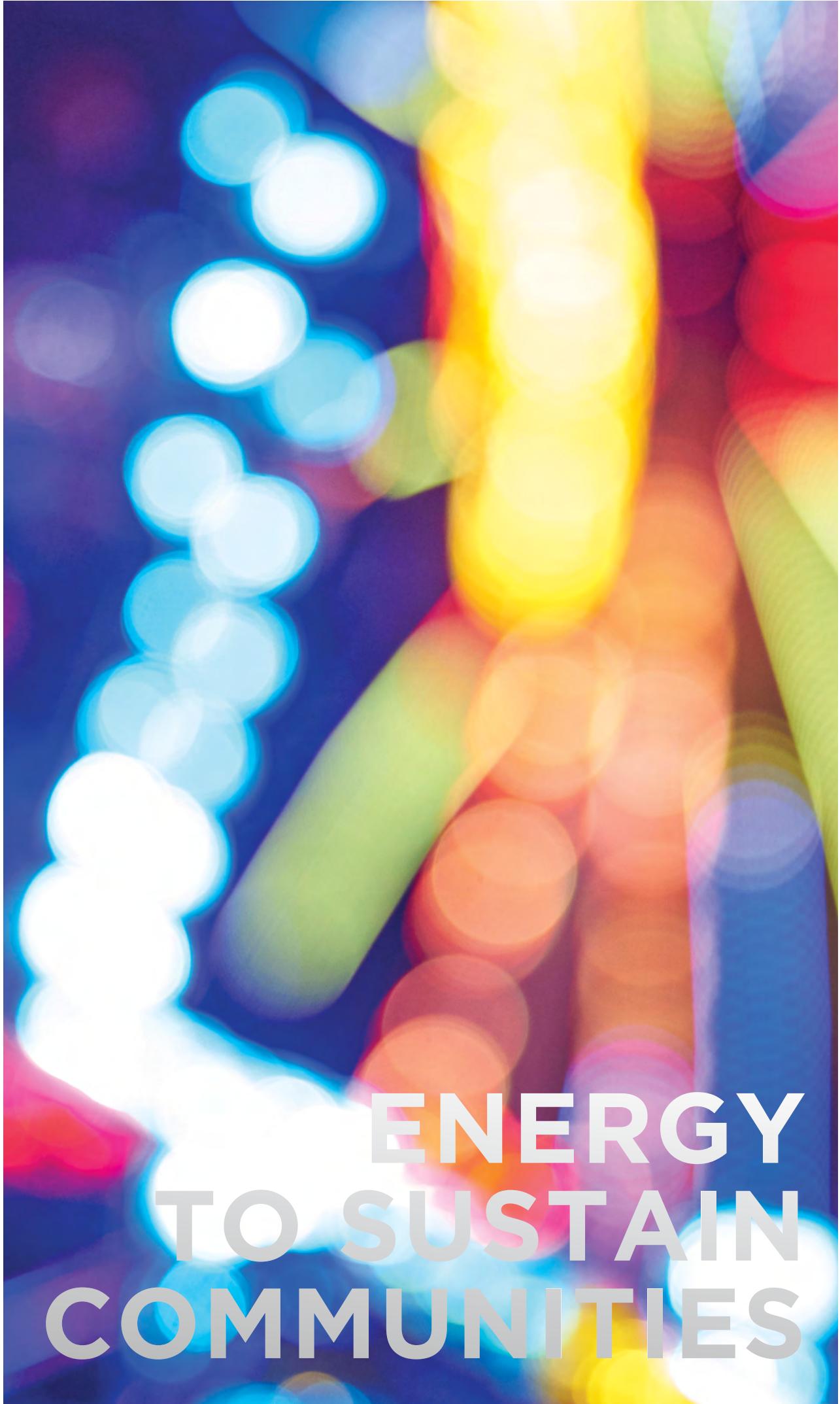




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**SUSTAINABILITY  
REPORT 2018**

- Spirit of Responsibility
- Delivering with Purpose
- Environmental Stewardship
- Embracing Relationships



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# ABOUT THIS REPORT

At TNB, we prioritise business operations that cater to the needs and interests of our various stakeholders and also the environment that we live in. We aim to provide clear, transparent and comprehensive information on all our efforts that highlight our commitment to sustainability, while identifying areas for improvement.

## TNB'S SUSTAINABILITY PILLARS



### Governance

Marks our commitment, driven by our Board to reinforce ethical business practices and forward-looking culture, described under the theme, 'Spirit of Responsibility'.



### Economic

Defines our continued aspiration to provide reliable and efficient energy in the local and international Energy Supply Industry (ESI) for a better and brighter future, described under the theme, 'Delivering with Purpose'.



### Environmental

Defines our commitment to minimise our environmental impact wherever we operate, described under the theme, 'Environmental Stewardship'.



### Social

Revolves around how we develop long-term and meaningful relationships with our customers, employees and communities to enhance their trusts, described under the theme, 'Embracing Relationships'.

This edition marks our second annual Sustainability Report, where we continue to share our sustainability performance and initiatives in our journey of creating sustainable value for our stakeholders. We also disclose targets for certain material matters, which are aligned to our corporate strategy and also the United Nation's Sustainable Development Goals (UN SDGs). This report complements TNB's Integrated Annual Report (IAR) 2018, which contains more detailed information on our Company's business and operations.

## REPORTING PERIOD

The reporting period for this edition covers the Financial Year 2018 (FY2018) from 1 January to 31 December. Where data for FY2018 is not available, the most recent data is provided.

Following a change in TNB's financial period, sustainability performance data for the period from 1 September to 31 December 2017 is also disclosed in this report. This is denoted in the relevant sections where applicable.

TNB's key sustainability initiatives and performance highlights across all sustainability pillars can also be found in the Sustainability Statement section of our IAR 2018.



For further information on our sustainability performance and sustainability reporting, or to provide us with your highly-valued feedback, please write to us at [cosec@tnb.com.my](mailto:cosec@tnb.com.my)

## REPORTING FRAMEWORK

The report was prepared in accordance to Bursa Malaysia Securities Berhad's (Bursa Malaysia) Main Market Listing Requirements for Sustainability Statement – based on the second edition of the Bursa Malaysia Sustainability Reporting Guide (2018). This report is also guided by the Global Reporting Initiative (GRI) Standards: Core Option. Various qualitative and quantitative data are provided in this report for material matters pertaining to TNB's economic, environmental and social performance. We have not undertaken assurance for data disclosed in this report, with the exception of financial data. Moving forward, we are working towards securing external assurance for our sustainability disclosures based on best practices.

## REPORTING SCOPE AND BOUNDARY

The scope of this report is primarily focused on TNB Company's operations in Peninsular Malaysia, with selected highlights from our subsidiaries. This report excludes outsourced, joint venture and our suppliers' activities, unless otherwise stated.



Further details on our material matters' boundary can be found in the Appendix section on page 99 of this Report

# CEO'S MESSAGE

The global movement on sustainability and climate change have accelerated, underscoring escalating public expectations for leading organisations to take effective actions for a sustainable future. In response to the trends and challenges, TNB had intensified its sustainability efforts during the year, achieving significant progress towards sustainable development in all areas of our operations.



The year 2018 marked a significant phase in our sustainability journey. As we welcomed the narrative for a Malaysia that calls for enhanced governance, accountability and an accelerated target on sustainability, we stepped up our efforts in not only the adoption of renewable energy (RE) and enhancing social equity, but also worked closely with the authorities in instituting reforms in the Malaysian electricity supply industry (MESI).

In the second edition of TNB's Sustainability Report, we are pleased to share a detailed account of the initiatives, programmes and developments that we undertook to create a better, brighter future for all Malaysians as we move forward in realising Reimagining TNB – our Strategic Plan 2016-2025. In aligning our sustainability efforts with unified global ambitions, we went a step further this year by mapping our sustainability efforts to four United Nations Sustainable Development Goals (UN SDGs).

In our endeavour to adopt a more holistic approach in our sustainability reporting, we have also widened our disclosure this year by addressing an additional three material sustainability matters, namely: Sustainable Supply Chain, Asset Optimisation and Waste Management.

## SUSTAINABILITY IN MOTION

When we first formalised our Reimagining TNB strategic blueprint in 2016, the path ahead was clear to the TNB Board and the mandate accorded to the Management. We needed to relook our growth trajectory, stay ahead of disruptions and continuously create value for our stakeholders. These efforts need to be underpinned by a shift in our culture and mindset in order to propel us into the league of leading global utility players by 2025.

We believe that sustainability forms an integral basis of our strategy to become a globally-recognised power utility that is socially and environmentally responsible, committed to nurturing world-class capabilities, and harnesses technology and innovation for continuous growth.

## CEO's Message

### REIMAGINING MALAYSIA'S ELECTRICITY SUPPLY INDUSTRY (MESI)

The transformation of MESI in embracing green technology and clean energy has taken a more concerted approach with the initiatives announced by the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) at the biennial Conference of Electric Power Supply Industry 2018 (CEPSI 2018) in Kuala Lumpur.

The industry reforms under the MESI 2.0 initiative will not only ensure the development of smarter, more innovative and efficient solutions, but also creates more transparency that empowers our customers in their energy consumption. As the nation's leading power utility provider, we are working closely and engaging with the Government in providing technical and market input, as the MESI navigates a landscape with rapidly evolving technologies, economic developments and shifts in customer expectations.

To this end, we will continue to play an important role in expanding Malaysia's RE portfolio, in line with the Government's target to reach 20% RE generation capacity mix by year 2025. Echoing the Government's RE aspirations, TNB's target is to grow our renewable capacity to 1,700MW - domestically and internationally – by 2025. On the same note, TNB is fully supportive of the third Large Scale Solar (LSS) Scheme to be implemented by the Government via a series of open tenders, which will increase Malaysia's RE capacity towards the desired outcome.

To date, TNB's foreign RE generation capacity stands at 665.9MW from a total RE generation capacity of 739.1MW. In March 2018, TNB acquired an 80% stake in the largest Feed-in Tariff (FiT) United Kingdom onshore wind farm (GVO Wind Limited and Bluemerang Capital Limited) through our wholly-owned unit Tenaga Wind Ventures UK Limited. As TNB's first international foray into wind energy, the acquired assets comprise 53 operational onshore medium-sized wind turbines delivering a total combined capacity of 26.1MW.

Locally, our first Large Scale Solar (LSS) farm in Sepang, Selangor, with a capacity of 50MW has been operational since November 2018, while our second LSS project in Bukit Selambau, Kedah, is currently at 22% completion, and is expected to commence operations by December 2020.

Combined, both LSS projects are expected to mitigate our Greenhouse Gas (GHG) emissions by up to 132,700 tonnes per year upon full completion. Additionally, the construction of our 20<sup>th</sup> mini hydro station in Sungai Tersat, Kuala Berang, Terengganu, with a capacity of 4MW is on schedule for completion by November 2020.

In further realising RE adoption, the number of projects installed under the FiT programme has reached a new high of 9,354 projects with a combined capacity of 527.63MW as of December 2018. The FiT programme, administered together with the Sustainable Energy Development Authority (SEDA), pays Feed-in Approval Holders a fixed price for the electricity supplied from solar photovoltaic (PV) generation at their premises.

The revised Net Energy Metering (NEM) programme and the Supply Agreement for Renewable Energy (SARE) scheme that were introduced in November 2018 will allow individuals and businesses to self-generate solar energy by installing solar PV systems on their rooftops or premises. Spearheaded by GSPARX Sdn. Bhd. (GSPARX), a fully-owned subsidiary of TNB Renewables Sdn Bhd, these schemes allow our customers to enjoy zero upfront cost for their solar PV investment, rendering self-generation solar an attractive and affordable option for faster adoption among Malaysians. As of 2018, GSPARX has secured 1.3MW worth of solar PV projects.

Our proactive efforts in promoting NEM and SARE self-generation packages through our customer engagement channels, are bringing us a step closer to accomplishing the Government's target to reach 500MW of NEM solar PV installed capacity by end of 2020.

### DIGITALISING ENERGY SUPPLY AND CUSTOMER ENGAGEMENT

Leveraging digitalisation to improve the efficiency and quality of our service in a cost-effective manner, our online Home Energy Report (HER) is now available to all our domestic customers through our myTNB web portal. Our efforts to increase alternative payment channels and cashless transactions, as well as our Home Energy Management System known as 'Making Electricity Visible' (MaEV) have not only pushed our digital aspirations forward, but also introduced new practical features that improved energy efficiency, cost savings and convenience, resulting in sustained customer satisfaction levels.

Our latest annual Customer Satisfaction Index (CSI), an indicator to reach out and understand our valued customers' expectations, stood at 8.1, for the third consecutive year. We believe this is a result of the positive interactions we made with our customers from all 11 interaction channels that we have developed.

Our total digital interactions with customers for the year stood at 77.92%, compared with 57% in 2017, exceeding our target of 70% by the year 2020.

### DEVELOPING OUR PEOPLE

Leadership development is a crucial component of our sustainability strategy to groom the next generation of leaders, to ensure continuity in our succession pipeline. The 'TNB People Matters Better Brighter' (PMBB) initiative, our integrated Talent Management System ensures leadership qualities are instilled at all levels of the organisation. In addition to appropriate leadership training, each colleague is comprehensively assessed through our standardised 'TNB Leadership Competencies', established under PMBB, to streamline talents' capabilities against our long-term vision.

p.4a

## CEO's Message

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TNB's Leadership Development Centre, which is tasked with providing experiential learning programmes to coach and mentor our colleagues, spent 2,496 hours in leadership-related trainings in FY2018. In August 2018, 30 of our selected colleagues graduated from the third enrolment of our 18-month Master of Business Administration (MBA) programme, offered under UNITEN, in collaboration with the Melbourne Business School, University of Melbourne, Australia.

### REINFORCING SAFETY AND HEALTH

Nurturing a conducive, safe and healthy work environment that ensures all our colleagues and contractors are actively playing a part in safeguarding against harm and occupational hazards remains a priority for TNB. We remain committed to our "Zero Fatality" and "Zero Accident" targets, under TNB's Generative Safety Culture, through the implementation of the Life Saving Rules (LSR) to ensure all of us "Get Home Safe" – with no exceptions.

In our journey to continuously improve TNB's safety procedures, a new Health, Safety and Environment Management System (HSEMS) was unveiled and will be fully implemented by end - 2020, effectively replacing the 'Safety Excellence Management System', which had been enforced since the late 1990s.

In this year's Tenaga Safety Day, we made sure that our 'Tenaga Safety Culture' was emphasised to drive home the safe working message among our colleagues and contractors, through our four safety focus areas of Assess, Comply, Intervene and Actively Caring.

### CONSERVING OUR ENVIRONMENT

In line with the Government's focused measures to decarbonise the economy and to reduce the ESI's carbon intensity, we continued to expand our 'Tree for a Tree' programme during the financial year, through which another 6,943 were planted, bringing the total number of trees planted to-date to 17,608.

We continue to work with non-governmental organisations such as Pertubuhan Pelindung Khazanah Alam Malaysia and local authorities in re-greening urban landscapes. We have invested a total of RM1.56 million to-date in our tree-planting programme.

Another of our initiatives that we are proud of is our 'Fireflies Conservation Programme' (*kelip-kelip*) which has seen considerable success, achieving our two-prong objectives of ensuring the fireflies colony in Kampung Kuantan, Selangor, continues to prosper, as well as enabling the villagers to earn a living from the thriving eco-tourism business. Today, the pilot programme at Kampung Kuantan has been extended to three more villages in the Peninsular states of Terengganu, Negeri Sembilan and Perak.

### BUILDING BETTER, BRIGHTER LIVES

TNB places great emphasis on helping local communities escape the low-income trap by providing opportunities for the young to pursue their studies up to the tertiary level. Through Yayasan Tenaga Nasional (YTN), we have provided more than 12,000 underprivileged students with financial assistance in their journey towards a better life and brighter livelihood for their families.

In FY2018, we dedicated RM35 million for our annual tertiary education scholarships that were awarded to 816 deserving students through YTN. To address the challenges faced by underprivileged and lower-income families, we launched the 'Dermasiswa My Brighter Future (MyBF) Programme' in August 2018 under YTN. Through this programme, TNB provides financial assistance to students from the B40 income group to extend their studies in the field of Science, Technology, Engineering and Mathematics (STEM) in local universities. A total of 945 students have benefitted from the financial programme, which covers board and lodging, tuition fees and living expenses throughout the duration of their studies.

As part of a deliberate approach to break the cycle of poverty and improve living standards, we continue to help and support the communities we operate in through our "Baiti Jannati" and "Program Mesra Rakyat" programmes. Through this initiative, TNB builds comfortable homes equipped with basic amenities like electricity, water and proper sanitation, and hands them over at no cost to deserving poor and underprivileged families. Since the launch of these programmes in 2007 and 2013 respectively, we have had the privilege of providing homes to more than 687 families.

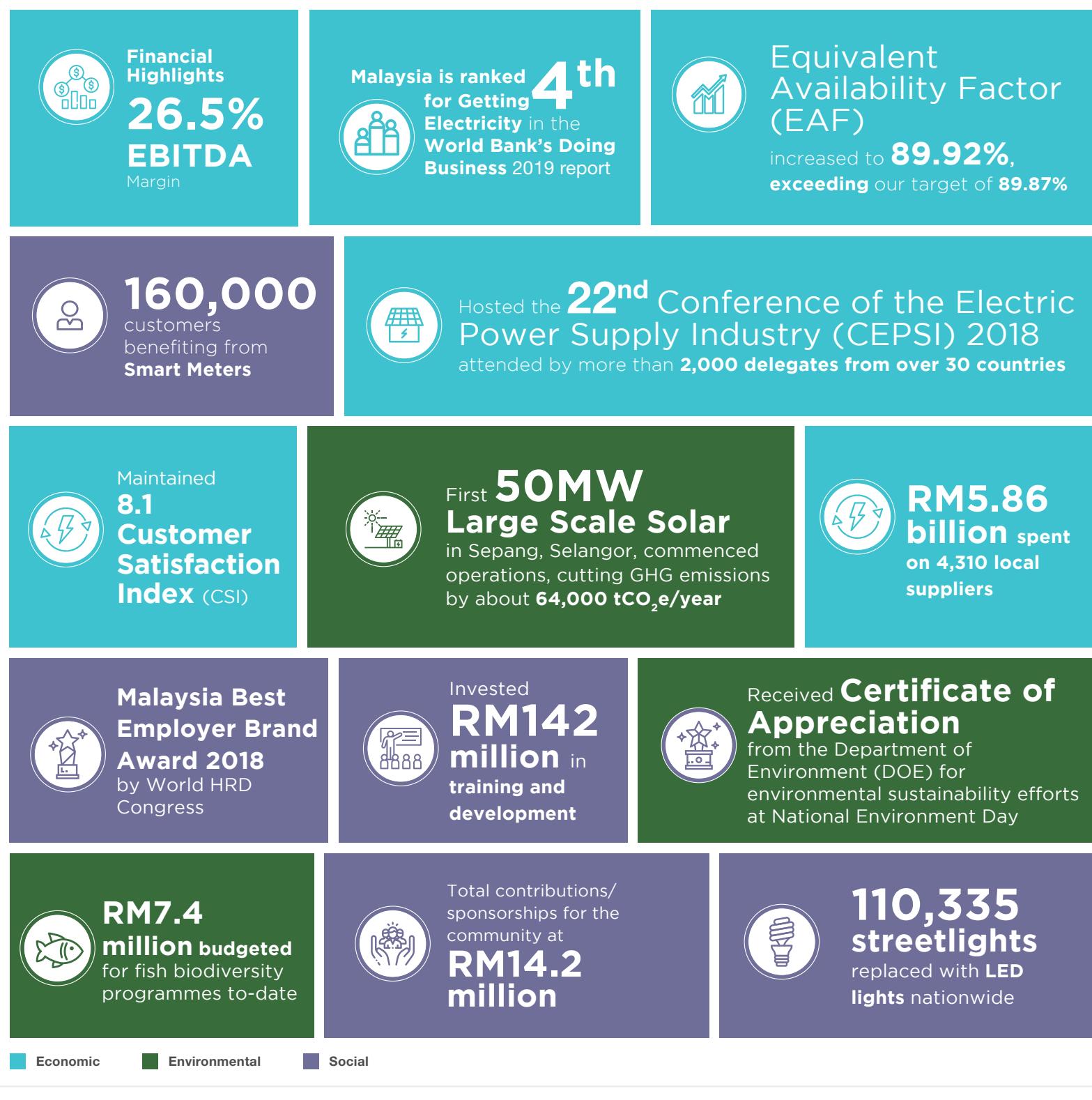
### MEETING FUTURE CHALLENGES

Electricity underpins every aspect of modern life. It is the foundation of economic growth and is a crucial element in determining the quality of life of our society. As the global energy landscape shifts toward decarbonisation, decentralisation and greater efficiency, accelerated by the emergence of disruptive and innovative technology, TNB is prepared to face the challenges ahead by staying focused on executing our strategic plans to realise our targets set under Reimagining TNB.

In our journey to become a leading global utility provider by 2025, we take pride in carrying out our mandate to ensure the continued security and affordability of electricity supply to our customers, while improving access and inculcating sustainability in our practices – to realise a better, brighter future for all Malaysians.

**AMIR HAMZAH BIN AZIZAN**  
 Chief Executive Officer

# SUSTAINABILITY HIGHLIGHTS



# ABOUT TNB AND OUR BUSINESS

Tenaga Nasional Berhad (TNB) is the largest electricity utility in Malaysia. With our core business of providing electricity to the country's businesses, homes and industries, we are a key contributor to nation building.



## OUR VISION

To be among the leading corporations in energy and related businesses globally

## OUR MISSION

We are committed to excellence in our products and services

Our activities represent the entire electricity production and supply value chain. In recent years, we have geared up our sustainability agenda through efforts such as Renewable Energy (RE) and other environmental and social initiatives as we seek to add value to all our stakeholders. We believe these activities will not only take TNB into the future, but also continue to grow our business sustainably in the long term.

TNB's core business essentially comprises Generation, Grid, Distribution Network and Retail operations. Our headquarters is located in Kuala Lumpur.

# REIMAGINING TNB

TNB's strategic plan for 2016 - 2025, Reimagining TNB, is anchored on maintaining our growth trajectory to emerge as one of the world's top 10 utilities by 2025. The world is currently changing at unprecedented speed fueled by global disruptions such as shifts in economic power, rapid technology advancement, increasing stakeholder demand and evolving regulatory landscape. Capitalising on the opportunities from these disruptions will enable TNB to unlock new growth areas.

Reimagining TNB is our strategy to do so and is driven by four value-creation pillars that will propel us towards our aspirations - Future Generation Sources, Grid of the Future, Winning the Customer and Future Proof Regulations.

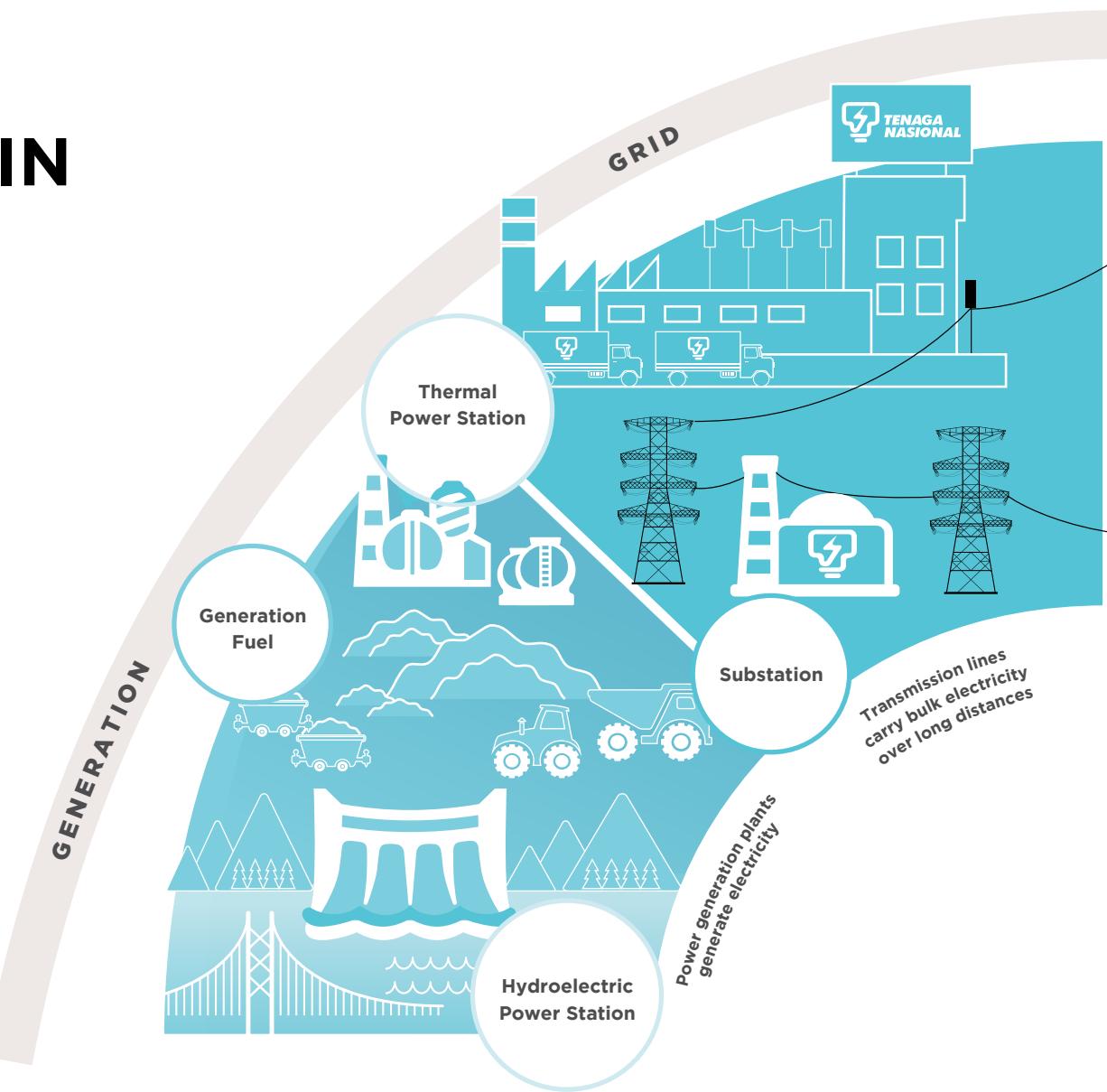
## OUR STRATEGY

Domestic and Regional Champion	Top Priorities	Target Metrics	Strategic Risks
 <b>Future Generation Sources</b>	<ul style="list-style-type: none"> <li>Growing TNB's renewable capacity</li> <li>Expansion of capacity into selected international energy markets with strong growth prospects</li> <li>Improving performance of existing generation fleet</li> </ul>	<ul style="list-style-type: none"> <li>Return on Invested Capital</li> <li>Renewable energy capacity</li> <li>Equity generation capacity</li> <li>Performance of generation assets</li> <li>Non-regulated revenue</li> </ul>	<ul style="list-style-type: none"> <li>Competency mismatch to drive strategy</li> <li>Inability to mitigate regulatory constraints</li> <li>Unable to keep pace with changing customers expectations</li> </ul>
 <b>Grid of The Future</b>	<ul style="list-style-type: none"> <li>Upgrading existing network infrastructure into a smart, automated and digitally- enabled network</li> <li>Optimising network productivity, efficiency and reliability</li> <li>Leveraging on network innovation to transform customers experience</li> </ul>	<ul style="list-style-type: none"> <li>Return on Regulated Asset</li> <li>Network productivity and efficiency</li> <li>Performance of network assets</li> </ul>	<ul style="list-style-type: none"> <li>Inability to mitigate regulatory constraints</li> <li>Incapacity to leverage on technology</li> <li>Inability to adapt to changing market environment</li> </ul>
 <b>Winning The Customer</b>	<ul style="list-style-type: none"> <li>Enhancing and renewing customers experience</li> <li>Growth through innovations of new solutions</li> <li>Meaningful engagements and communication with customers</li> </ul>	<ul style="list-style-type: none"> <li>Customer Satisfaction Index</li> <li>Brand Index</li> <li>Regulatory Satisfaction Index</li> <li>Social Media Sentiment</li> </ul>	<ul style="list-style-type: none"> <li>Unable to keep pace with changing customers' expectations</li> <li>Inability to adapt to changing market environment</li> </ul>
 <b>Future Proof Regulations</b>	<ul style="list-style-type: none"> <li>Working together with key stakeholders towards a stable and sustainable regulatory landscape</li> </ul>	<ul style="list-style-type: none"> <li>Return on Regulated Assets</li> </ul>	<ul style="list-style-type: none"> <li>Inability to mitigate regulatory constraints</li> <li>Ineffective engagement with stakeholders</li> <li>Inability to adapt to changing market environment</li> </ul>

 To read more about GSPARX Sdn. Bhd., please refer to page 42 of this Report

In alignment with our Vision, Mission, Reimagining TNB Strategic Plan and in our understanding of our leading position in the energy sector, as well as the role we play towards promoting greater sustainability - we will continue to strive towards ensuring that sustainability is intrinsic in our business and operations, while safeguarding the values and interests of our stakeholders and acting in accordance with the highest ethical standards.

# TNB VALUE CHAIN



## GENERATION

Develops, operates and maintains TNB's portfolio of power generating units. This division manages thermal generation assets and major hydro-generation schemes in Peninsular Malaysia

**10,917.53MW**

Natural Gas

**4,251.43MW**

Hydro

**2,536.10MW**

Coal

**4,080.00MW**

Solar

**50.00MW**

*For wholly-owned plants in Peninsular Malaysia*

## GRID

Manages and operates the 132kV, 275kV and 500kV transmission network (National Grid) in Peninsular Malaysia

Maximum Demand

**18,338MW**

On 15 August 2018

Length of Transmission Network

**23,082KM**

Number of Transmission Substations Operated

**443**

stations

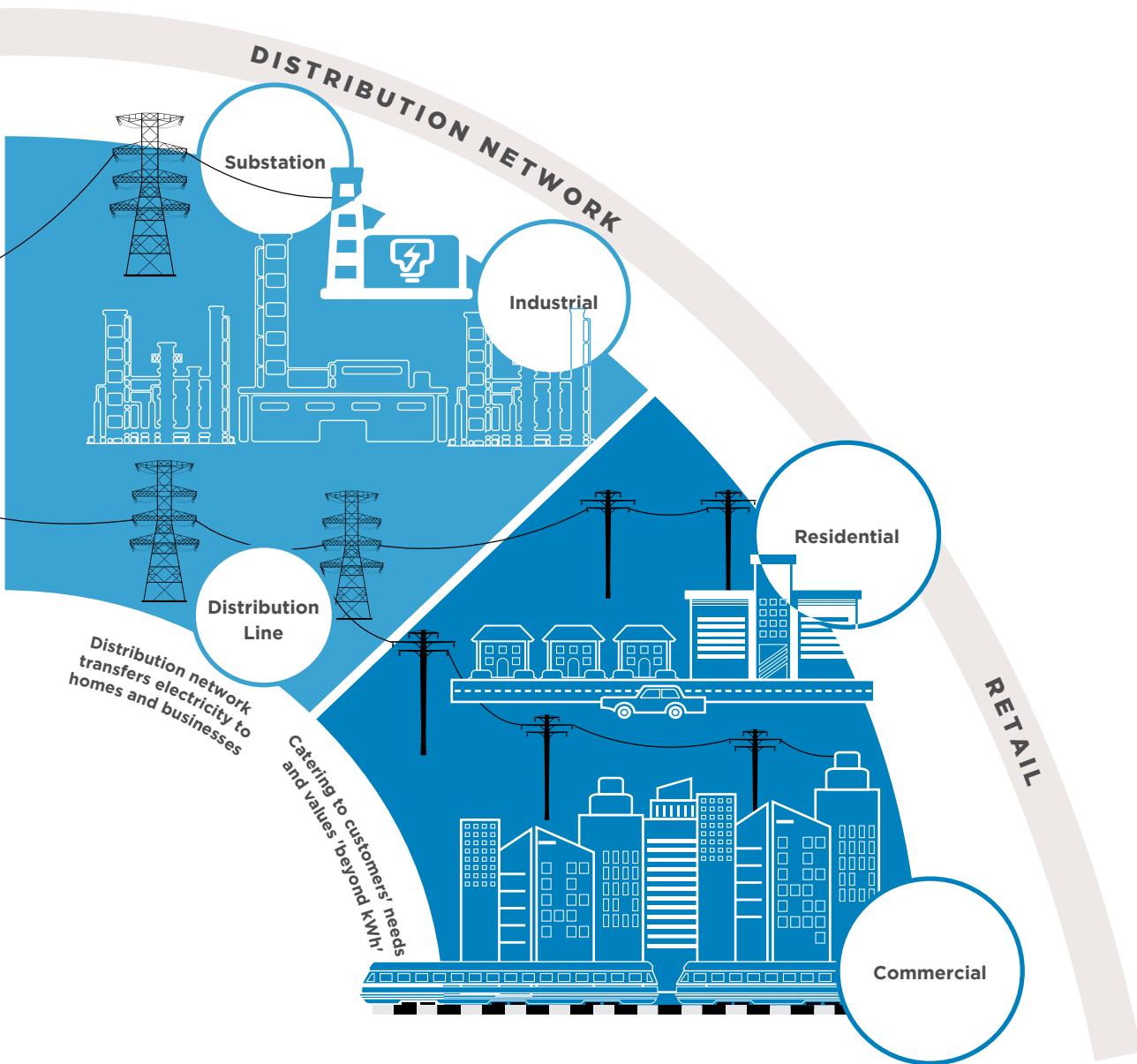
Number of Transmission Transformers Operated

**1,265**

Units

p.9

## About TNB and Our Business



### DISTRIBUTION NETWORK

Plans, constructs, operates, repairs, maintains and manages the 33kV, 22kV, 11kV, 6.6kV, 0.415kV and 0.23kV distribution network in Peninsular Malaysia

#### Length of Distribution Network

**660,038KM**

#### Number of Distribution Substations Operated

**81,327**  
stations

#### Number of Distribution Transformers Operated

**87,179**  
Units

### RETAIL

Operates a network of state and area offices to provide innovative products and excellent services to all our customers

#### Customer Base

**9,039,197**

in Peninsular Malaysia

#### Units of Electricity Sold

**113,469.22GWh**

in Peninsular Malaysia

#### Customer Demographic

Domestic <b>7,378,425</b> Customers	Commercial <b>1,553,607</b> Customers	Industrial <b>29,749</b> Customers	Others* <b>77,416</b> Customers
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\*Others consist of mining, street lighting and free units

# SUSTAINABILITY AT TNB

As Malaysia's largest and South East Asia's leading electricity utility company, we continuously aim to provide Malaysia with secure and reliable energy while also contributing to the nation's development in various ways. Our contributions have evolved – from being predominantly philanthropy-based to championing sustainability in more strategic, meaningful and relevant ways.

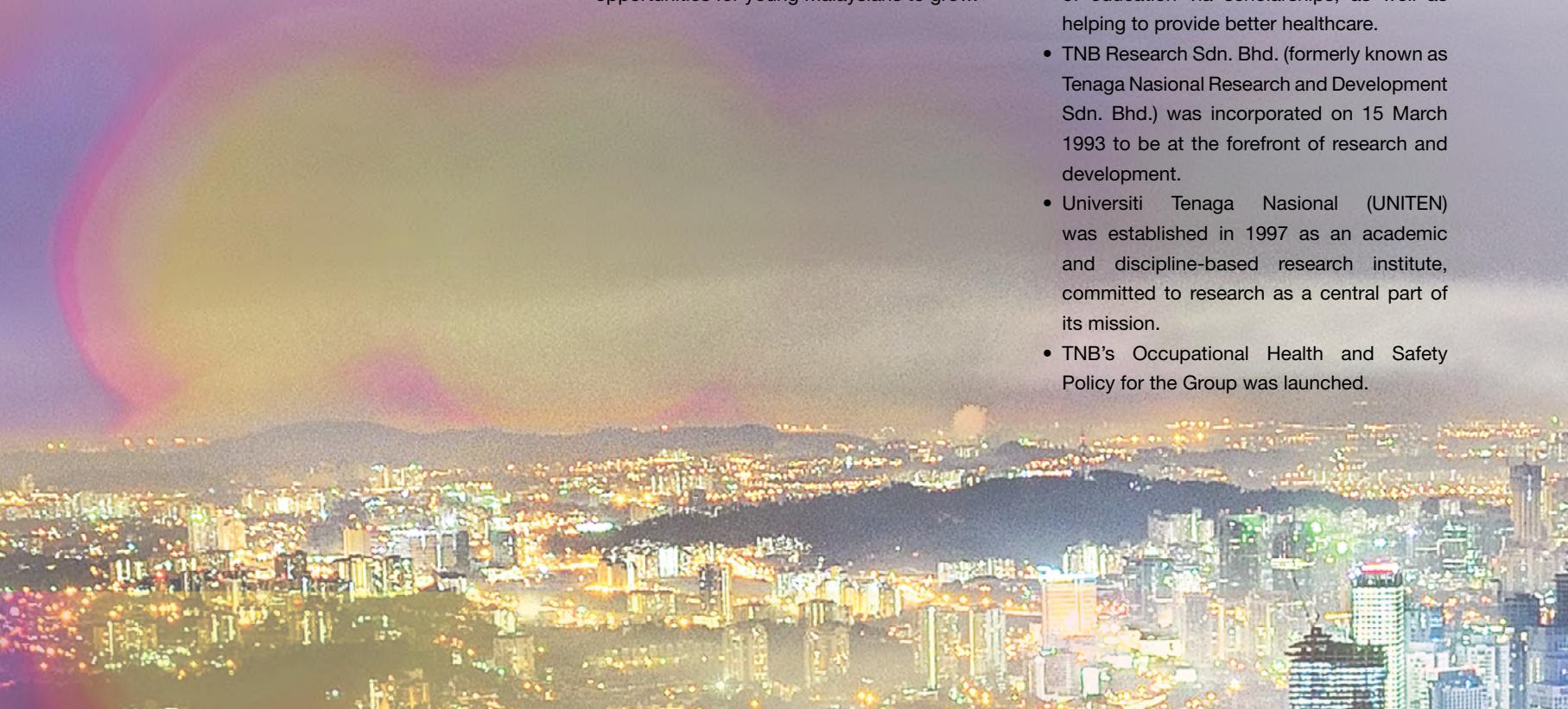
## TNB SUSTAINABILITY MILESTONES


 1970's

1990's

1980's

- A training institute, known as the Institut Latihan Sultan Ahmad Shah (ILSAS), was set up in 1976.
- First Grid connection was made from the West Coast to the East Coast, supplying electricity to Kuantan and Pekan.
- The National Load Despatch Centre (NLDC) was established in 1978 to provide reliable energy to our customers.
- Construction of the Kenyir dam, the largest hydroelectric scheme in Peninsular Malaysia was completed in December 1985. During construction, the Company was involved in Operation Jumbo to relocate a herd of elephants trapped by rising waters on the man-made islands in the lake.
- TNB Hockey Club was founded as our commitment in assisting the National Hockey Development, as well as providing opportunities for young Malaysians to grow.
- The Lembaga Letrik Negara (National Electricity Board) was corporatised as Tenaga Nasional Berhad (TNB) in 1990 and was listed on the Kuala Lumpur Stock Exchange in 1992.
- Our foundation, Yayasan Tenaga Nasional (YTN), was established in 1993. Through this, the Company runs numerous community programmes that benefit the underprivileged, such as the sponsorship of education via scholarships, as well as helping to provide better healthcare.
- TNB Research Sdn. Bhd. (formerly known as Tenaga Nasional Research and Development Sdn. Bhd.) was incorporated on 15 March 1993 to be at the forefront of research and development.
- Universiti Tenaga Nasional (UNITEN) was established in 1997 as an academic and discipline-based research institute, committed to research as a central part of its mission.
- TNB's Occupational Health and Safety Policy for the Group was launched.



While continuing to adapt to emerging opportunities and challenges, we remain committed to operating in a manner that is receptive to the needs and expectations of our stakeholders. In addition, we also proactively adopt a long-term view with an appreciation of our responsibility towards the people that we serve and the constantly-evolving planet that we live in.

Sustainability at TNB is rooted in our governance and other policies and is reflected in our business strategy, as well as in our decision-making processes. It influences everything we do, from the way we conduct our business and how we reduce impact to the environment, to creating positive experiences for the people that we serve – our employees and communities, among others.

2000's

2010-2018

- Funded by the Ministry of Rural Development (KKLW), the Village Street Lighting Project was rolled-out in 2003 to ensure public areas in villages are lit at night to support safe activities.
- The Community Outreach Programme (COP) was initiated in 2005 as a platform for the Management of TNB to engage directly with the communities we serve.
- In September 2005, TNB signed an agreement with the State Government of Selangor to launch the Kampung Kuantan Firefly Conservation Project in Kuala Selangor.
- TNB's CareLine 15454 service was launched on 13 June 2006 to provide a better platform to receive customers' feedbacks and/or complaints.
- *Projek Baiti Jannati* was launched in 2007, where the homes of the underprivileged were renovated and equipped with electricity, water and proper sanitation.
- In January 2009, the innovative Online Bill service was launched, allowing customers to view and pay their electricity bills online. It is seen as a significant milestone for electronic payments (e-payments) in Malaysia.
- The 'Tree for a Tree' programme was introduced in 2009 to counterbalance carbon emissions and re-green and re-energise urban public areas.

- In 2010, the Customers First Programme and TNB's Customer Charter was launched as part of the Company's initiatives to upgrade the quality of our services.
- In 2011, our Corporate Integrity Pledge was introduced to showcase our commitment to promote our TNB integrity focus, transparency and good governance.
- The Green Energy Policy was introduced in 2011 to support the national green agenda by applying sustainable, efficient operations and delivering green energy through the application of appropriate technologies and investments.
- On 22 March 2013, TNB launched the TNB-World Wildlife Fund (WWF) Malaysia Earth Hour 2013 Awareness Campaign.
- In 2016, we introduced our strategic plan 2017 to 2025 called Reimagining TNB with objectives to emerge as one of the global top ten utilities by 2025.
- TNB was one of the first corporations in Malaysia to embark on the ISO 37001:2016 Anti Bribery Management System certification in 2016.
- Sustainability Statement was first disclosed in the Annual Integrated Report in 2016.
- The first Large Scale Solar (LSS) farm at Sepang, Selangor with the capacity of 50MW was introduced in 2017, marking our venture into local solar energy generation.
- TNB's Sustainability Development Committee (SDC) was formalised to review, evaluate and advise on sustainability and green energy related initiatives prior to further review by other relevant committees including the Board.
- In 2017, TNB acquired a 50% interest in Vortex Solar Investments Sarl which operates a 365MW solar photovoltaic (PV) portfolio in the United Kingdom, increasing our overseas Renewable Energy (RE) portfolio.
- In 2017, the first assessment of our carbon footprint was completed and we intend to continuously improve the monitoring of our GHG emissions by developing a GHG Management System.
- TNB Sustainability Report was first published in 2017.
- In 2017, TNB's Green Energy Development Fund was implemented by the Sustainability Development Committee, for the purpose of seeding sustainability-related initiatives.
- TNB's Environmental Policy for the Group was launched in 2017.



# MANAGING SUSTAINABILITY

The world is constantly evolving insofar as sustainability issues are concerned. These changes are driven by naturally-induced factors and those propagated by humans. The latter includes exacerbating climate change, geopolitical tensions, population rise, rapid urbanisation, technology advancement and disruptions, economic challenges, environmental degradation and increasing regulatory requirements among others.

Within this context of constant evolution, the Energy Supply Industry (ESI) faces what the World Energy Council terms the “energy trilemma”, which is essentially the challenge to ensure energy security, universal access to affordable energy supply and environmentally responsible production and use of energy. Since 2010, the Council has prepared the annual World Energy Trilemma Index to provide Governments a clear framework to deliver transformations to make sustainable energy systems a reality; while stakeholders observe how well Governments and companies are responding to the trilemma.



It is imperative for TNB to be responsive to these constantly evolving trends, challenges and various material matters pertinent to the energy industry, whilst also being mindful of the concerns and expectations of our stakeholders and focusing on the broader contribution towards a more sustainable world.

In 2018, we adopted a more formal approach towards the management of sustainability including our commitments to governance, economic, environmental and social pillars that are fully aligned with our Reimagining TNB strategy.

We are cognisant to note that sustainability is a continuous and progressive journey. At TNB, we have aligned our aspirations and sustainability commitments with the United Nations Sustainable Development Goals (UN SDGs). In this regard, TNB Sustainability Strategy includes our impactful contributions to four SDGs namely; Goal 7 (Affordable and Clean Energy), Goal 8 (Decent Work and Economic Growth), Goal 13 (Climate Action) and Goal 17 (Partnership for the Goals) as illustrated in the diagram on this page.

The diagram shows the linkages and alignment between Reimagining TNB, our sustainability commitments and the UN SDGs - demonstrating how our sustainability priorities and growth blueprint are homogeneous in their approach and are aligned towards ensuring TNB’s continuous and sustainable progression in the coming years.



# SUSTAINABILITY GOVERNANCE

We are taking progressive steps toward ensuring sustainability principles are embedded into our decision making process and also throughout our operations. Sustainability is embedded in our company policies and is inextricably linked with our business strategy and decisions. It influences our investments, operational efficiency programmes, stakeholder engagements and climate risk mitigation efforts, among others.

TNB's Board of Directors is cognisant of the importance of ensuring that sustainability is integrated in the strategic direction of the organisation, decision making processes and operational performance.

TNB's sustainability initiatives fall under the purview of the respective committees – including Sustainability Development Committee (SDC), chaired by the President/Chief Executive Officer (CEO).

The SDC's role is to review, evaluate and advise on Sustainability and Green Energy related initiatives prior to further review by other relevant committees including the Board. Decision to escalate issues to higher approving authorities are subject to our Procurement and Supply Chain Policy and Procedures and Limits of Authority (LOA) guidelines.

Additionally, the SDC also serves as a platform to communicate and share relevant information relating to sustainability at TNB, specifically on Sustainability and Green Energy related business and other material matters.

Key matters discussed at the SDC in FY2018 include the following:

- Review of material matters for sustainability reporting
- TNB's commitment to the UN SDGs and future plans
- Climate-related disclosures including greenhouse gas (GHG) emissions
- TNB Green Energy Development Fund (TGEDF)

 To read more about how the SDC is structured under TNB's Corporate Governance, please refer to page 20 of the Governance Model

Sustainability initiatives and their implementation are cascaded down to TNB divisions and subsidiaries for incorporation into their respective business and operational areas. Sustainability performance is reported by the divisions and subsidiaries periodically.

As sustainability gains further traction and with guidance by the SDC and the respective committees, TNB divisions and subsidiaries will play a more active role in ensuring that sustainability is ingrained and forms a key component in the day-to-day running of our business and operations.

# SUPPORTING THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

In 2015, as part of the United Nations (UN) 2030 Agenda for Sustainable Development, 17 Sustainable Development Goals were adopted by 193 countries in the UN General Assembly. These goals and targets have been identified as important calls for action globally to enhance the wellbeing of the present and future generations.

As a signatory to the UN SDGs, Malaysia is committed to aligning the nation's sustainability aspirations towards the UN SDGs through partnership and collaboration. Malaysia's current five-year development plan (2016-2020), also referred to as the 11<sup>th</sup> Malaysia Plan takes into consideration the importance of sustainability that is integral to Malaysia's commitment towards the UN SDGs.

Ensuring the success of the 2030 Agenda is not just the responsibility of a single party, but requires a multi-stakeholder approach which includes the Government, regulatory bodies, corporations and the community as a whole. We are conscious of the role that we play in contributing towards Malaysia's sustainability commitment and goals. At TNB, our sustainability efforts have direct contributions to four UN SDGs, namely Goals 7, 8, 13 and 17. Our approach to the selection of these four UN SDGs was based on what is most material to us as a responsible corporate citizen and the areas that are most relevant to our business, operations and stakeholders.

TNB's contributions to the UN SDGs are not limited to the four distinct goals mentioned as various initiatives undertaken by the Group also indirectly address the imperatives highlighted under other relevant UN SDGs respectively.

 These are further showcased in the following section ("What Matters to Us" on page 17 of this Report)

Looking ahead, we will further enhance the formulation and development of relevant strategies, action plans and targets in regard to the four identified UN SDGs. This will enable us to further advance our internal processes to improve the measuring and management of our sustainability performance as a whole.



**At TNB, our sustainability efforts have direct contributions to four UN SDGs, namely Goals 7, 8, 13 and 17**

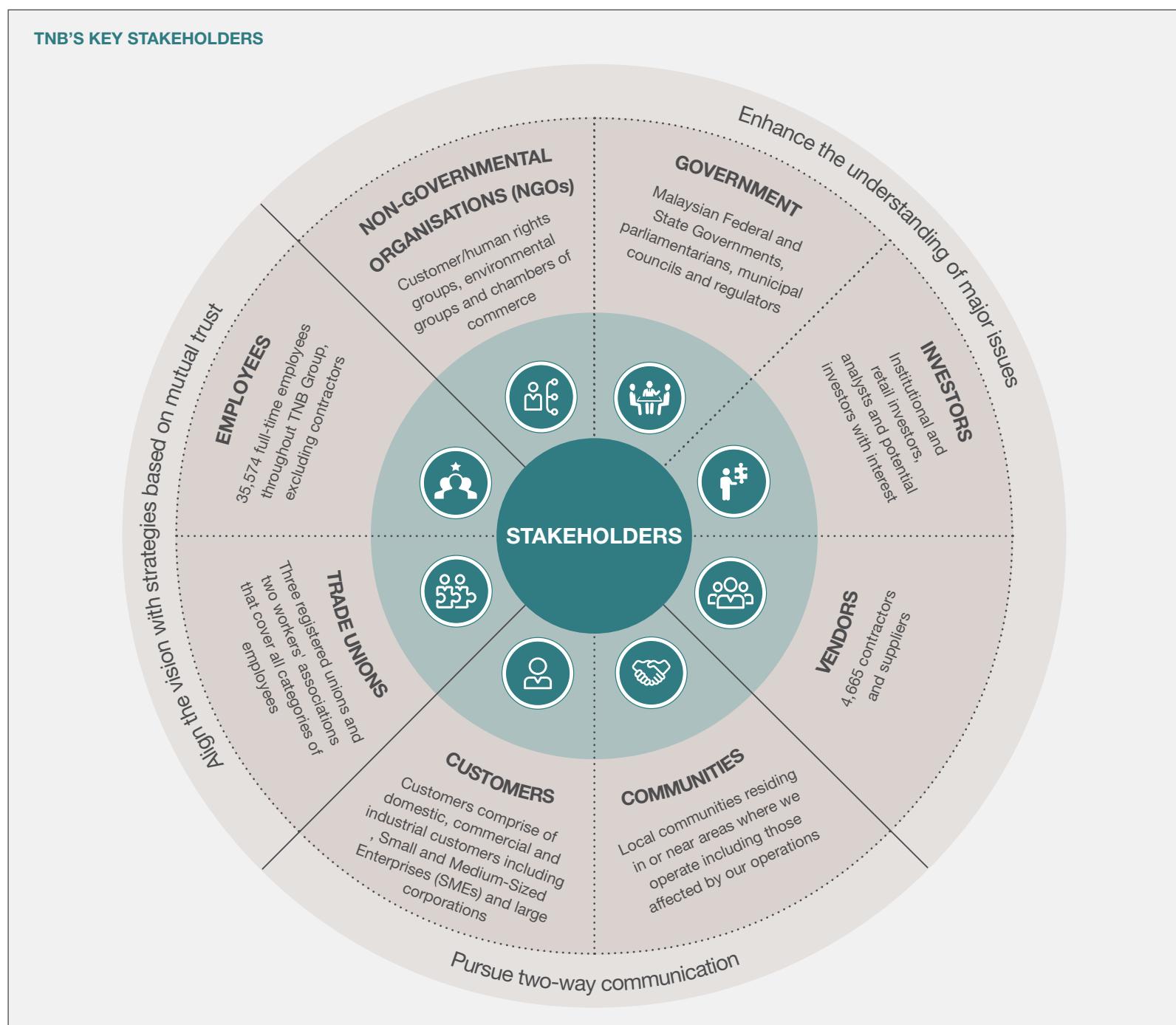
# SUSTAINABLE DEVELOPMENT GOALS



# ENGAGING STAKEHOLDERS

Stakeholder engagement process is an important component of TNB's sustainability agenda. The purpose of engagement is to foster better relationships and also to better understand their respective needs and concerns to continuously improve our social responsibility efforts. At TNB, we engage with various stakeholders on a regular and as-needed basis.

We have identified our key stakeholder groups through a systematic approach, as part of our materiality assessment process. The following table provides further details on the stakeholder groups relevant to the Company, our methods of engagement, areas of interests or concerns identified and our response to these.



# TNB'S STAKEHOLDER ENGAGEMENT APPROACH

Stakeholder Groups	Engagement Platforms	Areas of Interest or Concerns	Our Response in Topic
 <b>CUSTOMERS</b>	<ul style="list-style-type: none"> <li>Customer service outlets</li> <li>Call centre</li> <li>myTNB application and online portal</li> <li>Customer surveys</li> <li>Social media networks</li> <li>Roadshows</li> <li>Campaigns</li> </ul>	<ul style="list-style-type: none"> <li>Accessible and reliable supply of electricity</li> <li>Affordable electricity and tariffs</li> <li>Competitiveness and stability of electricity prices</li> <li>Potential environmental impacts</li> </ul>	<ul style="list-style-type: none"> <li>Customer Centricity – page 39</li> <li>Minimising Environmental Impact – page 47</li> </ul>
 <b>GOVERNMENT</b>	<ul style="list-style-type: none"> <li>Meetings and briefings</li> <li>Site visits</li> <li>Round table sessions</li> <li>Direct contact</li> <li>Outreach programmes</li> </ul>	<ul style="list-style-type: none"> <li>Reliable and affordable supply of electricity</li> <li>Malaysia's renewable energy development</li> <li>Malaysia Electricity Supply Industry (MESI) reform 2.0</li> <li>Cyber security posture of Critical National Information Infrastructure (CNII) in Grid network</li> </ul>	<ul style="list-style-type: none"> <li>The Future of Energy – page 25</li> <li>Climate Change – page 53</li> </ul>
 <b>INVESTORS</b>	<ul style="list-style-type: none"> <li>Financial results announcements</li> <li>Investor relations conferences and roadshows</li> <li>One-to-one engagements</li> <li>Site visits</li> </ul>	<ul style="list-style-type: none"> <li>Changes in the regulatory framework and electricity supply industry</li> <li>Financial sustainability and returns</li> <li>Group business strategy and direction i.e. domestic and international growth strategy</li> <li>Sustainability performance</li> </ul>	<ul style="list-style-type: none"> <li>The Future of Energy – page 25</li> </ul>
 <b>EMPLOYEES</b>	<ul style="list-style-type: none"> <li>Direct contact</li> <li>Townhalls, turun padang and other outreach programmes</li> <li>Online portal (intranet), newsletters, emails and TV TNB</li> <li>Employee surveys</li> <li>Corporate Social Responsibility (CSR) events</li> <li>Social media</li> </ul>	<ul style="list-style-type: none"> <li>Employee satisfaction</li> <li>Career development</li> <li>Employee welfare</li> <li>Talent and skill development</li> <li>Employee engagement on TNB's strategies and initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Unlocking People Value – page 59</li> </ul>
 <b>TRADE UNIONS</b>	<ul style="list-style-type: none"> <li>Joint meetings and engagement sessions</li> <li>Negotiations</li> <li>Collective Agreements</li> <li>Direct contact</li> </ul>	<ul style="list-style-type: none"> <li>Collective bargaining</li> <li>Employee welfare</li> <li>Employee engagement on TNB's strategies and initiatives</li> <li>Resolving employee issues</li> </ul>	<ul style="list-style-type: none"> <li>Unlocking People Value – page 59</li> </ul>
 <b>VENDORS</b>	<ul style="list-style-type: none"> <li>Direct contact</li> <li>Training and workshops</li> <li>TNB Vendors Day</li> <li>Outreach programmes</li> </ul>	<ul style="list-style-type: none"> <li>Vendors engagement</li> <li>Industry support for business growth</li> </ul>	<ul style="list-style-type: none"> <li>The Future of Energy – page 25</li> </ul>
 <b>COMMUNITIES</b>	<ul style="list-style-type: none"> <li>Outreach programmes</li> <li>Corporate Social Responsibilities (CSR) events</li> <li>Town halls</li> <li>Dialogue sessions</li> <li>Sporting events</li> </ul>	<ul style="list-style-type: none"> <li>Community building programmes for those in need</li> <li>Sponsorship for community services</li> <li>Potential environmental impacts</li> </ul>	<ul style="list-style-type: none"> <li>Minimising Environmental Impact – page 47</li> <li>Brightening Surrounding Communities – page 75</li> </ul>
 <b>NON-GOVERNMENTAL ORGANISATIONS (NGOs)</b>	<ul style="list-style-type: none"> <li>Direct contact</li> <li>Outreach programmes</li> <li>Seminars and knowledge sharing sessions</li> </ul>	<ul style="list-style-type: none"> <li>Affordable electricity tariffs</li> <li>Competitiveness of electricity prices</li> <li>Environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>The Future of Energy – page 25</li> <li>Minimising Environmental Impact – page 47</li> </ul>

# WHAT MATTERS TO US

In FY2017 (ended 31 August 2017), we conducted a comprehensive materiality assessment to identify matters which could have significant economic, environmental and/or social impacts to our business and stakeholders. Subsequently, we have reviewed these material matters for FY2018 and concluded that matters reported previously remained our priorities.

We have also expanded our reporting scope by adding three material matters as endorsed by the Sustainability Development Committee. They are: Sustainable Supply Chain, Asset Optimisation and Waste Management.

Sustainability Pillars	Topics	Material Matters	Contributions to SDGs
 <b>Spirit of Responsibility</b>	<p><b>Our Governing Principles</b></p> <p>Promoting ethical and safe practices is driven by the TNB Board and shared by our Management with all employees to reinforce sound business and forward-looking culture</p>	<ul style="list-style-type: none"> <li>• Responsible and Ethical Business Practices</li> </ul>	
 <b>Delivering with Purpose</b>	<p><b>The Future of Energy</b></p> <p>TNB's strategic plan for 2017-2025, Reimagining TNB is anchored on maintaining our growth trajectory to emerge as one of the top 10 global utilities by 2025</p>	<ul style="list-style-type: none"> <li>• Business and Financial Performance</li> <li>• Energy Efficiency</li> <li>• Fuel Mix Policy</li> <li>• Efficient Technology and Innovation</li> <li>• Asset Optimisation</li> <li>• Cyber Security Management</li> <li>• Sustainable Supply Chain</li> <li>• Reliable Energy and Fair Tariffs</li> <li>• Renewable Energy</li> </ul>	
 <b>Environmental Stewardship</b>	<p><b>Customer Centricity</b></p> <p>We seek to win customer trust and loyalty over the long-term through effective engagement, quality service and exceptional customer experience</p> <p><b>Minimising Environmental Impact</b></p> <p>TNB strives to protect and conserve the environment in our operations and decision-making in line with our commitment for continuous improvement of environmental performance</p>	<ul style="list-style-type: none"> <li>• Customer Experience</li> <li>• Energy Efficiency</li> </ul> <ul style="list-style-type: none"> <li>• Environment Management</li> <li>• Biodiversity Management</li> <li>• Natural Resource Consumption</li> <li>• Waste Management</li> </ul>	
 <b>Embracing Relationships</b>	<p><b>Climate Change</b></p> <p>We are committed towards a low-carbon economy by embracing and supporting renewable energy generation and energy efficiency to reduce greenhouse gas emissions</p> <p><b>Unlocking People Value</b></p> <p>In line with designating 2018 as the Year of The People, TNB's Management invested even more effort on employee engagement and inspiring our people to embrace an "adaptive culture". The idea is to remain agile in the way we work and be open to new ways of doing things</p> <p><b>Generative Safety Culture</b></p> <p>We seek to create a generative safety culture in which everyone is concerned not only with his or her own safety, but also the safety of their colleagues to achieve zero accidents and fatalities</p> <p><b>Brightening Surrounding Communities</b></p> <p>We strive to make people's lives better and brighter through our conviction in sustainability and commitment towards people and the environment. We do this by supporting them with skill, sustaining the environment and enhancing their livelihood. We engage in a wide range of programmes that seek to leave a long-lasting positive impact to people and communities</p>	<ul style="list-style-type: none"> <li>• Greenhouse Gas Emissions</li> <li>• Renewable Energy</li> <li>• Energy Efficiency</li> </ul> <ul style="list-style-type: none"> <li>• Diversity and Inclusion</li> <li>• Workplace Culture</li> <li>• Employee Engagement</li> <li>• Capability Development</li> </ul> <ul style="list-style-type: none"> <li>• Safety and Emergency Preparedness</li> <li>• Health and Well-being</li> </ul> <ul style="list-style-type: none"> <li>• Community Development</li> <li>• Education</li> </ul>	    

 Direct Contributions

 Indirect Contributions



Please refer to the SDGs on page 14

Measures taken to manage these material matters are categorised into eight thematic topics across our four Sustainability Pillars – Spirit of Responsibility (Governance), Delivering with Purpose (Economic), Environmental Stewardship (Environmental) and Embracing Relationships (Social). In line with our aspiration to highlight our direct contributions to the UN SDGs, we have mapped the UN SDGs which are committed to against each material matter, while illustrating other relevant UN SDGs with indirect contributions. As we progress in our sustainability journey, we strive to continuously enhance the scope of our reporting, as well as the overall disclosure of our sustainability programmes, initiatives and performance indicators.

## MATERIAL MATTERS

- Responsible and Ethical Business Practices

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*TNB is committed to championing good governance and the highest ethical values among all employees through our well-entrenched Code of Ethics, policies and procedures.*



# Spirit of Responsibility

## Our Governing Principles

Promoting ethical conduct and safe practices is driven by the TNB Board and shared by the Management with all our employees to reinforce sound business and a forward-looking culture.

### KEY HIGHLIGHTS



Obtained  
**ISO 37001:2016**  
**Anti Bribery**  
**Management**  
**System** certification



**Integrity Pledge**  
signed by **all**  
**employees**



Launched  
**TNB Corporate Integrity**  
**Management System (TCIMS)**  
**Handbook**

# CORPORATE GOVERNANCE AT TNB

TNB is committed to operating in an ethical, transparent and responsible manner given the critical role we play in national development and the number of stakeholders who are impacted by our business. Integrity is at the forefront of everything we do. It is one of our Shared Values and is driven by our Board and Top Management. We aspire for every employee to uphold the highest standards of ethics in all our dealings.

We have in place a robust Corporate Governance Model which defines the boundaries within which our employees and external parties are expected to perform and a common approach to how we conduct our business across the organisation. We regularly review our governance principles and practices, ensuring they reflect changes in the regulatory environment and are in line with international best practice.

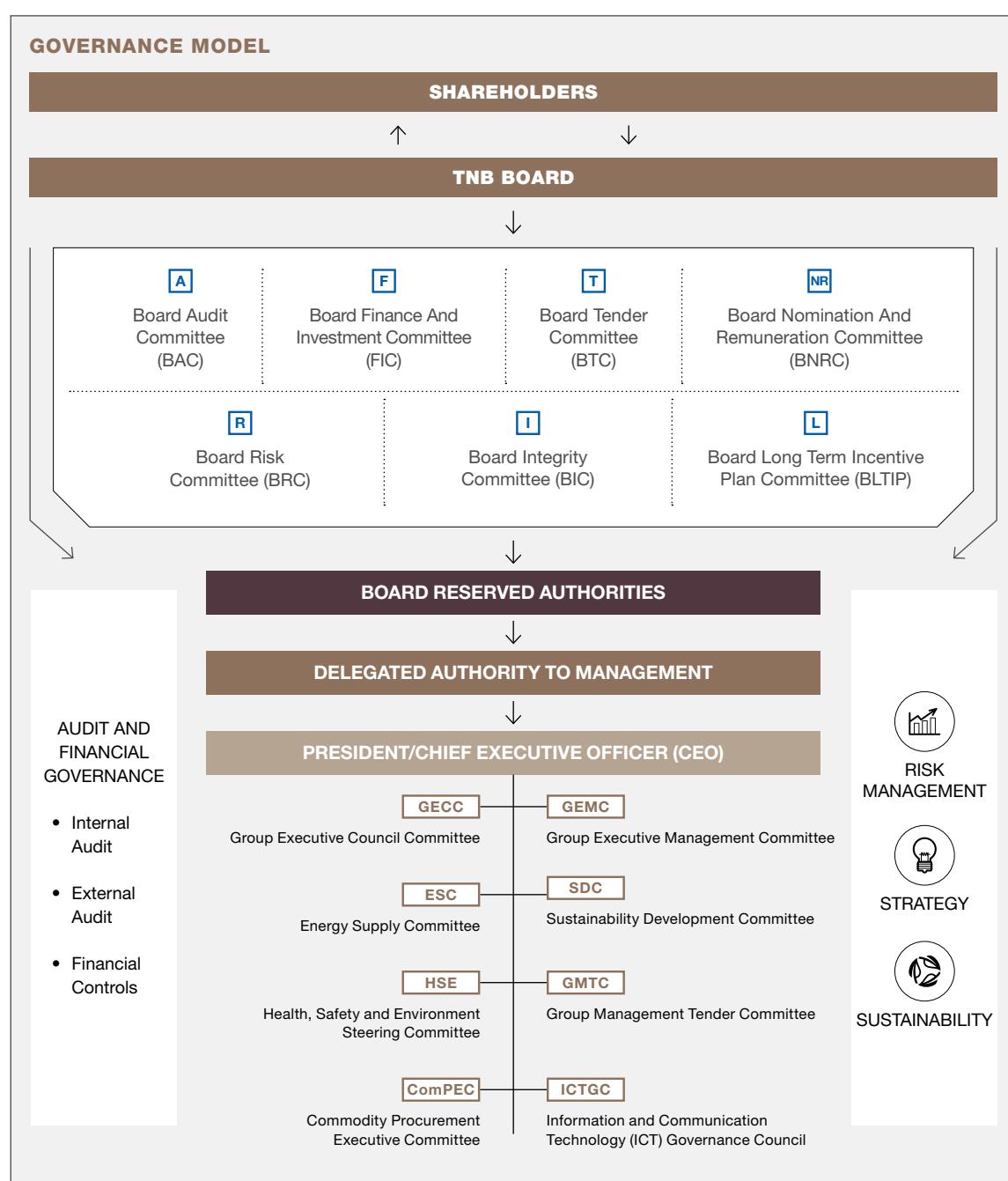
We comply with all relevant regulations to ensure integrity and good governance. These include the Companies Act 2016, Bursa Malaysia Securities Berhad's Main Market Listing Requirements and the Securities Commission's Malaysian Code on Corporate Governance 2017 (MCCG). Going beyond regulatory requirements, we strive to create a culture of ethics in which integrity is paramount to everyone.



In FY2018, there has been no cases of significant fines and non-monetary sanctions due to non-compliance with laws and/or regulations in relation to socio-economic concerns



To read more, please refer to our Corporate Governance Statement, which can be found on pages 118 - 140 of our Integrated Annual Report (IAR) 2018



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## **Spirit of Responsibility**

# **RISK MANAGEMENT AND INTERNAL CONTROL**

At TNB, we believe in the importance of integrating risk management into our processes and decision making to enable the achievement of our business objectives. The design and implementation of the TNB Risk Management Framework is based on the principles and guidelines expressed in ISO 31000:2009 Risk Management – Principles and Guidelines.

The intent of the TNB Risk Management Framework is to provide a structured and consistent approach to risk management across the Group for informed decision-making. The purpose of risk management is to create and protect value and this is exemplified through each element in the TNB Risk Management Framework.

A structured risk management process is in place to guide the Group to identify, analyse, evaluate and treat risks. The business units apply the process on a systematic, iterative and collaborative manner, drawing on the knowledge and views of stakeholders to develop and manage its respective risks.

This is supported by our internal control framework to manage risks within tolerable levels. The Group's risk management and internal control systems are designed to manage rather than eliminate risks; therefore, it provides reasonable rather than absolute assurance against material losses, misstatements or other significantly adverse consequences.

Group policies, codes and procedures are regularly reviewed and approved by Management and the Board. The effectiveness of implementation is consistently assessed and monitored for continual improvement.

Given that our assets are important to national security, we take every possible measure to protect them from potential threats. This year, our ICT and Cybersecurity Departments embarked on a collaboration with the Safety Services Department (JPK) to develop an operations model and roadmap to safeguard the security of our physical assets. Security gap analyses were also conducted and recommendations for improvement are to follow.



For more information please refer to the Statement of Risk Management and Internal Control on pages 144 - 146 of the IAR 2018



**The ISO 31000:2009 Risk Management - Principles and Guidelines steers our Risk Management Framework**

## **CODE OF ETHICS**

Our Code of Ethics applies to everyone in TNB, from employees to our Board, ensuring we always maintain the highest level of integrity. The Code defines how TNB relates to our shareholders, employees, suppliers and local communities, setting out provisions to ensure compliance with laws and regulations while outlining potential conflicts of interest. It includes general principles on business integrity. In addition, our Directors are guided by the Code of Ethics for Company Directors, established by the Companies Commission of Malaysia. The Code also encompasses TNB's Procurement Code of Conduct, which applies to our Directors, employees, suppliers and contractors, including their directors and employees.



For more information on our Code of Ethics, please refer to page 135 of the IAR 2018

# INSTILLING A CULTURE OF INTEGRITY

In 2017, TNB was one of the first listed corporations in Malaysia to embark on the ISO 37001:2016 Anti-Bribery Management System certification. Towards achieving the certification, we launched the TNB Corporate Integrity Management System (TCIMS) to drive an integrity-based culture and a high level of compliance with local and international anti-bribery standards. On 15 November 2018, we obtained the certification from Standard and Industrial Research Institute of Malaysia (SIRIM) and TCIMS is expected to be completed by late January 2019.

Further reinforcing this culture, the TCIMS handbook was launched on 19 December 2018 in conjunction with TNB Integrity Day. The handbook covers TCIMS policies on anti-bribery, gifts, hospitality & related benefits, conflicts of interest, whistleblowing and Integrity Pact & Committee Integrity Pledges Policy.



We embarked on the ISO 37001:2016 Anti-Bribery Management System certification in 2017, being one of the first corporations to do so

Launched TNB Corporate Integrity Management System (TCIMS) to drive an integrity-based culture within the organisation



A key highlight for this year was the signing of the Integrity Pledge by all employees for the purpose of increasing awareness and symbolic of the accountability they hold in their respective assignments and portfolio.

A 360° Integrity Survey was conducted post-TCIMS Implementation, where 4,045 responses were received from employees and 417 responses were received from vendors. The survey produced some useful results from both employees and vendors regarding how TNB is perceived with respect to business integrity. In general, the outcome of the survey showed that TNB improved in the areas covered by the TCIMS, although there is still further work to be done in the area of training and communication, both internally and externally. Overall, the survey proved that the TNB's integrity level is robust, while also indicating areas for improvement.

Our employees receive continuous training and awareness sessions to strengthen the value of integrity within the company. In FY2018, 1,728 of our employees attended Integrity Engagement Programmes that were conducted nationwide. Our goal is for all companies within the Group to adopt the ISO 37001 standard. Towards this end, we will continue with various activities and programmes that will help to inculcate integrity as part of our corporate DNA.



Deputy Minister of Energy, Science, Technology, Environment and Climate Change, YB Isnaraissah Munirah Majlis launched TNB Corporate Integrity Management System (TCIMS) handbook in conjunction with TNB Integrity Day.

## POLICIES, CODES AND PROCEDURES

Tenaga Nasional Berhad (TNB) has been a key contributor to the nation's social and economic development over the years. The Company is committed to maintaining the status quo as we transform into a more efficient and effective organisation that is able to create a better, brighter future for the nation and our people.

TNB has a well-thought-out set of Shared Values made publicly available and communicated to the workforce. First among the TNB Shared Values is *Integrity*. The five Principles of *Integrity* are:

**PRINCIPLE 1** Adhere to all set rules, regulations and guidelines

**PRINCIPLE 2** Perform to our best ability with very high standards whilst continuously improving the quality of our services

**PRINCIPLE 3** Adopt an open and honest attitude in all aspects

**PRINCIPLE 4** Deliver products and services to customers as pledged

**PRINCIPLE 5** Have pride in contributing towards TNB's success

By actively pursuing these Principles, the other four Shared Values of *Customer Focus*, *Business Excellence*, *Caring* and *Safety* are well supported, promoting a successful business model and working towards achieving the strategic objectives of TNB.

### ANTI-BRIBERY POLICY

<b>OBJECTIVE</b>	To state TNB's position on bribery and related matters, and to establish key pillars in its structure to protect the Company against the impact of bribery.
<b>POLICY STATEMENT</b>	Bribery in all its forms related to TNB's activities is prohibited. It is the responsibility of Personnel at all levels to act with integrity. TNB holds a 'No Gifts' policy, although certain exceptions are allowed. Integrity Pledges must be signed by Personnel on a regular basis, as well as a Conflict of Interest declaration. Business Associates acting on behalf of the Company must be managed carefully. Reporting of misconduct by Personnel or third parties is expected, with protection provided for all disclosers acting in good faith. The Company is committed to enforcing its position, with the Integrity Department (ID) taking on this role. The TCIMS will be assessed and updated on a regular basis to ensure its effectiveness is maintained.

### CONFLICT OF INTEREST POLICY

<b>OBJECTIVE</b>	To establish TNB's position on Conflicts of Interest, the Company's expectation that Personnel at all levels should declare any conflicts as they arise, and state the sanctions for non-compliance.
<b>POLICY STATEMENT</b>	It is the policy of TNB that the disclosure and management of Conflicts of Interest is the responsibility of its Personnel at all levels. All potential, perceived and actual conflicts are to be declared in a timely manner and managed using the mechanisms provided by the Company. Primary responsibility for managing the declaration lies with the person's own Manager, with support provided by Group Human Resource (GHR) and the ID. Sanctions for non-compliance can be severe, depending on the nature of the declared conflict and its impact on the Company.

### WHISTLEBLOWING POLICY

<b>OBJECTIVE</b>	To establish secure and confidential reporting channels, ensure whistleblower protection, and provide guidelines on managing reports to their conclusion in an effective and timely manner.
<b>POLICY STATEMENT</b>	TNB expects Personnel at all levels to report concerns they may have on any behaviour they observe in relation to the Company's activities via the channels established for this purpose. External parties encountering misconduct as they work with TNB Personnel are likewise expected to report their concerns through the designated channels. Protection will be provided to all parties acting in good faith.

### GIFTS, HOSPITALITY AND RELATED BENEFITS POLICY

<b>OBJECTIVE</b>	To delineate the difference between a gift and a bribe, and provide guidance on the acceptable behaviour for Company Personnel at all levels with respect to gifts, hospitality and related benefits. Expectations of external parties are also stated.
<b>POLICY STATEMENT</b>	TNB holds a 'No Gifts' policy. However there are some exceptions allowed, provided no Conflict of Interest arises and decision-making behaviour is not influenced. Likewise, normal business hospitality is permitted but must not be so frequent or extravagant that a sense of obligation is created on the side of the receiver. Festive hampers are discouraged and are to be refused wherever possible. Discounts for staff by External Providers must be provided transparently as part of a general agreement between the Provider and TNB. Facilitation payments must not be made.  Charitable donations and sponsorships must be made transparently and for the general well-being of the Company and the communities we serve. Political contributions are only permissible via an established approval procedure (due process) by the Board Integrity Committee and must be made in line with the law.

### INTEGRITY PACT AND COMMITTEE INTEGRITY PLEDGES POLICY

<b>OBJECTIVE</b>	To strengthen the measures employed by TNB to safeguard the tendering and procurement procedures against the effects of bribery.
<b>POLICY STATEMENT</b>	Integrity Pacts set out the behaviours expected of the Company's External Providers when participating in the contracting procedure. Signing the Pact is a prerequisite for entering into a contract with TNB, and includes provisions for recognised challenge areas such as collusion between providers, bribing of Company personnel, and misrepresentation of products. The Pacts are provided to providers at an early stage of the procurement process.  Integrity Pledges establish the expected behaviours of TNB Personnel at all levels participating in tender committees. Like the Integrity Pacts, the Pledges cover the high-risk areas of bribery, sharing of confidential information and collusion. In addition, the Pledges include a Conflict of Interest statement. All members of the committee who are present must sign their Pledges at the start of the meeting.

## MATERIAL MATTERS

- Business and Financial Performance
- Energy Efficiency
- Fuel Mix Policy
- Efficient Technology and Innovation
- Asset Optimisation
- Reliable Energy and Fair Tariffs
- Sustainable Supply Chain
- Renewable Energy
- Cyber Security Management

### Direct Contribution

07 AFFORDABLE AND CLEAN ENERGY



08 DECENT WORK AND ECONOMIC GROWTH



13 CLIMATE ACTION





TNB gained a foothold in the country's large-scale solar energy generation market with the successful connection of its first 50MW Large-Scale Solar (LSS) Plant in Sepang, Selangor, to the National Grid in November 2018.



# Delivering With Purpose

## The Future of Energy

TNB's strategic plan Reimagining TNB (2016 - 2025) outlines our growth trajectory to emerge as one of the world's top 10 global utility by 2025.

### KEY HIGHLIGHTS



**73.2MW**  
**Total Renewable Energy Generation Capacity\***

\* Within Malaysia



**Equivalent Availability Factor (EAF)** increased to **89.92%** above our target of **89.87%**



**50MW**  
**First Large Scale Solar (LSS) Plant**

at Sepang, Selangor, commenced commercial operations in November 2018

# DELIVERING SUSTAINABLE VALUE

The energy landscape is changing with a greater focus on renewables and digital technologies to create greater environmental, operational and customer-interfacing efficiencies. At the same time, regulatory changes are seeing markets open up, requiring industry players to be both cost-effective and efficient to remain competitive.

We have constantly reinvented ourselves based on the market landscape in order to create long-term stakeholder value.

As highlighted, in 2017, we launched our latest strategic blueprint called Reimagining TNB which aims to propel us to become one of the top 10 power and utilities companies in the world.

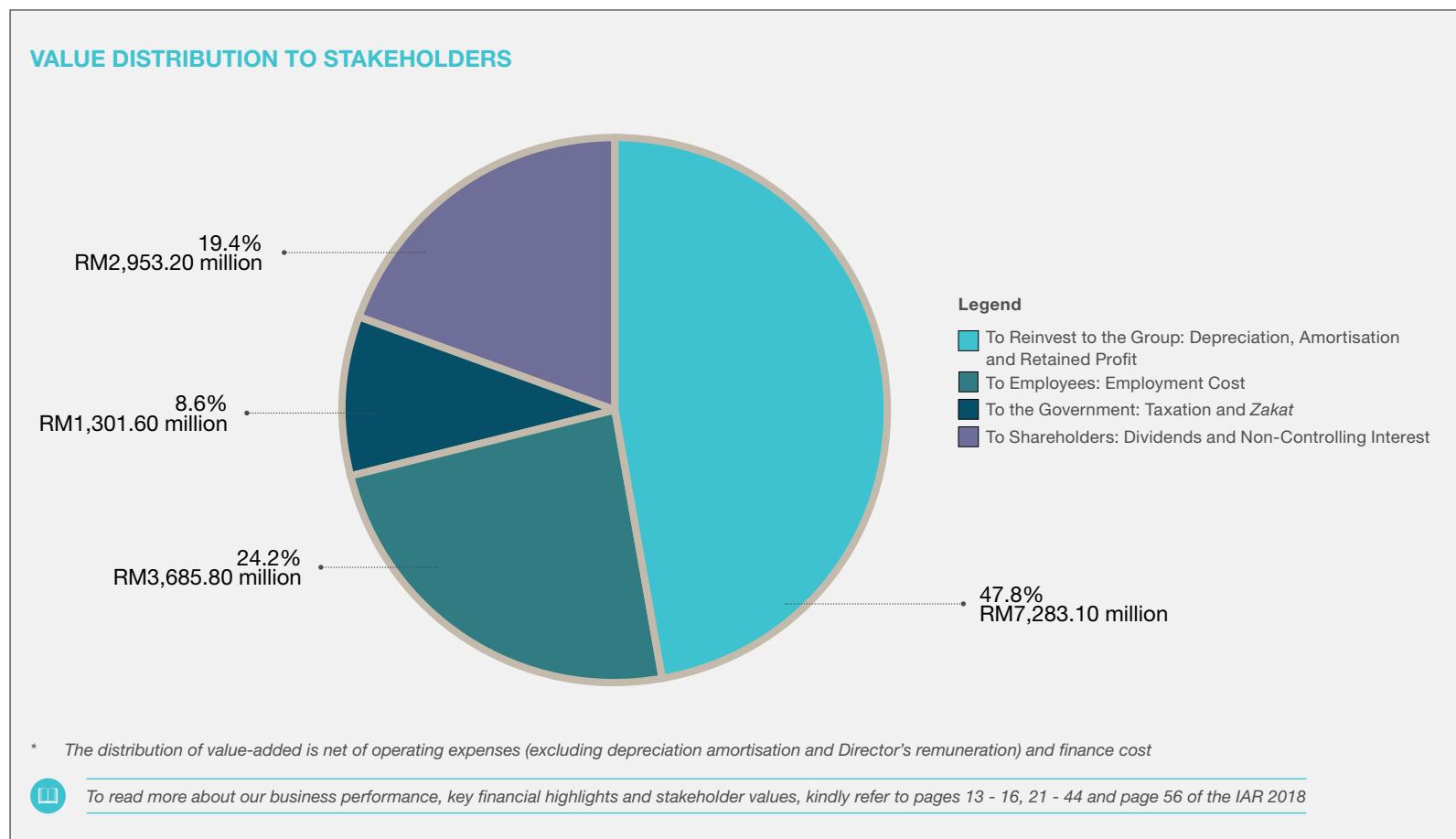
To realise this vision, we are focusing on four Reimagining TNB pillars: Future Generation Sources, Grid of the Future, Winning the Customer and Future-Proof Regulation.

 To read more on Reimagining TNB and our progress, refer to pages 22 - 31 of the IAR

Together with investments in non-regulated business, we have seen continued stable and sustainable economic growth in FY2018.

Revenue increase of 6.3% to <b>RM50.39 billion</b>	Operating Profit of <b>RM6,875.60 million</b>
Generation market share of <b>49.9%</b>	

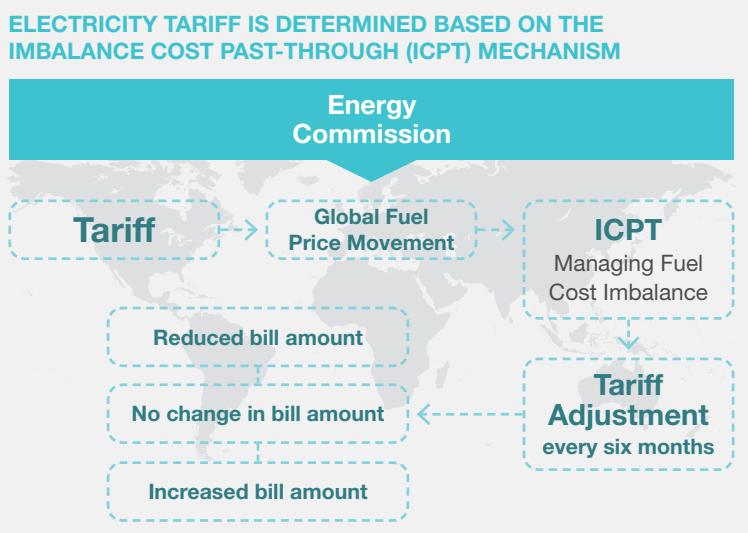
We are able to maximise economic value-added distribution to our diverse stakeholder groups, through the generation of economic value from sales revenue and other incomes. The value distribution graph below illustrates our ability to deliver long-term value to our stakeholders.



p.27

## Delivering with Purpose

### ENERGY INDUSTRY LANDSCAPE WE OPERATE IN



### ICPT CHARGES EXEMPTION



Domestic customers with electricity usage of **300kWh** and lower

**4.6 million** or **64%** of households are not affected

**Electricity usage of 200kWh or lower**  
Tariff band of 21.8sen/kWh is maintained since 1997

**Usage of 201-300kWh**  
Tariff band of 33.4sen/kWh is maintained since 2009

### ICPT IMPLEMENTATION FROM PERIOD JAN TO JUNE 2018



#### Domestic Customers

- Domestic customers with monthly electricity consumption of up to 300kWh are not subject to the ICPT implementation.
- Surcharge for domestic customers, amounting to RM114 million is funded by Kumpulan Wang Industri Elektrik (KWIE).



#### Non-domestic Customers

- Balance of the imbalance costs amounting to RM 583 million is passed-through to non-domestic customers via a 1.35 sen/kWh surcharge.

In regard to liberalising the energy industry, as well as enhancing efficiencies and transparency, the Government had introduced the Incentive Based Regulation (IBR), together with the Imbalance Cost Pass-Through (ICPT) mechanism in 2014. The IBR unbundles the accounts of the different divisions in TNB for greater clarity while the ICPT allows for variation in fuel and generation costs to be reflected in customers' bills. We are currently in the Second Regulatory Period (2018-2020) of the IBR regime.



#### BENEFITS OF ICPT TO OUR CUSTOMERS

- Transparent and fair electricity tariffs
- Secure and reliable power supply
- Encourage customers to improve energy efficiency

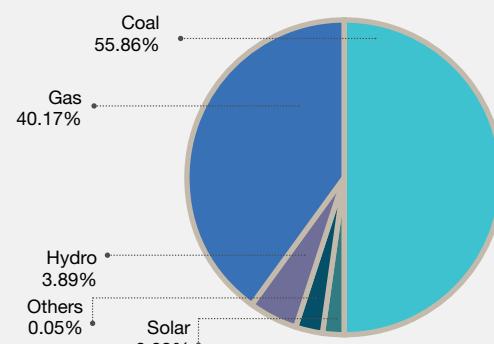
Between March 2015 to December 2015, customers (with the exception of domestic customers with monthly bills below RM77 per month, who already benefit from lower tariff rates) enjoyed an ICPT rebate of 2.25 sen/kWh. This rebate was reduced to 1.52 sen/kWh between January 2016 to June 2018. This was the result of savings derived from lower actual fuel prices i.e. coal and LNG, as compared to base fuel prices in the electricity tariff as well as the utilisation of Kumpulan Wang Industri Elektrik (KWIE) to maintain the ICPT rebate at 1.52 sen/kWh. During this period, a total of RM6.3 billion in fuel cost savings were passed through to our customers in the form of rebate.

Between July 2018 to December 2018, higher fuel and generation costs led to an additional cost of RM698 million. As a result, the Government approved an ICPT surcharge of 1.35 sen/kWh passed through to customers.

### GENERATION FUEL MIX

Our diversified generation fuel mix for Peninsular Malaysia is based on the optimal generation capacity development plan established by the Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET) helmed by the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). This plan takes into consideration an optimal balance of economic, environmental and energy security factors. Based on this plan, in the medium term, gas and coal will continue to be the main fuel sources for power generation, while renewables such as solar energy will grow in importance in line with global trends.

#### FUEL MIX (PENINSULAR MALAYSIA) AS AT 31 DECEMBER 2018



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## Delivering with Purpose

### EXPANDING GENERATING CAPACITY

Locally, in the conventional generation space, we are expanding our clean power assets portfolio, including ultra-supercritical coal-fired power plants. Jimah East Power, a 70% owned-subsidiary, is currently in the process of developing two units of 1,000MW Ultra-Supercritical (USC) Coal-Fired Power Plant in Port Dickson, Negeri Sembilan. The first synchronisation of Unit 1, Jimah East Power was achieved on 10 December 2018 and is expected to be commercialised in June 2019, with the commercialisation of Unit 2 expected in December 2019.

This will be the country's fourth and TNB's third USC plant. Additionally, through Southern Power Generation Sdn. Bhd., a 51% owned-subsidiary, we are developing two units of 720MW Combined-Cycle Gas Turbine (CGCT) Power Plant in Pasir Gudang, Johor. This is scheduled to be commercialised on 1 July 2020.



We have expanded our clean power assets portfolio, including ultra-supercritical coal-fired power plants

### TNB'S NEW INVESTMENT AND ACQUISITION

 <b>Second Large-Scale Solar (LSS) at Bukit Selambau, Kedah</b> <p><b>30MW</b></p> <p> <b>31 December 2020</b></p> <ul style="list-style-type: none"> <li>• TNB won the competitive bidding for round two process conducted by the Energy Commission (EC) to build a 30MW plant in Bukit Selambau, Kedah.</li> <li>• Received Letter of Award (LoA) from EC in April 2018.</li> <li>• As of December 2018, 22% of the plant's construction has been completed.</li> </ul>	 <b>Mini Hydroelectric Station at Sungai Tersat, Kuala Berang, Terengganu</b> <p><b>4MW</b></p> <p> <b>November 2020</b></p> <ul style="list-style-type: none"> <li>• Joint venture between TNB Energy Services (TNBES), a wholly-owned subsidiary of TNB and Metrosphere Hydro Tersat Sdn. Bhd on 49:51 basis.</li> <li>• To be operated under a 21 year Feed-in Tariff (FiT) scheme</li> <li>• Expected to generate 25GWh of electricity per annum.</li> </ul>	 <b>Combined-Cycle Gas Turbine (CCGT) Power Plant, Southern Power Generation (SPG) at Pasir Gudang, Johor</b> <p><b>2 Units x 720MW</b></p> <p> <b>1 July 2020</b></p> <ul style="list-style-type: none"> <li>• First CCGT plant in the world to use 9HA.02 gas turbine technology.</li> <li>• Won "Best Project Financing at Malaysian Rating Corporation Berhad (MARC) Award 2017" and "Best Wakalah Deal in Alpha Southeast Asia 2017".</li> <li>• As of December 2018, 74% of the plant's construction has been completed.</li> </ul>	 <b>Ultra-Supercritical Coal-Fired (USC) Power Plant, Jimah East Power, Negeri Sembilan</b> <p><b>2 Units x 1,000MW</b></p> <p> <b>Unit 1: June 2019</b> <b>Unit 2: December 2019</b></p> <ul style="list-style-type: none"> <li>• TNB's third USC power plant after Manjung 4 and Manjung 5.</li> <li>• Unit 1 was successfully synchronised to the National Grid on 10 December 2018.</li> <li>• As of December 2018, 98% of the plant's construction had been completed.</li> </ul>
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Generating Capacity



Scheduled Commercial Operation Date (SCOD)

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## Delivering with Purpose

### RENEWABLE AND GREEN ENERGY

Renewable energy is currently a major growth area not only globally but also in Malaysia. MESTECC has set a target to grow the proportion of renewables in the total generation capacity mix from 2% currently to 20% by 2025.

TNB seeks to be part of this growth and has been making significant investments into various renewable energy in the country. While we see conventional assets as being relatively more economical in the short term, we recognise the need to invest in renewables to help address climate change, as well as to prepare for gradual depletion of carbon-based fuels.

TNB's target is to grow our RE generating capacity to 1,700MW - domestically and internationally by 2025. In January 2018, we established TNB Renewables Sdn. Bhd. (TRe) to spearhead and accelerate our renewables business growth in Malaysia. The year also saw our 50MW Large Scale Solar at Sepang, Selangor, began operations. Our international portfolios, on the other hand, are acquired and managed by our International Asset Group (IAG) division.



Improving our sustainability through our maiden foray into the wind energy market in the UK.

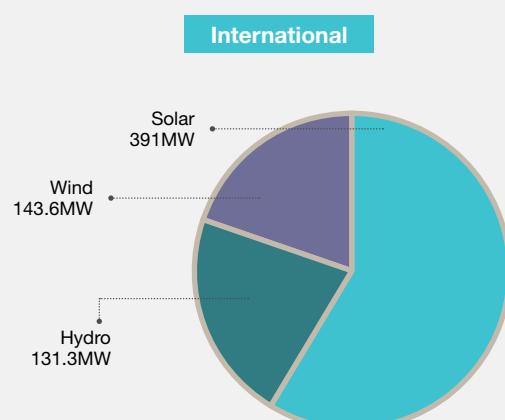
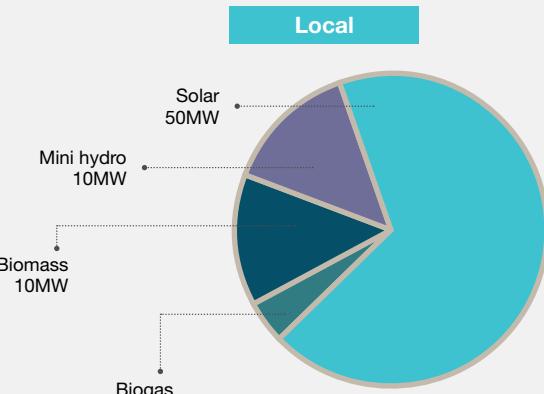


**By 2025, TNB is targeting to grow our RE generating capacity to 1,700 MW**

**The first 50MW Large Scale Solar at Sepang, Selangor, began operations in FY2018**

**TNB Renewables Sdn. Bhd. (TRe) was established in FY2018 to facilitate the growth of TNB's renewables business in Malaysia**

### TNB'S RENEWABLE ENERGY PORTFOLIO AS AT 31 DECEMBER 2018



#### Key Updates for FY2018

- First 50MW Large Scale (LSS) farm at Sepang, Selangor, began operations in November 2018.
- Commencement of the 30MW LSS farm in Bukit Selambau, Kedah with expected completion in late-2020.
- Acquisition of 80% equity in GVO Wind Limited and Bluemerang Capital Limited through our subsidiary, Tenaga Wind Ventures UK Limited with a total capacity of 26.1MW.

### TNB RENEWABLES SDN. BHD. (TRE)

TNB Renewables Sdn. Bhd. (TRe) was established on 22 January 2018 to focus on our RE business growth in Malaysia. It will eventually manage all RE businesses under TNB.

 Utility Scale RE (>30MW)	 Retail Self Generation	 Small Scale RE (<30MW)	 Emerging New Energy Business
<b>Objectives</b> <ul style="list-style-type: none"> <li>Grow TNB's RE business locally</li> <li>Become the largest RE asset owner in Malaysia</li> </ul>	<b>Objectives</b> <ul style="list-style-type: none"> <li>Protect TNB's future revenue</li> <li>Create new revenue stream</li> <li>Become new brand of choice for RE business and services</li> </ul>	<b>Objectives</b> <ul style="list-style-type: none"> <li>Become the developer/partner of choice for small scale RE business</li> <li>Create new business source for TNB</li> </ul>	<b>Objectives</b> <ul style="list-style-type: none"> <li>Become the reference point for new RE asset development</li> <li>Enhance other RE businesses</li> </ul>

Through TRe, we seek to collaborate with other companies in the small RE segment utilising the Feed-In Tariff scheme. TRe is currently exploring the potential of biogas and mini-hydro and is monitoring developments in emerging technologies, such as battery energy storage systems and virtual power plants; as well as participating in Large Scale Solar Photovoltaic (PV) biddings. Meanwhile, GSPARX Sdn. Bhd. (a wholly-owned subsidiary of TRe) is embarking on a journey to provide retail self-generation solutions for residential, commercial and industrial customers.

 For more info on GSPARX Sdn. Bhd., please refer to the Customer Centricity section on page 42 of this Report

### TNB GREEN ENERGY DEVELOPMENT FUND (TGEDF)

Underlining our commitment to promote green energy, we officially launched the TGEDF in March 2017. The fund is currently supporting UNITEN Smart UniverCity project, which is expected to be completed by the end of 2019. There are also five other projects in the pipeline.

<b>UNITEN Smart UniverCity</b>	Designed to create a sustainable ecosystem that provides a competitive advantage for TNB in the smart city space. The project focuses on customer experience, renewable energy, energy efficiency and artificial intelligence.   For more information, please refer to the UNITEN section on page 82 of this Report
<b>Maverick - Showcase of Net Zero Energy Home Living</b>	Showcasing Net Zero Energy Home Living in residential areas in Cyberjaya, the project provides a physical experience for customers to visualise how to self generate their own electricity.
<b>Expansion of Electric Vehicle (EV) Charging Network Through Utilisation of Unbudgeted Earnings</b>	To expand the EV charging network under the following scopes: <ol style="list-style-type: none"> <li>Developing the IT system for EV charging stations.</li> <li>Collaborating with industry players to develop the EV charging market.</li> <li>Expanding the existing EV charging infrastructure under the ChargEV programme managed by the Malaysian Green Technology Corporation (MGTC).</li> </ol>
<b>TNB Centre of Excellence (CoE) for Solar Energy at the Large Scale Solar (LSS) site in Sepang</b>	This is a project carried out in collaboration with TNB Sepang Solar Sdn. Bhd., our subsidiary that operates and maintains this LSS asset. The CoE will become a training centre for solar energy development and technology, catering for TNB employees, as well as external participants from both the public and private sectors.
<b>Smart Street Light Showcase Project at UNITEN Putrajaya Campus</b>	A street lighting system integrated with communication facilities that allow it to perform various functions such as brightness control, surveillance and digital street signs. This project enables TNB to demonstrate its commitment towards Green Technology.
<b>Introduction of Electric Buses for UNITEN</b>	The project aims to develop a feasible business model for the operation of electric buses within the campus, such as vehicle leasing between the Fleet Management Department (FMD) and UNITEN.

### EXPANDING OVERSEAS RE PORTFOLIO

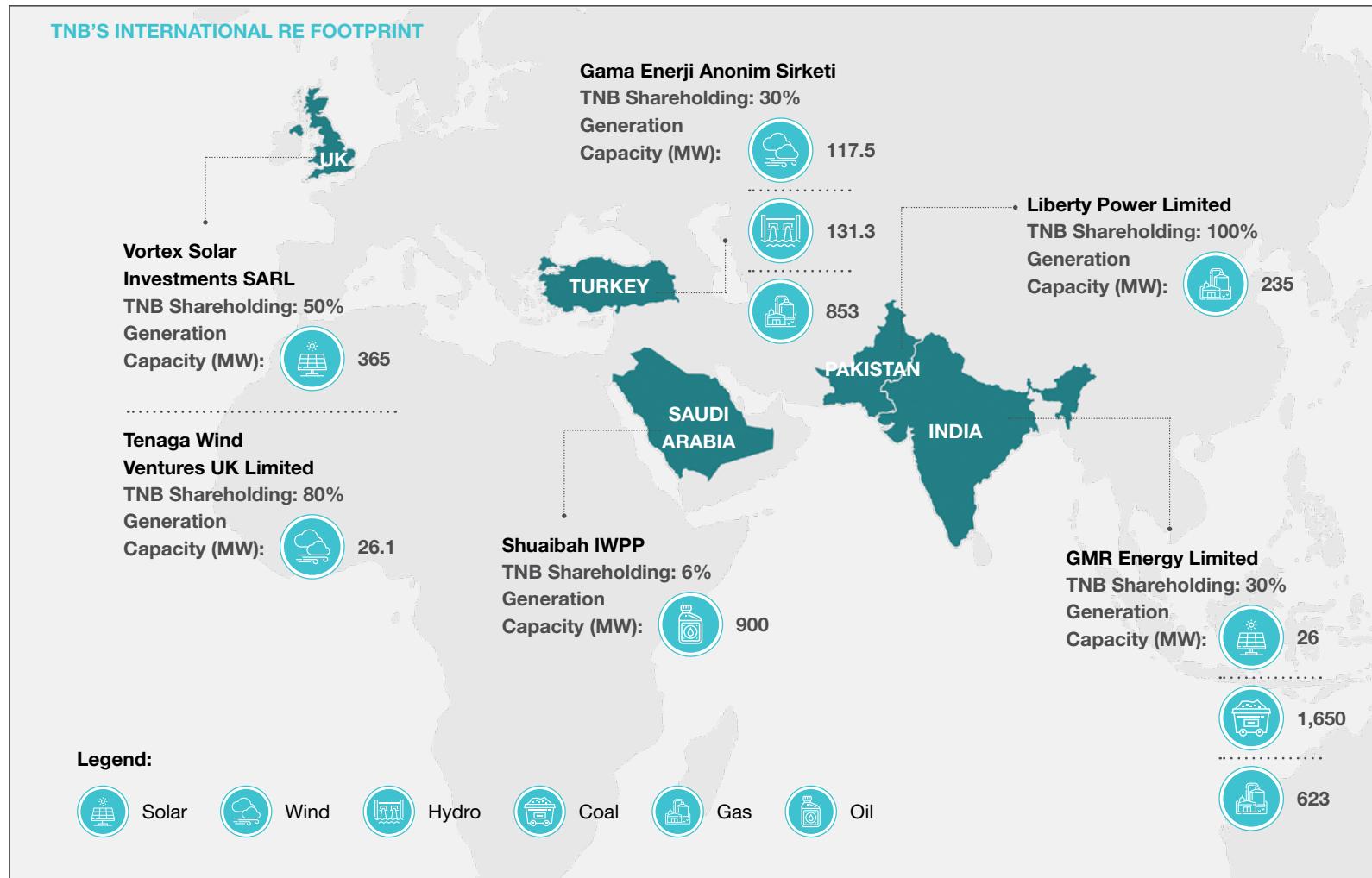
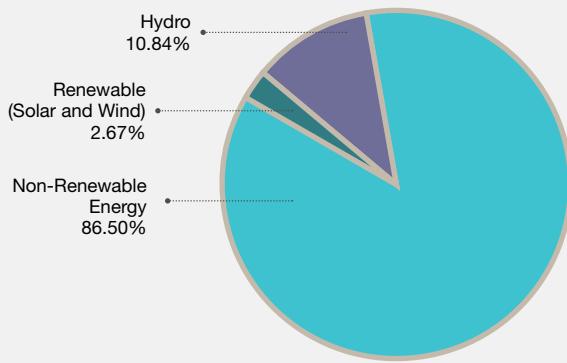
We have continued to build our international capacity in strategic markets, with a focus on expanding our RE portfolio. During the year, we further grew our wind portfolio via the acquisition of 80% equity in GVO Wind Limited and Bluemerang Capital Limited through our subsidiary, Tenaga Wind Ventures UK Limited. The acquisition is a portfolio of 53 single medium-sized wind turbines spread across the United Kingdom (UK), Wales and Scotland, with a total capacity of 26.1MW. It has also received a 20-year Feed-in Tariff (FiT) from the UK Government and at the point of acquisition, was the largest FiT onshore wind portfolio in the UK.

 To read more on TNB's domestic RE generation capacity, kindly refer to the Climate Change section on page 56 of this report



**We acquired an 80% equity stake in GVO Wind Limited and Bluemerang Capital Limited in the United Kingdom are our first overseas foray in the wind energy market**

### INTERNATIONAL GENERATION PORTFOLIO



**PROVIDING EXCELLENT OPERATIONAL PERFORMANCE**

While growing our business, we continue to retain the highest level of efficiency and reliability of our operations, from our generation plants to our transmission and distribution lines, safeguarding power supply which is essential to end users. In light of this, we continue to invest in relevant technologies to optimise our assets while promoting a culture that embraces innovation among our people. Together, our Business Continuity Management (BCM) Framework, innovation and asset optimisation plans enable us to improve our operational performance.



To read more on our performance and initiatives, please refer to our Strategic Review section on pages 21 - 43 of IAR 2018

In tandem with the expansion of our electricity generation operations, our domestic wholly-owned generation plants continued to demonstrate high reliability with a higher Equivalent Availability Factor (EAF) of 89.92%, above our target of 89.87%. We also recorded a 99.79% Transmission System Availability, as well as 0.35 Transmission System Minutes in FY2018. We will continue to improve our operational performance as our commitment to stakeholders.

Today, TNB has achieved service reliability standards on a par with leading power and utilities players. This is reflected in two key supply parameters, namely our System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI). TNB's SAIDI has improved from 50.24 minutes/customer/year in FY2017 to 48.22 minutes/customer/year in FY2018 due to a reduction in breakdowns and forced outages, whereas our SAIFI is well-positioned at 0.86 frequency/customer/year in FY2018.

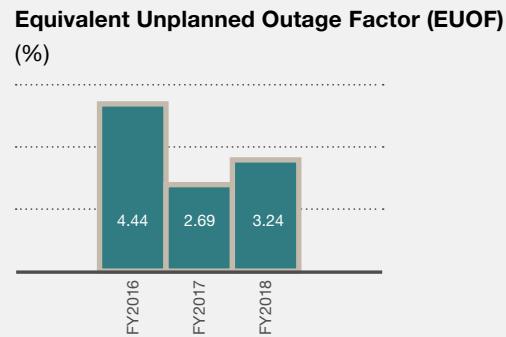
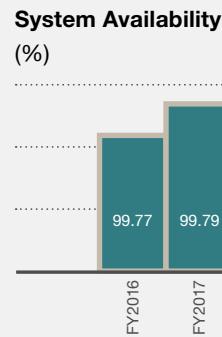
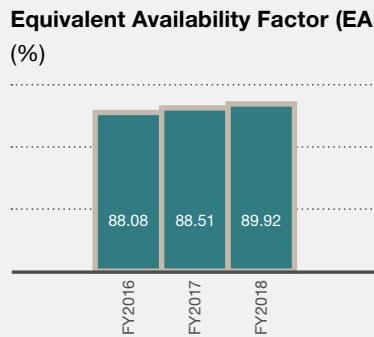


**In FY2018, we recorded a 99.79% Transmission System Availability and Transmission System Minutes of 0.35**

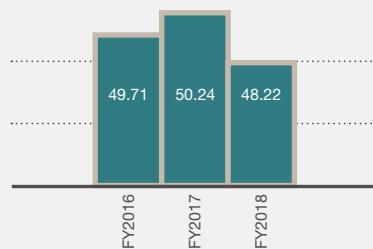
**TNB has attained service reliability standards that are comparable with global power and utility players**

**OPERATIONAL PERFORMANCE IN FY2018**

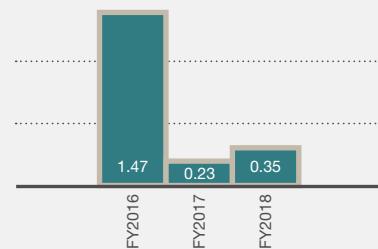
Maximum demand in FY2018  
**18,338 MW**



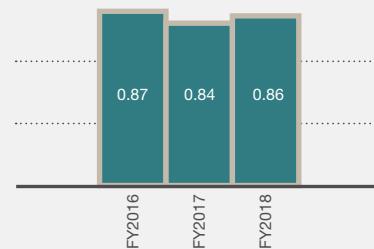
**System Average Interruption Duration Index (SAIDI) for Peninsular Malaysia (Minutes/Customer/Year)**



**Transmission System Minutes (Minutes)**



**System Average Interruption Frequency Index (SAIFI) for Peninsular Malaysia (Frequency/Customer/Year)**

**ASSET OPTIMISATION THROUGH INTEGRATED MANAGEMENT**

Given the importance of energy to national security, our assets are classified as Critical National Information Infrastructure (CNII). We recognise our responsibility to ensure this infrastructure is maintained and protected, hence we have adopted a holistic asset management approach to fulfil this need.

Our Asset Management Plan is an integrated enterprise solution that enables TNB to achieve optimal asset performance at a sustainable cost. Under this plan, we leverage on predictive maintenance to identify the need for maintenance or action required for our assets, while a centralised analytics platform provides a consistent and optimised maintenance strategy that will minimise human error in data imports and analysis. Aided by this integrated plan, our key business units have attained the ISO 55001 Asset Management certification. We have also implemented our Asset Performance Management System (APMS) that enables us to adopt a holistic view in our asset management practices for the entire asset lifecycle.

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## Delivering with Purpose

### ASSET MANAGEMENT AND OPTIMISATION INITIATIVES IN FY2018

During the year, various asset management and optimisation plans, guidelines and initiatives were established or revised across our key business divisions.

v	v	v	v	v
<b>Preventive Maintenance (PM) and Condition-Based Maintenance (CBM)</b>  Ensures high reliability of electricity supply to our customers	<b>SAIDI 50 Initiatives</b>  Early detection for defects, need for asset replacement and introduction of new technologies	<b>Business Turnaround Programme</b>  A programme designed to unlock asset potential and enhance performance of TNB's generation power plants	<b>Intelligent Predictive and Diagnostic Monitoring (IPDM) System</b>  A system that enables plant operators to detect anomalies from operating parameters of major assets	<b>Asset Mid-life Overhaul</b>  Introduced to prolong asset life, optimise resources and asset-reliability, reduce equipment failures, decrease maintenance requirement and mitigate loss of service

### INNOVATION INITIATIVES IN FY2018

v	v	v
<b>Drones</b>  To enhance land planning capability and improve our Geospatial Information System (GIS) data. 34 drones were purchased and 34 personnel were certified as drone pilots by the Civil Aviation Authority of Malaysia (previously DCA)	<b>Online monitoring system for gas analysis</b>  For transformer bushing and gas insulated switchgears	<b>Automatic Fault Analysis and Fault Location Identification System project</b>  To assist the system operator and the maintenance team in decision making during the restoration processes - pilot project is in progress

### CYBER SECURITY MANAGEMENT – SECURING OUR ASSETS THROUGH PROACTIVE SECURITY

Cyber security is critical to safeguard data integrity and our power transmission system to ensure uninterrupted power supply. While complying with the Electricity Supply Act 2015 (Amendment), Personal Data Protection Act (PDPA) 2010 and the Malaysian National Security Council (MKN) Regulation No. 24, we have strengthened our cyber resilience and readiness to respond to potential cyber attacks, using our existing Cyber Security Operating Model (CSOM). This is to ensure that electricity supply in Malaysia remains reliable, secure and sustainable at all times.

Cyber security governance committees across the different lines of business also keep a firm eye on initiatives, mitigation actions, incidence response and policies to keep strengthening our barriers against ever-evolving cyber threats. As a measure of our cyber resilience, TNB is ISO 27001:2013 Information Security Management System (ISMS) certified – and audits at the National Load Despatch Centre and related critical infrastructure are conducted regularly.

The year also saw us organising cyber drills and cyber-attack simulations, as well as security awareness and training programmes. The latter included our first anti-phishing campaign. In line with the digitalisation of TNB, some of the training programmes were conducted online. We also leveraged on gamification-based e-learning to enhance the alertness of our employees.

### EFFICIENT AND ADVANCED TECHNOLOGY

Innovation is transforming the energy supply industry, contributing to greater efficiencies. At TNB, we fully embrace innovation and strive to create a culture of cross-functional collaborations. We actively encourage TNB personnel to propose new feasible technologies for adoption.



**TNB is ISO 27001:2013 Information Security Management System (ISMS) certified, as a proactive measure towards cyber security management**



**NUMBER OF CYBER DRILLS CONDUCTED**

**2** FY2016

**3** FY2017

**3** FY2018

### INFRASTRUCTURE INVESTMENT: GRID SUPERHIGHWAY

As electricity demand continues to increase in Peninsular Malaysia, we are safeguarding our ability to meet customers' needs by building a 500kV Grid Superhighway. Construction of the RM2 billion Grid Superhighway began in 2015 and is expected to be completed by 2020. The 500kV Grid Superhighway, dubbed as the 'backbone', will enable adequate and safe power transfer from other regions into the Central Area. At present, the Central Area accounts for about 45% of Peninsular Malaysia's electricity demand.



### LOW CARBON GENERATION AND CLEAN TECHNOLOGY AT TNB JANAMANJUNG (TNBJ)

Manjung 4 and 5 (M4 and M5), uses ultra-supercritical boiler for coal-fired power plant which operates at higher pressure and higher temperature which results in more economical way of improving power plant efficiency and operating flexibility, achieving fuel cost savings and reducing emissions. M4 and M5 have a generating capacity of 1,010MW and 1,000MW, respectively. In total, both power plants account for about 16.38% of TNB's generation capacity. Currently, the thermal efficiencies of M4 and M5 are in the range of 39%-40%. The plants are also equipped with clean coal combustion technology, utilising a range of air pollution control technologies and low-carbon initiatives as summarised below:

Air pollution control technologies and low-carbon initiatives	Advantages
Seawater flue gas desulphurisation (FGD)	<ul style="list-style-type: none"> <li>Ability to meet emission requirements</li> <li>Uses the reactivity of the seawater to remove sulfur dioxide (<math>\text{SO}_2</math>) which is then oxidised into harmless sulfate and discharged into the turbine condenser cooling system</li> </ul>
Fabric Filters	<ul style="list-style-type: none"> <li>Use to remove particulate or dust from the flue gas</li> <li>Collects trapped dust/ash, which is then sold to the cement industry</li> </ul>
Low nitrogen oxide (NOx) Burner	<ul style="list-style-type: none"> <li>Ability to meet emission on requirements</li> <li>Easy to operate</li> <li>Requires the lowest capital and operating cost</li> <li>High-efficiency burner</li> <li>Technology is incorporated in boiler design</li> </ul>
Usage of low sulphur sub-bituminous coal	<ul style="list-style-type: none"> <li>Produces less <math>\text{CO}_2</math></li> <li>Using FGD, <math>\text{CO}_2</math> produced is absorbed by sea water and oxidised into harmless sulphate</li> </ul>

### Floating Solar Photovoltaic (PV) system on coal ash pond

A new addition to the Manjung facilities is the floating solar photovoltaic (PV) system built at the ash pond area. The project started on 28 July 2017 and is expected to commence operations by early 2019. 146.29MWh of electricity is expected to be generated per year from this floating solar PV system with a capacity of 100kW. The system consists of 288 floating solar panels with three smart inverter units that will channel electricity back to TNBJ buildings.

The system is expected to reduce  $\text{CO}_2$  emissions by 101.34 tonnes per year.



We continuously seek ways to improve our assets by investing in advanced technology and infrastructure upgrade. For instance, we have invested in developing a Smart Grid which will not only have the capacity to self-correct for optimum efficiency, but will also provide our customers with the ability to better manage their electricity utilisation, hence minimising their energy cost.

### GRID OF THE FUTURE - INNOVATION AND SMART GRID

Under Reimagining TNB's Grid of the Future, we aim to introduce Smart Grid to our customers in form of a modernised and digitalised grid with improved capabilities that would cater to rising electricity demand. Ongoing improvements in TNB's grid infrastructure include innovative initiatives that will improve our reliability, service quality and operational efficiency.

Projects	
① <b>Advanced Metering Infrastructure (AMI)</b>	Installed 160,000 smart meters in Melaka. The installation programme will continue in Melaka and will also be expanded to the Klang Valley in 2019
② <b>Mobility Solutions</b>	Successfully rolled out Mobility Solution applications for smart meter installation (AMI project) ie. 3MS and I-nett, to automate load forecast and the disaggregation process for the Distribution Network Annual Planning cycle programme
③ <b>Volt/Volt-Ampere Reactive (Var) Optimisation</b>	Planted up 113MVAr capacitor bank
④ <b>Geospatial Information System (GIS)</b>	GIS function successfully rolled out to various substations in Putrajaya, Cyberjaya and Kuala Selangor stations as per GIS Roadmap for 2018
⑤ <b>Distribution Automation</b>	During the year, 3,672 substations were converted into Supervisory Control and Data Acquisition-enabled (SCADA) substations

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## Delivering with Purpose

### IN-HOUSE INNOVATION THROUGH RESEARCH AND DEVELOPMENT

Our research arm, TNB Research Sdn. Bhd. (TNBR) develops numerous solutions under various applied research projects to enhance our performance in areas such as power plant Unplanned Outage Rate (UOR), transmission system minutes and System Average Interruption Duration Index (SAIDI).

#### Patented Research:

##### **Portable optical sensing device for determining inhibitor content in power transformer**



This device can be used on-site to monitor inhibitor levels and ensure that they get replenished when they reach below the minimum level. Depletion of the inhibitor below this level will hasten the deterioration of the transformer insulating oil, which is an important component in a power transformer.

##### **Pre-treatment system of empty fruit bunch (EFB) for reducing combustion obstacles**



A pre-treatment process to reduce the alkali metal and chlorine contents in the EFB. With this, operational issues related to the combustion of EFB (and other types of biomass) are mitigated, increasing the viability of biomass utilisation and reducing carbon emissions.

##### **Impulse Hydro Turbine System**



Known as the Bahari Impulse Hydro Turbine (BIHT), which has the smallest weight to power ratio among all hydro turbines, it has a low installation cost and a wide site applicability range among the impulse and high turbine efficiency.

##### **System for Quantifying Hydroturbine Discharge**



The VenBFLOW ® Hydro Turbine Discharge Measurement is a new innovation method by TNBR which uses the principles of fluid mechanics. It is a non-intrusive measurement that is not only suitable for all types of hydro turbine intakes, but also for short and long penstock and online efficiency monitoring.

##### **System for Synthesis of Biogas or CO<sub>2</sub> Utilisation for Producing Liquid Fuel**



High levels of CO<sub>2</sub> decrease the energy content of the biogas from landfills or from reactors with fluctuating feedstock properties, thus reducing the energy content. To mitigate this issue, a non-thermal plasma device dissociates the CO<sub>2</sub> content to carbon monoxide (CO) and CH<sub>4</sub> to hydrogen gas (H<sub>2</sub>), both of which form a combustible mixture. The device is also able to produce methanol, which is an essential building block for other chemicals, including biofuel. CO<sub>2</sub> captured from absorption process is also converted in the non-thermal plasma device to CO<sub>2</sub>, which can be utilised for fuel synthesis.

#### Commercialised Research:



##### **Bio-Remediation of Oil Contaminated Soil using Effective Microbe (EM) Application**

The EM used in this application is an enhanced oil-degrading local microbe that removes the pollutant completely. It is an on-site treatment that bears a lower cost than traditional use of an incinerators. It is in compliance with the Environmental Quality Act 1974.



##### **Greenhouse Gas Emissions Management System (GEMS)**

A carbon footprint monitoring application system to keep track of GHG emissions resulting from TNB operations. This system can collect, analyse, store and report the results of TNB operations' carbon footprint. This will allow for action plans to be established to reduce emissions.



##### **Plant Lightning Protection and Earthing System Inspections, Measurements and Assessment**

This research covers full, detailed inspections and assessments on three lightning protection aspects – direct strike protection, secondary surge protection and earthing. Relevant tests include electrical testing, soil resistivity and plant system earthing resistance measurements. Surface potential and earth potential rise will be simulated to investigate the possible impacts on the electronic and telecommunication systems of the plants.

# SUSTAINABLE SUPPLY CHAIN



Award recipients comprising of Local Work Contractors (KKB) & Local Service Contractors (KPBs) on TNB Vendor Day 2018.

We recognise the need to manage our supply chain sustainably given the volume and value of our annual purchases. As far as possible, we support local suppliers in order to stimulate the local economy. Out of the approximately RM7.2 billion of procurement spent in FY2018, about 94% was channeled to local suppliers.

We treat all our suppliers fairly and with integrity, establishing strong working with our suppliers and contractors, based on mutual respect. Towards this end, we are guided by TNB's Procurement and Supply Chain (P&SC) Policy and Procedures, which include a Procurement Code of Conduct. Procurement at TNB is governed by our Board Tender Committee (BTC) and the respective Management Tender Committees.

Beyond providing our suppliers with business opportunities, we also provide assistance in the form of further building and enhancing their capabilities. Thus, ensuring an improvement in their performance and efficient delivery of services. In the year under review, we announced the launch of TNB's mobile procurement application for vendors during our Procurement and Supply Chain Day, to further enhance communication flow between our vendors and TNB.

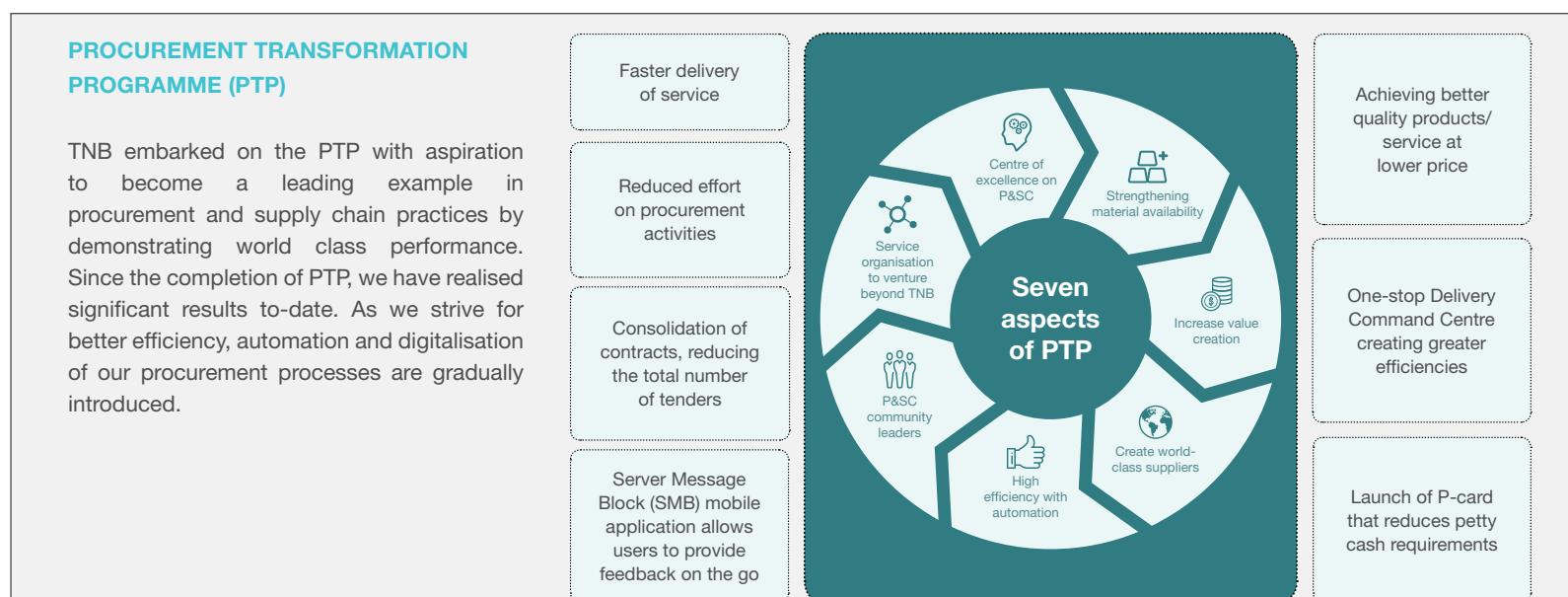
	FY2016	FY2017	*FPE 31.12.2017	FY2018
<b>PROCUREMENT PRACTICES</b>				
Total spent on procurement (RM billion)	8.1	7.18	2.45	<b>7.2</b>
Total number of suppliers	4,685	4,514	3,206	<b>4,665</b>
<b>LOCAL SUPPLIERS SUPPORTED</b>				
Total number of local suppliers	4,550	3,281	3,132	<b>4,514</b>
Total spent on local procurement (RM billion)	7.44	6.64	2.28	<b>6.80</b>
Percentage of local suppliers (%)	97	73	98	<b>97</b>



**94% of the approximate RM7.2 billion spent on procurement was channelled to local suppliers**

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## Delivering with Purpose



### DIGITALISATION EFFORTS BY THE PROCUREMENT DIVISION

Various initiatives have been implemented to enhance our agility in carrying out best procurement practices. Technology initiatives that saw significant outcomes during FY2018 are listed below:

#### P&SC e-Approval System (PSAS)



A platform which allows Category Managers and Spotbuyers to submit their memo to the relevant authority for approval. The system provides online alerts, standard and simplified templates as well as tracking and reporting capabilities in a single digital platform. This will improve the approval process lead time.



Transitioning from printed copies towards e-forms, scanned copies and online approval platform



Paper savings with an estimated value of RM90,020

#### Electronic Processes



Launched electronic processes such as electronic Purchase Order (e-PO) and electronic-Invoice (e-Invoice) through new Supply Chain Management System (SCMS).



Enhance technological ability to implement and standardise best procurement practices to create value by driving efficiency, transparency and consistency

	Number Issued	Savings (RM)	Remarks
e-PO	164,219	9.85 million	Paper savings and courier services cost
e-Invoice	48,314	1.2 million	Paper savings

#### LAPASAR



An internal online purchase channel or B2B market place integrated with e-procurement systems to connect buyers and vendors.



- Reduced cost and encourage competitive pricing
- Improve productivity by reducing indirect purchasing time
- Empower customers to conduct self-purchase which include pre-negotiated rates
- Increase visibility on low value purchase
- Vast choices of goods and products
- Reduced procurement cycle times



- Saved a total of 740 man-hours as compared to physical purchasing
- Saved a value of RM86,200 from reduction in man-hours, paper consumption and transportation cost

#### Robotic Process Automation (RPA)



8 robots are deployed



Material delivered in <7 days



90% Same day purchase request processing



100% transparent and equal allocation



- 13,000 transactions processed daily with an automation level of 90%
- Efficiency gain of average 70%
- US\$2.4 million in productivity savings over a period of two years



Detail



Benefits



Savings/Improvement

## MATERIAL MATTERS

- Customer Experience
- Energy Efficiency

## Direct Contribution

07 AFFORDABLE AND CLEAN ENERGY



08 DECENT WORK AND ECONOMIC GROWTH



13 CLIMATE ACTION



17 PARTNERSHIPS FOR THE GOALS





# Delivering With Purpose

## Customer Centricity

We seek to win customers' trust and loyalty over the long term through effective engagement, quality service and exceptional customer experience.

### KEY HIGHLIGHTS



**Top-quartile** Customer Satisfaction Index at **81%**



**160,000 customers**  
experienced smart meters



**47,792MWh** of energy saved from  
**Home Energy Report Phase 2**

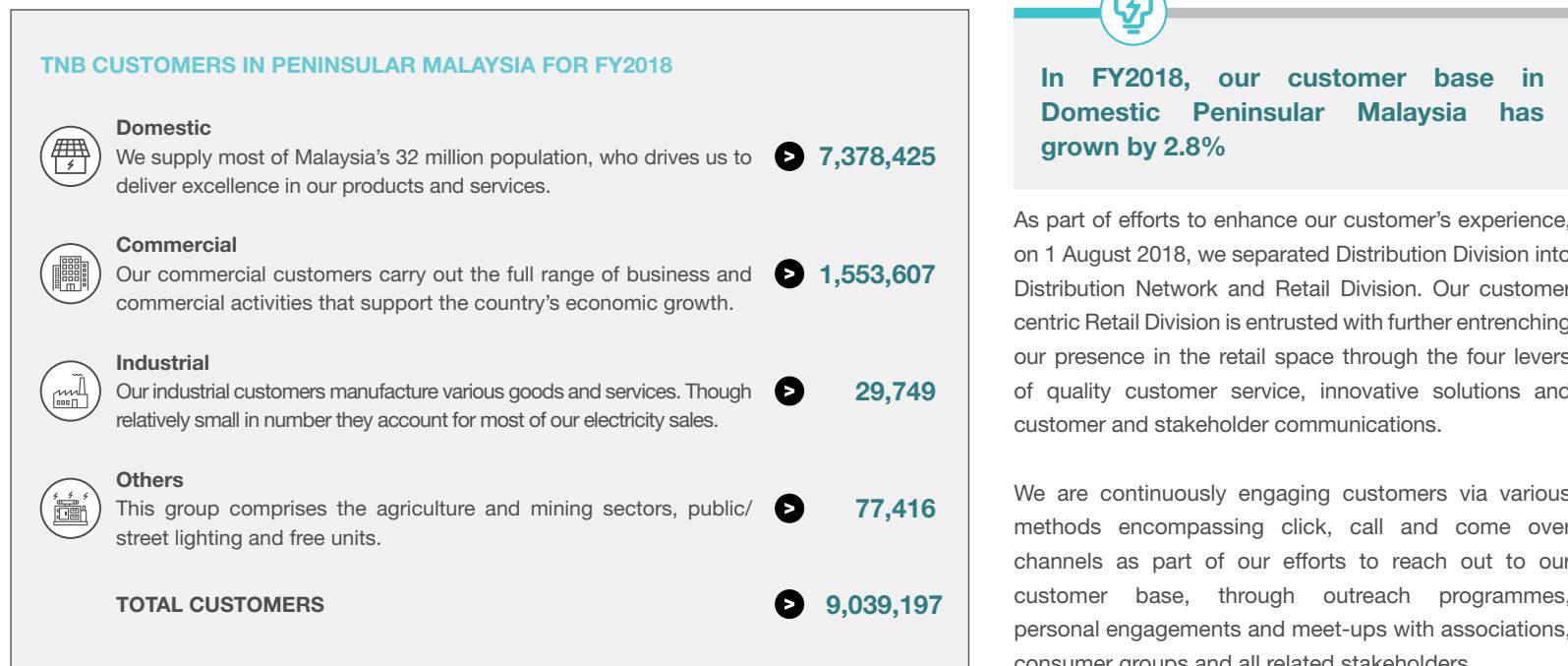
*TNB is continuously engaging and winning the customers through delivery of high quality services standards.*

# WINNING OUR CUSTOMERS

TNB has seen the energy landscape evolve over the last 68 years and we have remained proactive in staying relevant by constantly reinventing ourselves. Today, the need to adapt is perhaps more urgent than ever as customers are in a more advanced position to embrace a digital lifestyle. They expect a high quality service addressing their values and needs revolving around personalised experience, reliability, affordability and efficiency.

Thus, we seek to forge continuous and meaningful relationships via quality customer services through customer experience, providing best and innovative solutions and effective communication and engagement.

To date, we serve a total of 9,039,197 customers in the domestic, commercial, industrial and others.



## DEPLOYMENT OF SMART METERS – OUR ADVANCED METERING INFRASTRUCTURE

TNB is advancing its grid infrastructure in transition towards Smart Grid, with Advanced Metering Infrastructure (AMI) being a key component of this Smart Grid. The AMI provides customers with more detailed and near real-time information on their energy consumption, as well as promote energy efficiency practices and related services.

We have installed 160,000 Smart Meters in Melaka as of December 2018, with a further 180,000 Smart Meters to be installed. Moving forward, we will be rolling out Smart Meters within the urban areas of Klang Valley.



# SOLUTIONS BEYOND kWh

In growing “beyond the kWh” business, we are adopting a value-centric approach in understanding our customers. We are continuously working on winning the customers through delivery of personalised solutions, targeted to enrich their lifestyles and improve their experience in better, brighter ways.

## ENERGY EFFICIENCY SOLUTIONS FOR CUSTOMERS

### Home Energy Report (HER)

Using analytics, HER provides customers personalised energy usage reports. Customers can also access the HER online for tips on how to save energy in their homes.

During the implementation period from October 2017 to September 2018, HER Phase II programme saved a total of 47,792MWh of electricity. This is more than triple the total energy savings achieved during the Phase I Pilot. Total carbon emission avoidance is estimated at more than 33,168 tonnes of CO<sub>2</sub> emissions.

### Making Electricity Visible (MaEVi)

This Home Energy Management System (HEMS) helps domestic customers monitor their electricity consumption, automate their home appliances and improve their home security, through a downloadable mobile app. TNB Energy Services (TNBES) has formed MaEVi Sdn. Bhd as a subsidiary to manage the business.



To learn more, please refer to <https://maevi.my/>.

### Energy Performance Contracts (EPCs)

EPCs are formed between energy services companies and facility owners with the primary purpose of improving energy efficiency through investment in energy efficient equipment.

This year, TNBES has entered into an EPC with Universiti Putra Malaysia (UPM) under which it will replace existing fluorescent light fixtures with energy-saving LED tubes. This will help UPM reduce its electricity consumption by about 890,000kWh of electricity a year, saving about RM453.000 per annum.

#### HER Features



Home Energy Analysis



Energy Usage Details



Saving Tips



Bill Comparison



Neighbourhood Comparison

## ENERGY EFFICIENCY - EMPOWERING SMARTER CHOICES FOR OUR CUSTOMERS

In 2018, 40 Energy Efficiency sessions were conducted with Government agencies, NGOs, community leaders, universities, schools, as well as TNB employees. We are not only equipping our customers with the knowledge to be energy efficient, but also aim to empower them to manage energy efficiently through value-added offerings and solutions.

## ENCOURAGING LOCAL RENEWABLE ENERGY MARKET

We collaborate with the Sustainable Energy Development Authority (SEDA) to manage the FiT programme, under which owners of solar photovoltaic (PV) systems with Feed-in Approvals are able to supply electricity to the grid at a fixed price. To-date, 9,354 FiT projects have been commissioned with an installed capacity of 527.63MW.

A new Net Energy Metering (NEM) Scheme and Supply Agreement for Renewable Energy (SARE) was announced in November 2018 to grow the solar energy industry by opening the market and subsequently spur local players to become regional solution providers.

Through GSPARX Sdn. Bhd., TNB is able to support the country in meeting its new RE target of 20% share of energy source by 2025 by assisting in the implementation of NEM and SARE. GSPARX Sdn. Bhd. provides a platform through which TNB can implement beyond-the-meter transactions for SARE such as solar leasing, Power Purchase Agreement (PPA) or a hybrid of both, as alternatives to direct purchases by customers. With SARE, TNB manages the billing, collection and remittance of payment by customers to solar lessors/investors in return for an agreed service fee.



**GSPARX Sdn. Bhd. will aid TNB in supporting Malaysia to meet its RE target of 20% share of energy source by 2025 through the implementation of NEM and SARE**

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## Delivering with Purpose

### UNLOCKING VALUE IN LOCAL SOLAR ENERGY MARKET

GSPARX Sdn. Bhd., a fully-owned subsidiary of TNB Renewables Sdn. Bhd. (TRe), was incorporated in 2018 to grow TNB's self-generation/self-consumption business. Its target is to co-invest in 500MW of solar energy by 2020 with TNB's customers by offering attractive packages with flexible payment modes to make solar energy more affordable and accessible.



For more information on GSPARX Sdn. Bhd., please visit [www.gsparx.com](http://www.gsparx.com)

Benefits		
Zero upfront cost	End-to end hassle-free services	Electricity cost reduction
Minimum 10% savings on electricity rate	Personalised energy solutions	Efficient electricity management



Minister of Energy, Science, Technology, Environment and Climate Change, YB Yeo Bee Yin visited TNB's Booth during the International Greentech and Eco Products Exhibition and Conference Malaysia 2018 (IGEM 2018).

# CUSTOMER ENGAGEMENT AND SATISFACTION

We constantly engage with our customers in order to build trust, gather invaluable feedback to understand gaps in our systems and subsequently to take any necessary corrective actions.

Communication with our customers takes place on a number of different platforms, which allows for further convenience with regards to reaching out to TNB.

We are currently using the annual Customer Satisfaction Index (CSI) as a measurement to gauge customer satisfaction levels with our service delivery and how satisfied our customers are with our solutions. The survey is conducted at the national and state levels involving a range of our customers – domestic (residential), commercial and industrial categories.

In addition, we also measure customer delivery experience via all the various click, call come over touch points installed at all our 125 Kedai Tenaga outlets nationwide, TNB careline, myTNB mobile application and online portal. As a testament to our high quality products and services, we have scored 8.1 in our 2018 CSI for the third year in a row. We strive to maintain this score by enhancing our service. Towards this end, we strive to extend value-added services to our customers.

### SERVICING CUSTOMERS THROUGH MEANINGFUL ENGAGEMENT

Meaningful engagement is key to maximising the customer experience. Today, our customers are able to reach out to us through multiple channels, including our app and web-based myTNB portal, email, text messages, calls, fax and social media. With an increasing number of our customers being digital natives, we are channelling more effort into our digital engagement platforms, through which we are able to provide quicker, more accessible, convenient, clear and effective service. Our target is for these to make up at least 70% of our total customer interaction by 2020. As of December 2018, 77.92% of our customer interactions were conducted via digital channels.



TNB won the  
**"Brand of the Year" award for 2018-2019,**  
under the power category in the national tier at the prestigious World Branding Awards



We have successfully maintained in the top quartile among utility companies in achieving the Customer Satisfaction Index (CSI) score of 8.1 for the third year running

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## Delivering with Purpose

### TNB CUSTOMERS' INTERACTION CHANNELS



**Social Media**  
@TNB Careline



**Write-in (email)**  
tnbcareline@tnb.com.my



#### myTNB Mobile App Web and Self-Service Applications

myTNB Portal features one-stop self-service portal integrating existing web services for greater Web and Self-Service Applications convenience and flexibility



#### Contact Centre & Interactive Voice Response (IVR)

@ 15454, 1-300-88-5454



**Kedai Tenaga**  
• Multiservice counters  
• E-pos  
• Kiosks



#### Key Account Managers



#### Third Party Services for payment transactions

- Banks - ATMs, CDMs
- Post Office
- Petronas

### CUSTOMER DATA PRIVACY

As a responsible organisation, we take our responsibility to protect customers' data as a priority and make every effort to comply with the Personal Data Protection Act (PDPA) 2010. Meanwhile, greater digitalisation of our services has increased the need for cyber security. To-date, we have implemented over 100 security controls as part of an initiative to beef up online payment security through the Payment Card Industry Data Security Standard (PCI DSS). In FY2018, no complaints were received concerning breaches of customer privacy or loss of customer data.



**Total digital interactions with customers for the year stood at 77.92%, exceeding the target of 70% by 2020**



TNB One Stop Engagement Centre offers a single point of contact to respond to customer enquiries and feedback on billing and account related matters.

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## Delivering with Purpose

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### CUSTOMER FEEDBACK MANAGEMENT

In enhancing our communications, we constantly value feedback from our customers, which will enable us to take corrective actions leading towards continuous improvement in our service delivery and customers' experience. We therefore encourage customers to use the touchpoints made available by TNB. With this in mind, we have expended our presence in the social media space, namely via Facebook, Twitter and Instagram. We have a systematic approach to resolve all received feedback to ensure that all service requests, complaints, comments, enquiries and concerns are effectively addressed in a timely manner.

### ENERGY EFFICIENCY AWARENESS PROGRAMMES

Throughout 2018, our Retail Division organised multiple events through various methods such as briefing sessions, exhibitions and one-to-one advisory, among others, to drive the sustainability and environment preservation agenda. These programmes which are organised for the sole purpose to directly increase the awareness towards energy efficient lifestyle and promote the long-term benefits of energy conservation for the future, has successfully reached out to 5,000 students from national schools to universities level and 1,000 citizens comprising of community leaders, Government employees, NGOs, hospital staffs and employees from manufacturing sectors.



Reaching out to the younger generation at Sekolah Kebangsaan Jalan U3-Subang Perdana, Selangor

p.45

**Delivering with Purpose**



TNB is proud to have organised CEPSI 2018 for the second time, between 18-20 September 2018, with the theme 'Reimagining Utility of the Future'. Over the years, CEPSI has emerged as a premier platform for global power industry companies, utility leaders, industry professionals and experts to exchange ideas and learn from each other, while also becoming an avenue for industry players to showcase their technologies, products and services.

This event was attended by more than 2,000 industry delegates. The conference saw industry experts share their insights on the challenges and opportunities of the industry. A key opportunity discussed was the potential convergence of the power and telecommunications industries, which have much in common. The special address was delivered by the Prime Minister of Malaysia Tun Dr. Mahathir Mohamad followed by a speech from the Minister of MESTECC, YB Yeo Bee Yin.

This year, 488 technical working papers covering eight themes from 25 countries were presented, in the technical paper session. These sessions served as platforms to share case studies, on-site lessons and experiences, overviews of recent technologies, design strategies, industry best practices and more.

The vendor exhibition, meanwhile, attracted 4,586 foreign and local trade visitors, the largest number to date. Most of the visitors were from the energy utility sector. The exhibition showcased products and solutions from more than 100 international-level companies.

**CEPSI 2018 FACTS AND FIGURES**



## MATERIAL MATTERS

- Environment Management
- Natural Resource Consumption
- Waste Management
- Biodiversity Management

## Direct Contribution

08 DECENT WORK AND ECONOMIC GROWTH





TNB carried out various initiatives to protect a number of identified endangered species of fish and terrestrial at their hydro stations.



# Environmental Stewardship

## Minimising Environmental Impact

TNB strives to protect and conserve the environment in carrying out our operations and decision-making in delivering on our commitment to continuously improve our environmental performance.

### KEY HIGHLIGHTS



**Signed Memorandum of Understanding (MoU)**  
with the Department of Environment (DOE) to embrace **Guided Self-Regulation (GSR)**



Received **certificate of appreciation** from the DOE for environmental sustainability efforts during the National Environment Day



A total of **RM7.4 million** budgeted for **fish biodiversity programmes** to-date

# OUR ENVIRONMENTAL POLICIES AND GOVERNANCE

We have in place an Environmental Policy, which outlines TNB's commitment to protect, conserve and improve the environment in our operations and decision making. Guided by the policy, we strive to incorporate environmental management principles into our corporate strategy, planning and implementation.

We also constantly conduct and support relevant research and development to improve the quality of environment. The Environmental Policy is complemented by our green objectives, which further underlines our environmental commitments through sustainability practices. All our power plants have been ISO 14001:2015 Environmental Management System (EMS) certified.

We are committed to comply with all environmental related regulations and requirements, including the mandated environmental audits and reviews such as Environmental Impact Assessment (EIA). In our effort to ensure the protection of the natural environment in the areas in which we operate, we conduct EIA prior to the commencement of work at project sites.

In FY2018, no significant fines and non-monetary sanctions related to environmental non-compliance was recorded.

Our environmental policies and initiatives are overseen by an Environmental Management Committee (EMC), which makes all decisions related to environmental issues. The committee is divided into an Environmental Performance Monitoring Committee (EPMC), chaired by the Senior Management at the operational level; and an Environmental Regulatory Compliance Monitoring Committee (ERCMC), chaired by the Top Management at the divisional level. The direct involvement of Top Management underlines TNB's commitment to achieving financial success in a manner that is environmentally responsible and sends a positive message on the importance of the environment to the rest of the organisation. Through the EMC, we incorporate environmental management principles in our corporate strategy and plans.



**All our power plants have been ISO 14001:2015 Environmental Management System (EMS) certified**

**No significant fines and non-monetary sanctions relating to environmental non-compliance was recorded in FY2018**

Beyond meeting regulatory requirements, we adopt best environmental practices and have embarked on a journey to implement the Guided Self-Regulation (GSR) programme encompassing all TNB activities and its subsidiaries.

GSR was launched by the Department of Environment (DOE) on 16 October 2017 to transform regulation enforcement under the Environmental Quality Act 1974 and enhance environmental awareness and management. It is accompanied by a set of environmental mainstreaming tools for organisations to achieve self-regulation.

Additionally, within the same month, TNB signed a Memorandum of Understanding (MoU) with the DOE to embrace GSR, through which we are instituting a culture shift to ensure environmental compliance and best practices.



Memorandum of Understanding (MoU) Signing between DOE and TNB to embrace the GSR.

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## Environmental Stewardship

# WATER AND WASTE MANAGEMENT

Our operation is highly dependent on water, from running generators in our hydroelectric plants, to cooling and steam generation in our thermal power plants. We are cognisant of the fact that water resource issues are gaining prominence on the global front and have taken steps that reflect our recognition of the criticality of effective water management.

Our power plants track water consumption on a monthly basis under a plant optimisation and waste minimisation programme in compliance with ISO 14001. Any deviation from the norm is investigated and accompanied by corrective actions to stop unnecessary water loss.

Waste is another globally critical issue, as the world is producing more waste than can be managed sustainably. In view of this, we seek to reduce the amount of waste generated and commit to safe disposal of wastes that we are unable to avoid.

To ensure proper waste management, we monitor the consumption of materials such as fuel as well as the discharge of effluents and compare these against baseline data on a regular basis. We also ensure all our effluents' quality meets the regulated minimum standards based on DOE's requirement. Effluent water recycling has been identified as a potential programme to be implemented in the future, subject to its feasibility and viability. For FY2018, there were no significant spills recorded by the Company.

Optimisation programmes are implemented to identify and manage discrepancies in consumption. Industrial waste produced at TNB is handled and disposed off according to the relevant regulations. Best practices have been incorporated into our Health, Safety and Environment (HSE)

Department's Guidelines on Scheduled Waste Management. We also recycle used parts, such as faulty transformers and switch gears through designated third-party recyclers.

Additionally, as a result of digitalisation initiatives by our Procurement Division, we have been able to reduce consumption of 2,124 reams of paper by minimising and avoiding physical printouts.

TNB is currently exploring the possibility of working with relevant vendors to recycle as much waste as possible and we look forward to launching new waste management initiatives in FY2019.

 To find out more about TNB's Procurement Division digitalisation initiatives, please read more on page 37 of this report



**Our power plants monitor water consumption on a monthly basis under our plant optimisation and waste minimisation programme that is in compliance with ISO 14001**

# BIODIVERSITY MANAGEMENT

Our operations encompass vast tracts of land, some of which are inhabited by endangered species. We recognise the value of biodiversity and take responsibility in protecting and preserving the flora and fauna in these areas.

Towards this end, we have formed strategic partnerships with relevant Government agencies and biodiversity experts to undertake studies and develop action plans. We also engage local communities in our efforts through awareness creation initiatives or through environment-related job opportunities.

Our initiatives are based on local contexts and in some cases, on the International Union for Conservation of Nature (IUCN)'s Red List. The IUCN Red List guides us in monitoring and protecting the biodiversity at two of our sites - the Hulu Terengganu Hydroelectric Station and the Pergau Hydroelectric Station.

At Hulu Terengganu Hydroelectric Station, a total of 18 biodiversity programmes were carried out in FY2018, nine for fish and nine for terrestrial fauna, with a total budgeted amount of RM3.15 million and RM2.52 million respectively. *Ikan Kelah (Tor tambra)* has been identified as a protected species in this site, with a total count of 473 fishes as of FY2016. We also carried out various initiatives at other sites to protect this threatened species.

For the Sungai Perak Hydroelectric Station, specifically at the Temenggor Dam, a total of 11 biodiversity programmes were carried out in FY2018, eight for fish and three for terrestrial fauna, with a total budgeted amount of RM1.13 million and RM2.40 million for FY2018 respectively. There are other study initiatives other than the Kelah Sanctuary at other sites such as the Rafflesia at the X-ray trail and the Saltlick at Sungai Papan. TNB partnered with the National Hydraulic Research Institute of Malaysia (NAHRIM) to study the enhancement of water management practices at Sungai Perak and Cameron Highlands. We also launched the “*Pengurusan Lestari Sumber Asli Taman Negeri Royal Belum*” programme to improve fish resource management and Rafflesia protection in the Royal Belum State Park (RBSP) in Perak.



**In FY2018, a total of 18 biodiversity programmes were conducted at the Hulu Terengganu Hydroelectric Station, with a total budget amounting to RM5.67 million**

**In FY2018, a total of 11 biodiversity programmes were conducted at the Temenggor Dam at the Sungai Perak Hydroelectric Station, with a total budget amounting to RM3.53 million**

#### PROTECTING IKAN KELAH

*Ikan kelah* (or Mahseer) is popular not only as game fish, but also as a delicacy. With its relatively slow growth and reproductive rate, there is a tendency for populations of this fish to deplete. Recognising this, TNB has embarked on initiatives to preserve this species at two of our operation sites. Kelah Sanctuaries have been set up at:

- Upper stream of Tembat Lake, Hulu Terengganu, Terengganu
- Sungai Tiang, Royal Belum State Park, Perak

There are also *Tengas* fish in the sanctuaries and all fishes have been trained to eat hand-fed fish pellets. Members of local communities are hired to oversee and look after the sanctuaries with regular monitoring carried out by TNB Research Sdn. Bhd. Sabah’s traditional fish conservation system, called *Tagal*, is practised here.



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## Environmental Stewardship



Replanting mangrove trees is one of the efforts implemented by TNB Janamanjung to preserve the coastal lines and marine organisms of Manjung.

### NUMBER OF IUCN RED LIST SPECIES IDENTIFIED IN KEY TNB-OWNED HYDROELECTRIC STATIONS

Site	Key Findings						
	Species Group	Number of Species					
<b>Hulu Terengganu Hydroelectric station</b>	Fish				24	1	4
	Terrestrial	1	9	19	44	209	
<b>Sungai Perak Hydroelectric station</b>	Species Group	Number of Species					
		Fish			22	2	1
	Terrestrial		5	4	5	30	

Critically Endangered (CR)      Endangered (EN)      Vulnerable (VU)      Near Threatened (NT)  
Least Concern (LC)      Data Deficient      Not Evaluated

Our subsidiary, TNB Janamanjung Sdn. Bhd. (TNBJ) also contributes efforts in biodiversity conservation through their mangrove planting initiative. The purpose of this initiative is to raise awareness among the local community on the importance of conservation and preservation of the mangrove ecosystem. This is essentially to help enhance coastal protection and encourage the production of sustainable fisheries. It is an annually recurring event, involving approximately 200 participants planting an estimated 1,000 saplings each year since 2014.

In FY2018, approximately 2,000 mangrove saplings were planted in Kampung Sungai Tiram, Lekir, Perak. The initiative was carried out with the involvement of TNBJ's employees and their families, as well as the Kampung Sungai Tiram community. A total of around RM8,000 was allocated for the joint venture with Vale Malaysia Minerals Sdn. Bhd. For FY2019, TNBJ targets to plant 2,500 saplings at Kampung Sungai Tiram, Lekir, Perak in conjunction with the Janamanjung Fellowship Ride (JMFR) event.

To read more about JMFR, please see page 86 of this Report

Looking ahead, we are currently working on establishing a more formal approach towards biodiversity management, aligned with our environmental policy. Progress updates on this, will be shared in our next sustainability disclosure.

## MATERIAL MATTERS

- Greenhouse Gas Emissions
- Renewable Energy
- Energy Efficiency

## Direct Contribution

07 AFFORDABLE AND CLEAN ENERGY



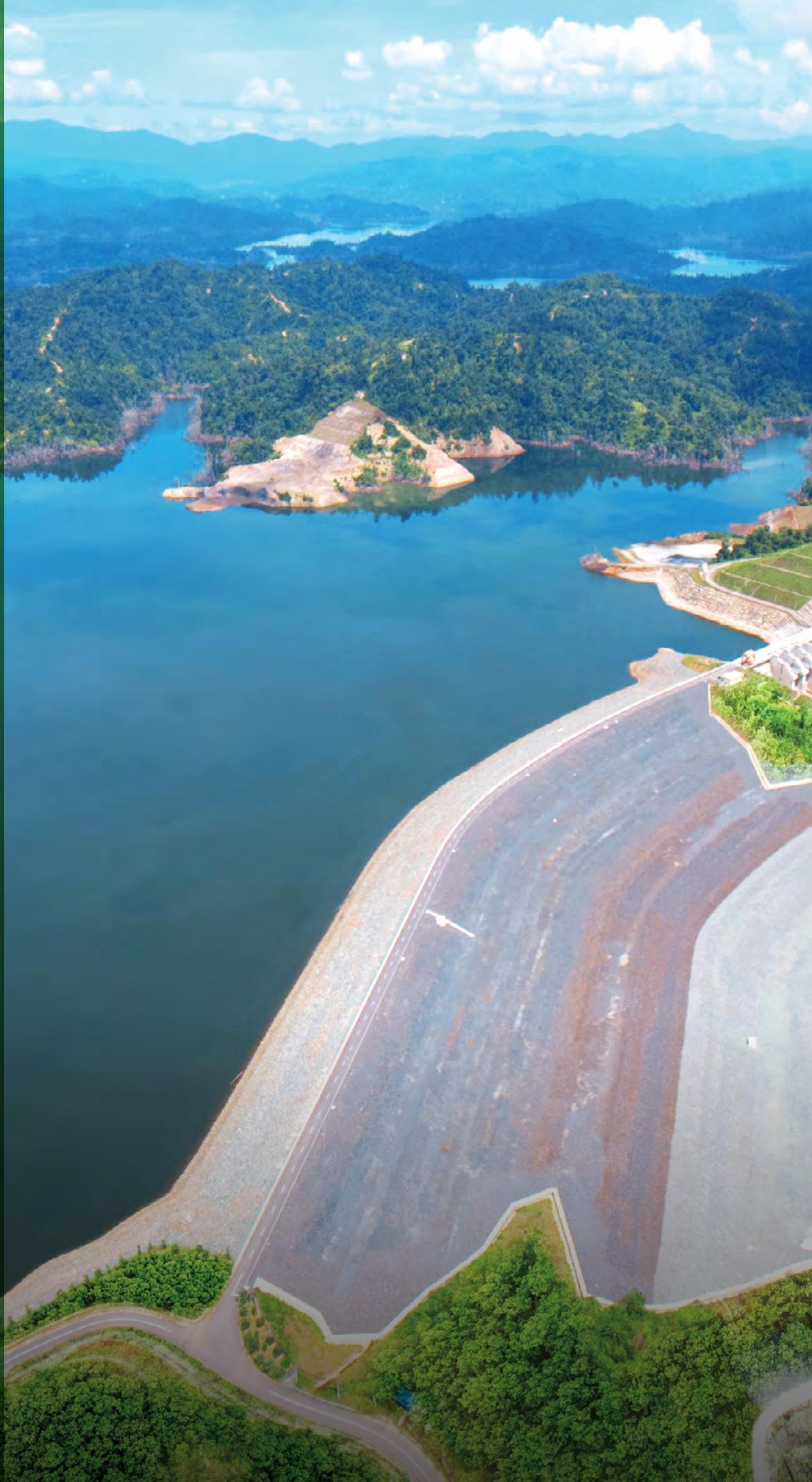
08 DECENT WORK AND ECONOMIC GROWTH



13 CLIMATE ACTION



17 PARTNERSHIPS FOR THE GOALS





The 250MW Hulu Terengganu hydro power station has further boosted TNB's hydro installed capacity.



# Environmental Stewardship

## Climate Change

We are committed towards thriving in a low-carbon economy by embracing and supporting renewable energy generation and energy efficiency.

### KEY HIGHLIGHTS

 **GHG emissions intensity reduced to 0.54 tCO<sub>2</sub>e/MWh\***

 **Total GHG emissions mitigated 5,030,079 tCO<sub>2</sub>e**



Our **50MW** Large Scale Solar farm, cut emissions by approximately **64,000 tCO<sub>2</sub>e/year**

\* Emissions intensity in FY2017. FY2018 figures is still in progress and will be disclosed in the next financial year

# CLIMATE CHANGE AND GLOBAL WARMING

Essentially, global warming causes more frequent extreme weather events leading to heat waves, storms, freshwater shortage and drought. To mitigate these dire scenarios, world leaders at the Conference of the Parties (COP) in Paris in 2015 agreed to cap global warming to “well below” 2°C from pre-industrial levels. Under the Paris Agreement, Malaysia has committed to reduce its greenhouse gas (GHG) emissions intensity of gross domestic product (GDP) by 45% by 2030 relative to the emissions intensity of GDP in 2005. This consists of 35% on an unconditional basis and a further 10% is upon receipt of climate financing, technology transfer and capacity building from developed countries.

As the largest electricity provider in Malaysia, TNB recognises that we have a significant role to play in assisting the Government to achieve this goal by aligning our business activities and decisions with a carbon mitigation agenda, while supporting the UN SDGs, particularly goal 13 which focuses on Climate Action.

Additionally, we are cognisant of growing stakeholder expectations and the latest recommendation by Bursa Malaysia’s Main Market Listing Requirements on climate-related financial disclosures, based on recommendations made by the Task Force on Climate-related Financial Disclosure (TCFD). Looking ahead, we will ensure our alignment to the aforementioned expectations and recommendations and will provide further disclosure on our position and approach in the future.

We are excited to embrace the ongoing transformation of the Malaysian electricity supply industry as we develop greener operations that will help reduce our environmental footprint. Guided by our Environmental Policy and Green Policy, we are also adopting more sustainable practices along our entire value chain to further reduce our carbon footprint. This is accomplished through greater focus on renewable generation sources, clean power assets and a more efficient, digitalised operations.

# CARBON MITIGATION INITIATIVES

TNB has been reducing operational emissions within our control by expanding our clean power assets and decommissioning inefficient and ageing plants. At the same time, we are expanding our renewable energy portfolio and investing in emerging technologies to further improve our emissions mitigation and energy efficiency.

Our GHG emissions increased to 33.50 million tCO<sub>2</sub>e in FY2017 due to a widened operating scope, covering TNB Pasir Gudang Energy (TNB PGE) and Kapar Energy Venture (KEV). TNB’s GHG emissions intensity was in the range of 0.55 tCO<sub>2</sub>e/MWh in FY2016 to 0.54 tCO<sub>2</sub>e/MWh in FY2017 depending on GHG emissions per unit of electricity generation output for each particular year.

To better monitor and report on our GHG emissions data, we have developed an internal online GHG Emissions Management System (GEMS), slated to go live in FY2019.



**Our internal online GHG Emissions Management System (GEMS) has been developed and is scheduled to be launched in FY2019**

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## Environmental Stewardship

TNB's GHG Emissions (tCO <sub>2</sub> e)	Unit	FY2016	FY2017*
Scope 1**	tCO <sub>2</sub> e	28,492,111.00	33,108,297.42
Scope 2** (Electricity Consumption)	tCO <sub>2</sub> e	569,079.00	395,506.80
Total GHG Emissions Mitigation***	tCO <sub>2</sub> e	2,359,770.65	5,030,079.70
GHG Emissions Intensity	tCO <sub>2</sub> e/MWh	0.55	0.54

Note: Figures for FY2018 are in progress.

\* Extended scope to include TNB Energy Ventures, TNB Non-Cores (Corporates) and Kapar Energy Ventures (KEV). The GHG emission for KEV has been assessed according to the equity approach of 60%.

\*\* Scope 1 refers to direct emissions from owned or controlled sources, while Scope 2 emissions are indirect emissions from the generation of purchased energy.

\*\*\* Mitigation sources made up from Hydro, RE, efficient technology power plant, energy efficiency programme and Tree for a Tree programme.

We have been mitigating emissions substantially mainly through the expansion of our low-carbon generation portfolio which include large hydro, renewables (solar, mini hydro, biogas and biomass) and cleaner power assets. Other mitigation efforts include energy efficiency programmes and community programmes such as the 'Tree for a Tree' programme.

For instance, in November 2018, the highly anticipated Large Scale Solar (LSS) plant in Sepang, Selangor – Malaysia's first LSS – was successfully commissioned. The RM300 million project, initiated under the 11th Malaysia Plan, has a generation capacity of 50MWac with 230,000 solar panels, increasing TNB's renewable energy capacity to 73.2MW. With the new LSS plant, we expect to cut our emissions by approximately 64,000 tonnes/year and boost development in the surrounding areas.

Hydropower plants are a major contributor to our emissions mitigation, with a total of 3,597,007 tCO<sub>2</sub>e emissions mitigated in FY2017. Our latest coal-based power plants utilise ultra-supercritical technology, which consumes less fuel per MWh electricity produced in comparison to conventional coal power plants, which further contribute to lower GHG emissions.

Our efforts towards energy efficiency and emissions mitigation are not limited to our operations and processes, we also strive to provide our customers with more green options through our suite of energy efficiency improvement products and services.



Further details of these can be found at our Energy Efficiency - Empowering Smarter Choices for Our Customers on page 41 of this Report



**Our first Large Scale Solar (LSS) plant in Sepang Selangor is expected to reduce our GHG emissions by about 64,000 tonnes/year**

**In FY2017, our hydro power plants mitigated 3,597,007 tCO<sub>2</sub>e of GHG emissions**



TNB's first Large Scale Solar (LSS) in Sepang, Selangor, was commissioned in November 2018.

Generation Source/Technology Used	Installed Capacity (MW)	GHG Emissions Mitigation (tCO <sub>2</sub> e)	
		FY2016	FY2017
Large Hydro	2,521.0	1,957,280.87	3,597,007.38
Solar Hybrid*	6.8	1,338.51	2,422.22
Mini Hydro	9.3	4,110.39	747.82
Biogas	3.2	0.75	0.74
Biomass	12.5	-	5,793.82
Subcritical and Ultra supercritical	3,080.0	395,337.26	1,421,569.47

TNB's emissions avoidance from low-carbon generation portfolio

\* Solar hybrid integrates multiple power sources, including solar photovoltaic, battery and generator set.

Internally, in FY2018, a series of knowledge sharing sessions on Carbon Footprint and Mitigation Assessment was conducted with all TNB Divisions to raise awareness on GHG emissions reporting and management.

### ENERGY CONSUMPTION AND EFFICIENCY

Throughout the years, we have been retrofitting facilities across our office buildings. This initiative is very much aligned to and in support of the Government's emphasis on energy efficiency in buildings. The total energy consumption for TNB buildings in Peninsular Malaysia for FY2018 was 322,025,722 kWh.

Our Phase 1 Energy Efficiency Rewards Programme, which began in 2016 was initiated with the objective of enhancing the energy efficiency of key TNB Buildings. In FY2018, 1,265,325kWh of electricity was saved as a result of the programme.

In 2018, we undertook five energy efficiency retrofitting projects across seven TNB buildings nationwide as follows:

- Centralised Energy Efficiency Monitoring System (CEEMOS)
- Energy Efficient Lighting (LED)
- Power Factor Improvement
- Chiller Optimiser
- Variable Speed Drive (VSD) for centralised AC system motors

CEEMOS supports our Energy Management System in benchmarking, target setting and energy saving verification. Through this system, we are able to monitor the electricity consumption on each floor of our premises, observe hourly/daily trends and access monthly reports. CEEMOS and the other retrofitting projects were implemented in TNB buildings in Kangar, Perlis; Alor Setar, Kedah; Ipoh, Perak; Subang Jaya and Jalan Timur, Selangor; Seremban, Negeri Sembilan; and Kota Bharu, Kelantan.



Our Wisma TNB Jalan Timur won the Energy Management for Buildings and Industries Award under the Large Building Category.

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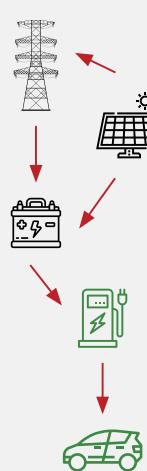
## Environmental Stewardship



TNB is working with the Malaysian Green Technology Corporation (MGTC) to increase the number of electric vehicle (EV) charging stations in Malaysia. In the next five to 10 years, the joint venture aims to install up to 10,000 charging stations nationwide, to fulfil a growing need. Currently, there are only 234 charging stations in the country, 150 of which are in the Klang Valley. TNB has also installed several EV chargers at its premises such as our TNB Headquarters in Bangsar, Kuala Lumpur and TNB Research Sdn. Bhd. (TNBR) office in Kajang, Selangor.



### ELECTRIC VEHICLE CHARGING STATION WITH HYBRID SOLAR PV SYSTEM



#### PV MODULE

Module: Mono Crystalline  
Capacity: 24,150kWp



#### BATTERY

Battery: Lithium Phosphate  
Capacity: 650Ah, 62.4kW



#### CHARGER

Fast Charger: 125A  
Slow Charger: 30A

EV charging stations at our TNBR office uses the Fast Direct Current (DC) Electric Vehicle Supply Equipment (EVSE) with Monocrystalline (24,150kWp) PV solar type charging for lithium ion battery (62.4kW). It comes with safety features and takes only 30 minutes to charge an EV without supervision.

TNB is also onboarding the Green Energy Programme (GEP) along the 77km Senai-Desaru Expressway in Johor together with the Malaysian Industry-Government Group for High Technology (MIGHT) and Senai-Desaru Expressway Bhd. This programme will involve the application of renewable energy, energy efficiency and energy management systems along the highway and its facilities, including the installation of EV charging stations. An energy audit conducted in April 2018 revealed that the highway operator can reduce its electricity cost by up to 50% simply by replacing the high masts and street lights along the highway with Light Emitting Diode (LED) technology.

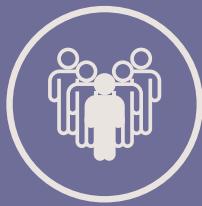
## MATERIAL MATTERS

- Diversity and Inclusion
- Workplace Culture
- Employee Engagement
- Capability Development

## Direct Contribution

08 DECENT WORK AND ECONOMIC GROWTH





# EMBRACING RELATIONSHIPS

## Unlocking People Value

In line with designating FY2018 as the Year of The People, TNB's Management invested even more efforts on employee engagement and inspiring our people to embrace an "adaptive culture". The idea is to remain agile in the way we work and be open to new ways of doing things.

### KEY HIGHLIGHTS



#### Malaysia Best Employer Brand Award 2018

by World HRD Congress



Invested up to  
**RM142 million** in  
training  
and development



**677,960** training hours  
spent by TNB Company

*We focused in maximising the potential of human capital across the organisation in order to inspire TNB to greater heights.*

# EMPLOYER OF CHOICE

As we believe our people are our most important asset, we seek to attract and retain the best talents. This, in turn, rests on being an "Employer of Choice". Most recently, TNB won the Malaysia Best Employer Brand Award 2018; and the Most Talented HR Leaders award under the Golden Globe Tiger Awards 2018, both of hosted by the World HRD Congress.

Our Human Resources (HR) team launched the "HR Guiding Principles - Focused on People with Care; Clarity of Actions with Knowledge; Simplicity of Processes with Trust" in FY2017. To implement and embed this throughout the organisation, we introduced the HR Leap 6 Project in FY2018. Through HR Leap 6, we will continue to drive a high-performing culture, in line with Reimagining TNB.

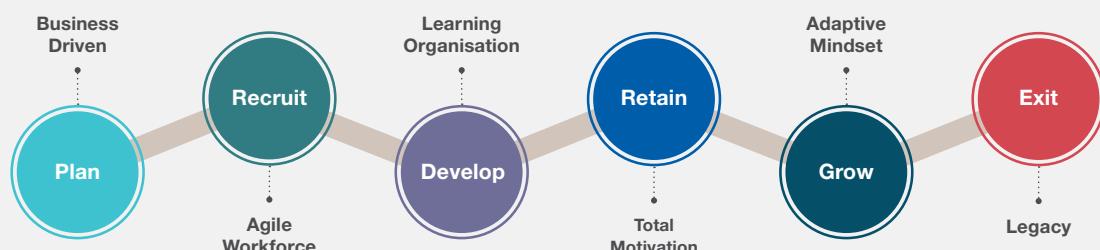


TNB won the Malaysia Best Employer Brand Award 2018 by World HRD Congress and Most Talented HR Leaders

## HR LEAP 6 PROJECT

HR Leap 6 Project is a strategy to support TNB's talent development towards its Reimagining TNB aspirations. HR Policies and Processes are established and reviewed in light of the Leap 6 Pillars. The objective is to transform our HR function into an adaptive and high-performing culture. Each of the six pillars is spearheaded by an identified North Star to guide its implementation:

### HR policies and process categorised into 6 Pillars



Each pillar is driven by a capable leader of different functional units in HR which is done through Leader Driven Initiative programme. A cross-functional network of teams is adopted in cultivating a high-performing culture. Through Leap 6 initiatives, we have been able to enhance HR policies and processes throughout our talent management system to improve employee experience.

## TNB PEOPLE MATTERS BETTER BRIGHTER (PMBB)

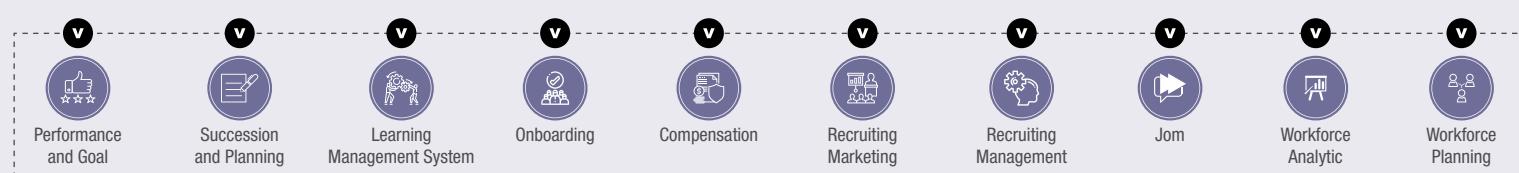
PMBB, launched in 2016, provides a fully integrated people management system that caters for an end-to-end employee experience, driving employee performance and engagement.

### TNB Strategic Focus in People Management



The system empowers employees to manage their own growth journey by having overview of their performance against expectations and what they can do in terms of development to close the competency gaps. PMBB was put in place to integrate and enhance HR processes across 10 modules.

### 10 modules



# TALENT ATTRACTION

To bring in the best talent, we recruit our people from leading universities including UNITEN, focusing on industry-relevant graduates. We believe in recruiting bright and young talent and develop them within the organisation. This is reflected in the age profile of our recruits, where out of a total of 1,788 new hires, 1,768 were millennials, representing approximately 99% of new hires.

In FY2018, we participated in five career fairs in the United Kingdom (UK) and Malaysia, including our subsidiaries, to broaden the portfolio of job opportunities that we offer. In the UK, we organised career talks and formed a strategic partnership with iCube, a UK student society. Locally, we formed strategic partnerships with a number of academic institutions and organisations such as the Young Malaysian Engineers (YME) to regularly engage with students to spark interest in the energy industry, specifically in TNB. We also hosted several engagement sessions with candidates and university students, where participants had the opportunity to interact with TNB employees.

In support of the Government's Skim Latihan 1 Malaysia (SL1M) initiative, now known as the Professional Training and Education For Growing Entrepreneurs (PROTÉGÉ) to train graduates who have yet to gain employment, we took in a total of 880 trainees for FY2018 (up until August 31<sup>st</sup>), compared to 500 in FY2017.

We recognise that starting a new job may be daunting, especially for a fresh graduate. To further improve new hires' onboarding experience, this year we set up a dedicated onboarding team, enabling each recruit to be assigned a single contact point for candidates pre-onboarding and on Day 1.

## TNB'S KEY TALENTS RECRUITMENT INITIATIVES FOR FY2018



Participated in five career fairs in the UK and Malaysia, taking our subsidiaries along with us



Organised career talks and formed a strategic partnership with iCube, a UK students society



Formed a strategic partnerships with a number of local academic institutions and organisations to regularly engage with students to inspire them to build their career in the power utility industry, especially with TNB



Hosted "Tea with Tenaga" sessions at UNITEN with final year students from 10 universities



Set up a dedicated onboarding team, enabling each recruit to have a single contact point for candidates pre-onboarding and on the first day the talents join TNB



Engagement through social media i.e Instagram, Portal and etc



**In FY2018, we took in a total of 880 trainees in for support of the Government's PROTÉGÉ initiative to train graduates seeking employment**

**A dedicated onboarding team has been set up this year to assist new recruits**



*Launching of Professional Training And Education For Growing Entrepreneurs programme (PROTÉGÉ) with Ministry of Entrepreneur Development (MED).*

# CAREER DEVELOPMENT AND TRAINING

We provide comprehensive learning and development interventions to nurture an exceptional workforce, taking into account our current and future needs.

As part of becoming an agile workforce, we nurtured a High-Impact Learning Culture in which we offer our people equal opportunities for growth. We view learning and development as intrinsic in the context of enhancing the quality of day-to-day work.

Learning and development is not associated only with formal training; it is deeply rooted in the context of day-to-day work. TNB employees are provided with extensive on-the-job development opportunities including stretch assignments and complemented by coaching and mentoring. One of the main focuses in FY2018 is to develop high cognitive skills on Business Strategy, Financial Acumen and Customer Centricity.

Under PMBB, we are developing individualised “Learning Journeys” for all employees. Line managers spend time with each employee under their supervision to discuss each aspirations and develop career journey. The career path then serves as a guideline for effective career management, efficient performance management and leadership development. Where suitable, employees are supported in obtaining relevant accreditations. To date, 11 Departments have established their learning journey. The development of Learning Journeys began during the Value Unlocking Programme (VUP) in 2017. It will eventually be applied across TNB Group or Company.

## DIVISION ACADEMIES

To accelerate technical capability development at TNB, we collaborated with TNB Integrated Learning Solution (ILSAS) to set up separate academies for the Generation, Grid, Distribution and Procurement Divisions. The objective is to produce Subject Matter Experts (SMEs) in each division, who possess specialised skill sets in problem solving, as well as with deepened business mindset. These SMEs will coach others and provide on-the job technical upskilling to enhance performance. At the academies, SMEs underwent world-class training that cuts across operational, technical and management areas with a strong commercial perspective.

Generation Division was the first academy being set up and had produced 215 SMEs to-date. The SMEs play a major role in the Division Transformation Programme which has accumulated a savings of RM1.82 billion since FY2014 through initiatives in improving availability, energy efficiency, cost efficiency and inventory optimisation.

Other key initiatives for the year include:

- Generation Leadership Development (GLD) Programme to groom talents to become the future Functional and Business Leaders for TNB.
- SME's Development Programme to develop executives and supervisors with specialised skill sets.

Recorded a total of

**677,960**  
training hours  
for TNB Company

**2,496** hours  
spent on leadership  
training

Invested  
**RM142** million  
on training and development

## TNB GENERATION VIBRATION ENGINEERING TEAM (TVET)

Through this initiative, launched in 2017 in collaboration with ILSAS, a number of plant engineers have been selected to collaborate with Performance and Diagnostics (P&D) Condition Monitoring engineers. The idea is to establish a pool of competent engineers to improve the overall power plant vibration performance by:

- Providing detailed analysis, evaluation and recommendation on generation asset vibrations
- Providing technical support, troubleshooting and consulting services
- Sharing best practices

TVET members are undergoing a competency development programme with an industrial leader specialising in vibrations. Upon completion, the team will gather vibration data across the Generation Division and provide solutions. Currently, they have completed a pilot project at the Ulu Jelai Hydroelectric Station to standardise Condition Monitoring practices.

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## Embracing Relationships

### CAREER ENHANCEMENT MANAGEMENT

TNB's Career Enhancement Management (CEM) focusing on "Everybody has a role" facilitate towards ensuring that all employees have roles that are best suited to their skill sets and competencies though redeployment across the organisation. We engage with employees to understand current skills and competencies, matching roles and positions and coordinate future or new roles for placements. Selected employees are upskilled for present and future role requirements. Other plans along the CEM strategy pipeline include establishing external partnerships and developing a competent team for CEM.

In FY2018, 162 employees were engaged by CEM for redeployment, while 3,560 employees attended CEM development programmes. Moving forward, CEM will align its activities towards realising Reimagining TNB's strategic priorities.

#### KEY HIGHLIGHTS OF CEM IN FY2018

**43** project assignments on CEM platform

**90.29%** CEM Engagement Score

Establishing **Renewable Energy Community** and forecasting workforce requirements for **Renewable Energy initiatives**

Facilitated manpower assignment for **Sabah Electricity Sdn Bhd (SESB)** **Task Force SAIDI 150**

### DIGITALISATION OF OUR WORKPLACE

At TNB, we recognise the importance being digital-savvy to leverage on emerging technologies in line with the Industry 4.0 Revolution. We are constantly training our employees to adapt and innovate the way we work using the latest technologies by enhancing their capabilities and knowledge, with the aim of improving our operational efficiency.

To-date, we have rolled out training programmes related to technology, such as the use of drones, Augmented Reality (AR) for power plants and Robotic Process Automation (RPA) system automation for procurement to enhance the way tasks are carried out. The targeted employees for these programmes are specific to each division and the job requirements. To-date, more than 200 employees have attended these programmes, with numbers expected to rise as new technologies are introduced.

Digitalisation is also used to enhance the delivery of our training programmes, with some programmes now being made available online, thus facilitating access.



Further details of our digitalisation efforts can be found on pages 37 and 43 of this report

### PERFORMANCE MANAGEMENT

Performance management aims to achieve a high performance culture for all employees at all levels. At TNB, all processes in the annual performance cycle require performance conversation between managers and employees to determine performance results and development needs. Therefore, managers are required to actively discuss continuous progress and provide feedback to employees all year round to enhance employees' performance to achieve our strategic business objectives.



**In FY2018, 3,560 employees attended the CEM development programmes**

### FORUMS CONDUCTED BY CEM IN FY2018

#### The Project Assignment Forums

Attended by 268 employees, these forums were carried out to highlight elements of mobility, agility and value creation through project assignments' story sharing and exhibits. The forums focused on forecasted outcomes created from selected project assignments. These would encourage and provide impetus for more impactful project assignments in line with the target productivity gains by 2020 and beyond.

#### The Pre-Retirement Programmes

These programmes were held to prepare TNB's would-be retirees to prepare for the next phase of their lives. The programmes helped prepare 466 participants in managing their physical wellness, self finance management, as well as introducing them to social work and the concept of entrepreneurship.

**LEADERSHIP DEVELOPMENT**

Nurturing leaders at all levels not only motivates our employees, it also strengthens our succession planning, enabling us to develop a strong pipeline of leaders. Comprehensive leadership training and exposure are provided for employees at all levels and a set of TNB Leadership Competencies has been established under PMBB. This has been integrated into our employees' unified Competency Assessment, alongside Technical Competencies.

Our Leadership Development Centre (LDC) designs new experiential leadership and development programmes to coach and mentor employees at all levels. For instance, the Masterclass Future Thinking - a programme for management at all levels, seeks to impart the ability to visualise the future they desire and assist them to deliver the organisation's vision. Other programmes conducted include the Thrust Leadership Programme, General Management Programme, Senior Management Development Programme, Masterclass Business Analytics and the Leadership Programme for non-executives. A total of 2,496 training hours were spent on leadership-related trainings in FY2018.

We encourage high-potential employees to enroll in the Master of Business Administration (MBA) programme offered by UNITEN in partnership with the Melbourne Business School, University of Melbourne, Australia. A key component of the 18-month programme is the opportunity to network and exchange ideas with other global executives, many of whom are working with major global companies.

We also introduced new programmes such as New Leadership Initiative: Global Leaders Programme to meet the demands of our growing business where specialised training programmes were organised in different countries and operations to ensure succession of qualified employees with both core and functional competencies.

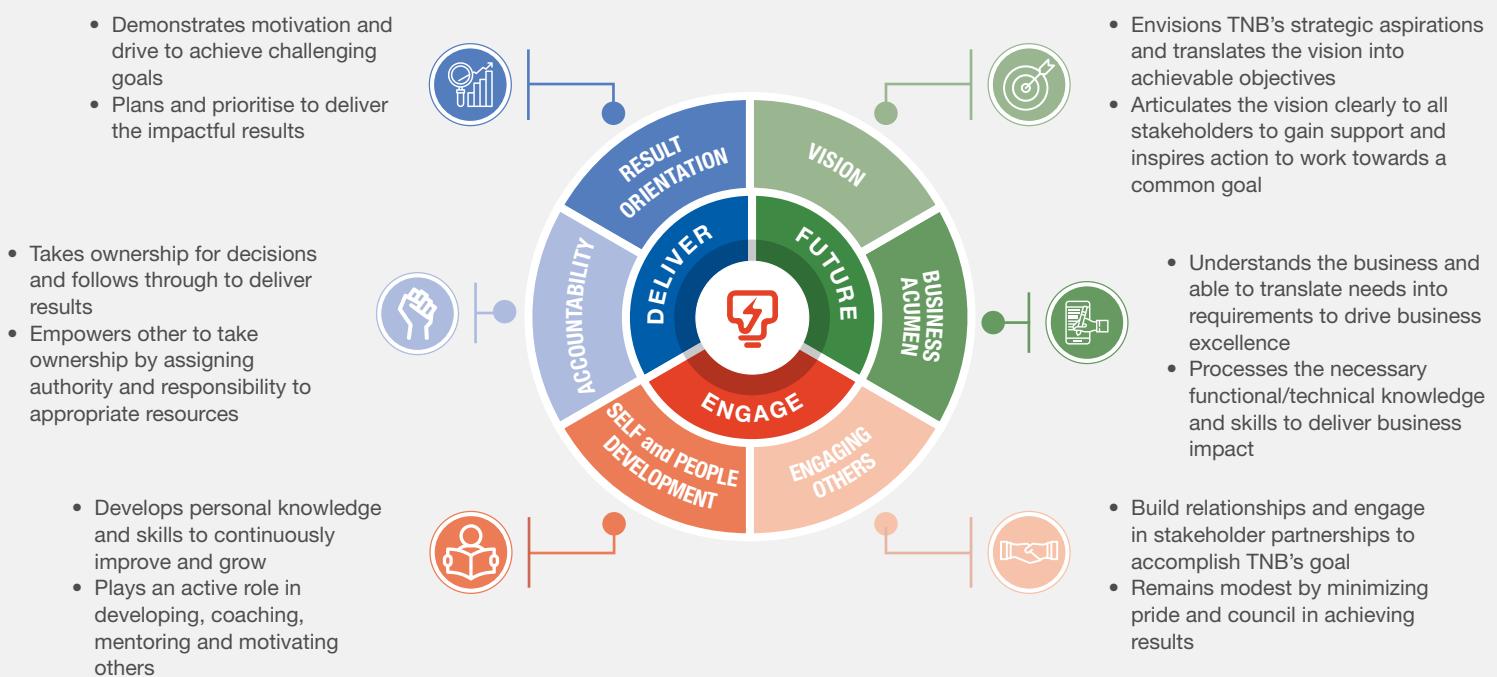


**A total of 2,496 hours of leadership-related trainings were carried out this year**

**In August 2018, 30 employees selected for the MBA programme in 2017 graduated from our third cohort of the UNITEN/Melbourne Business School (MBS) programme**



*The "Leadership Drive" initiative was introduced to democratise our search for potential leaders throughout our Company.*

**UNIFIED SET OF TNB LEADERSHIP COMPETENCIES**

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## Embracing Relationships

### LEADERSHIP DRIVE UPDATES FOR FY2018

Through the Leadership Drive (LD) initiative, we identify and train employees with potential to become business leaders. This programme blends experiential learning with classroom lessons and mission-based work assignments.

Launched in FY2016 targeting high-potential TNB executives, we have selected three batches of employees. The third batch was specifically targeted for senior managers. Interested employees were first screened and those deemed eligible were provided with

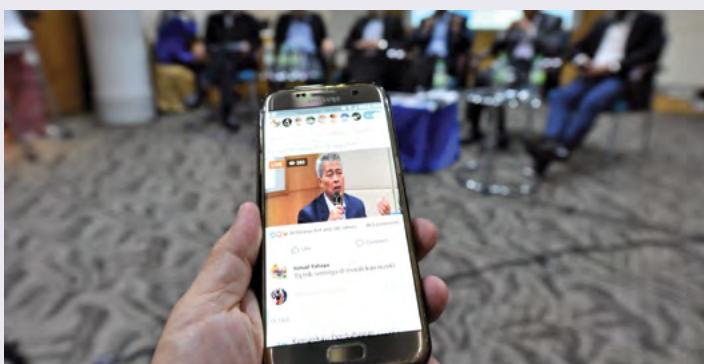
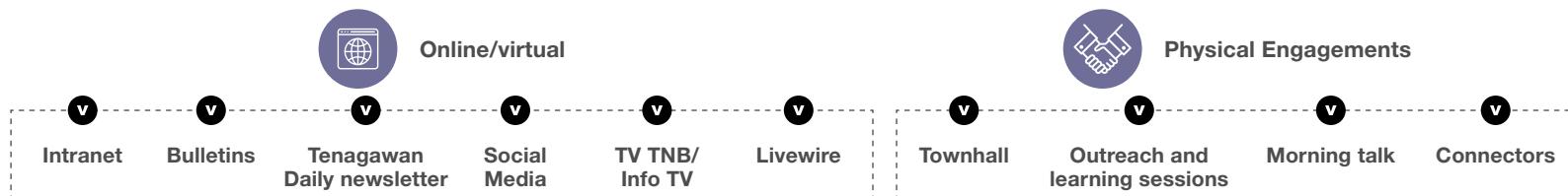
a more comprehensive assessment programme, known as “Assessment Development Centre”, where their general behaviour, approach and decision-making abilities were evaluated. Future programmes will be extended to managers and executives across divisions.

Season	No. of Talents
Leadership Drive One	32
Leadership Drive Two	11
Leadership Drive Three	70

# ENGAGING AND LISTENING TO OUR PEOPLE

We engage in two-way communication with our employees to harness their views for the benefit of the Company. Our direct engagement channels are complemented by internal communication initiatives supported via various print, social and audio-visual media.

### CHANNELS OF COMMUNICATION



### FACEBOOK LIVE WITH TNB MANAGEMENT

The Management engages frequently with employees through outreach sessions and internal communication platforms. Utilising technology and social media, we have recently expanded our “Sessions with the CEO” to be more digital and engaging. Through the “Sessions with the CEO” Live@Facebook TNB Powerfaces, our President/CEO and a panel of other Chief Officers briefed employees on the latest happenings and addressed concerns on a variety of issues.

A total of eight such sessions have been held to date, attracting an average of 5,050 online viewers per session. TNB employees and new recruits, are invited to attend these sessions, each lasts up to two hours, while others are able to follow the proceedings live on our dedicated internal Facebook page.

### TNB ALUMNI NETWORK

We engage with our former employees through the TNB Alumni Network. The alumni serves as a channel for former employees and Lembaga Letrik Negara (LLN)/TNB/Yayasan Tenaga Nasional (YTN) bursary recipients to be in contact with TNB. This network serves as a primary destination for our alumnus to build effective partnerships with each other, realising mutual benefits to achieve TNB’s long-term business objectives.

### ENGAGEMENT WITH UNIONS

Our extensive workforce is represented by three Registered Unions and two Workers Associations covering both executives and non-executives employees. We have always maintained a harmonious relationship with our unions and are pleased to note that our union leaders make a point of being involved in all employee engagement sessions such as labs, syndications, joint meetings and technical/field trips.

We are engaged in three collective agreements (CAs) with our unions. During the year, two CAs were concluded while negotiations are ongoing on the third CA. In total, we have 22,992 employees covered under the CAs.

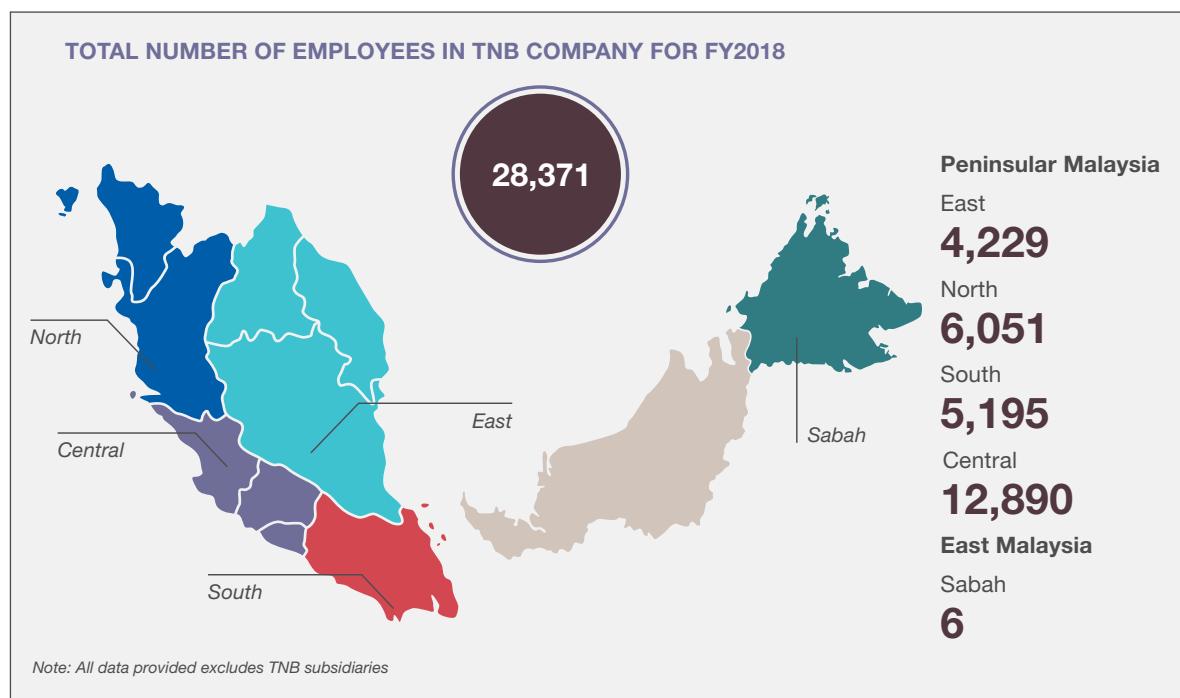
  
Our extensive workforce is represented by three Registered Unions and two Workers Associations covering both executives and non-executives employees

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## Embracing Relationships

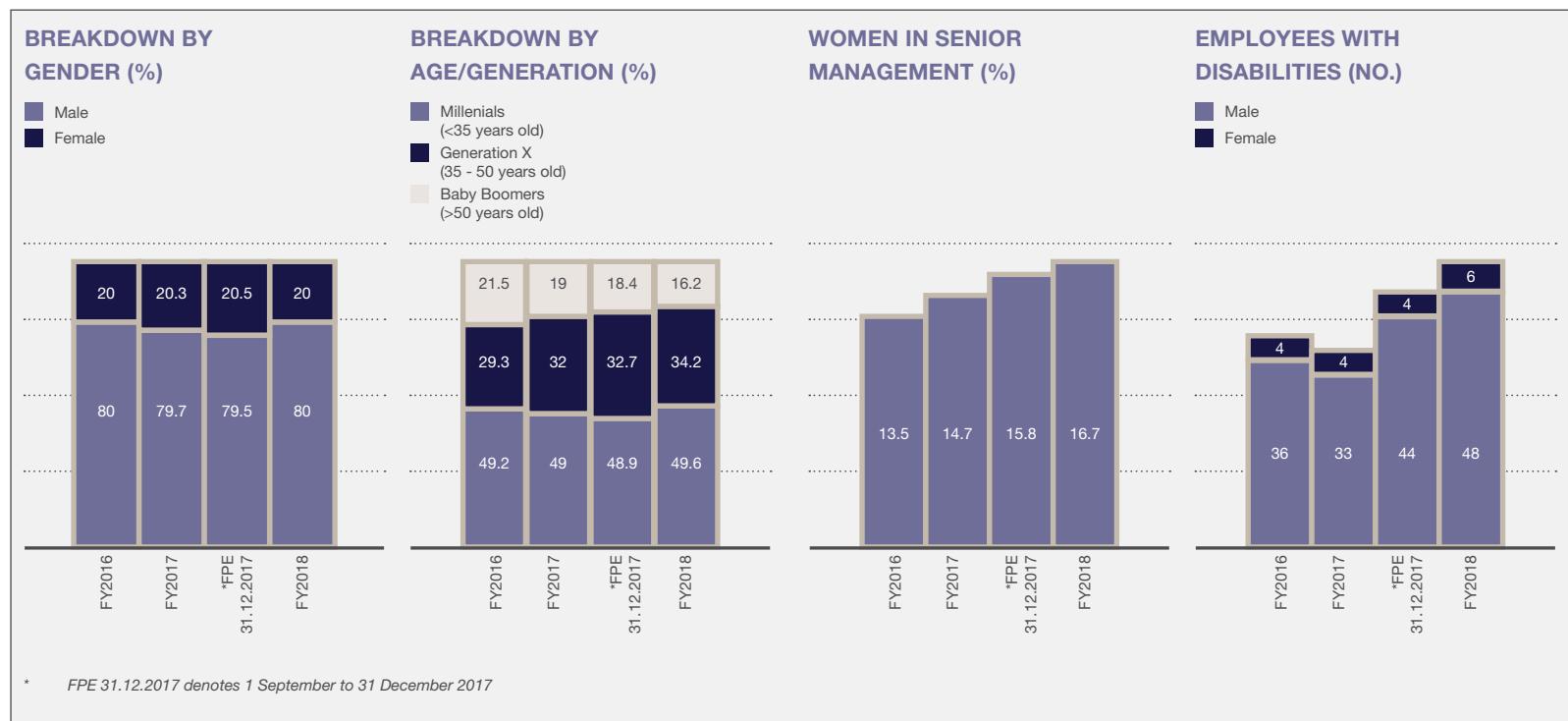
# DIVERSITY AND INCLUSION

We recognise the immense value that diversity brings to the workplace, in broadening our intellectual perspective and enriching the basis on which important decisions are made.



We therefore seek to nurture a diverse and inclusive workforce in terms of race, ethnicity, gender, age, disability status, religious affiliation, experience and thought. Our ultimate objective is to provide a convenient and supportive work environment, where people of diverse backgrounds feel safe and motivated to contribute to the organisation.

 Total number of employees in TNB Group for FY2018  
**35,574**



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## Embracing Relationships

### GENDER EQUALITY

At TNB, we practice the same remuneration to both genders for the same jobs as stated in our HR manuals and CAs. We offer equal opportunities for training and career development regardless of gender.

Women face challenges in balancing work with family obligations, especially when they have young children to care for. In appreciation of this and to facilitate for the ease of our female employees and alleviate their burden, we provide eight nurseries and eight kindergartens across our premises.

### PELITAWANIS ENTREPRENEURSHIP CONFERENCE

PELITAWANIS TNB was founded as an effort to encourage and develop entrepreneurship amongst TNB's female employees and the wives of TNB's male employees. The programme helps strengthen and develop kinship and bond among its participants. To date, there are 61 branches of PELITAWANIS TNB consisting of approximately 6,633 members in total.

In FY2018, a three-day conference was organised involving 120 TNB female employees. The conference was centred around the role of women in:

- Enhancing family economics through entrepreneurship
- Creating a positive and progressive entrepreneurial mindset
- Managing family spending and finances
- Working together towards realising Reimagining TNB



**“This initiative reflects that women are committed on fighting for continuity of life. This will encourage women to collectively play their role in nation building.”**

Deputy Prime Minister and Minister of Women,  
Family and Community Development, Dato' Seri  
Dr. Wan Azizah Wan Ismail.

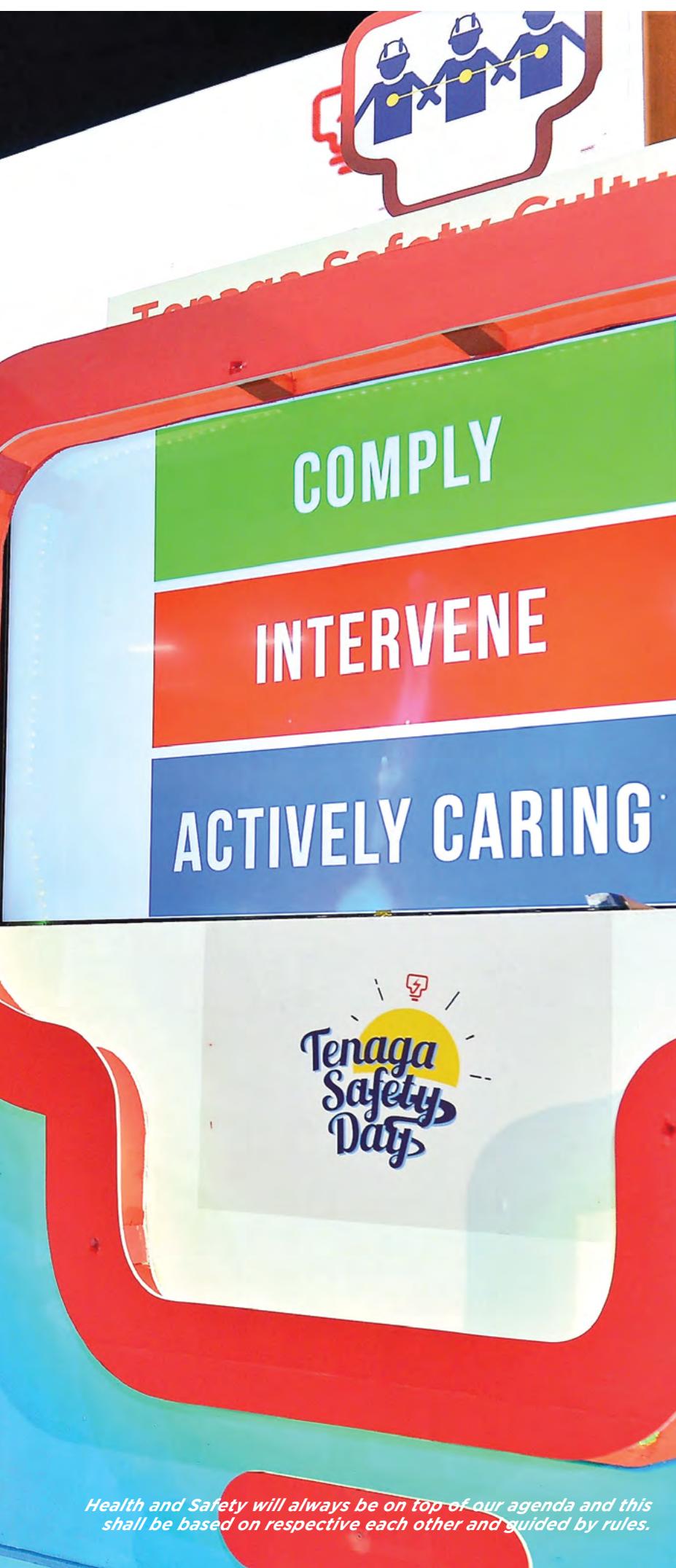
## MATERIAL MATTERS

- Safety and Emergency Preparedness
- Health and Well-being

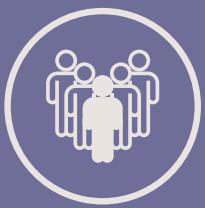
## Direct Contribution

08 DECENT WORK AND ECONOMIC GROWTH





*Health and Safety will always be on top of our agenda and this shall be based on respective each other and guided by rules.*



# EMBRACING RELATIONSHIPS

## Generative Safety Culture

We seek to create a Generative Safety Culture in which everyone is concerned not only with his or her own safety, but also the safety of their colleagues and others to achieve zero accident and fatality. Towards this end, we have invested significantly in a robust safety framework, which we continuously enhance. We do not compromise on safety and ultimately seek to ensure everyone "Get Home Safe".

### KEY HIGHLIGHTS



**Golden Globe  
Tigers Award 2018**  
- Best in Managing  
Health at Work  
by World HRD Congress



5 Integrated  
**Community-  
Based Disaster  
Management  
(ICBDM)** exercises  
conducted



**Tenaga Safety Culture** launched to inculcate four safety focus

- Assess
- Comply
- Intervene
- Actively Caring

# WHAT SAFETY MEANS TO US

We are guided by TNB's Health and Safety Policy to deliver a comprehensive safety governance framework. Health, Safety and Environment Committees have been set up in all departments and all committee members meet on a quarterly basis to discuss safety performance and to address potential shortcomings.

As part of continuous efforts to improve our safety procedures, this year we introduced a new HSE management manual, namely the Health, Safety and Environment Management System (HSEMS). The manual is expected to be fully enforced by end-2020. This will replace the previous Safety Excellence Management System which has been implemented since the late 1990's. Supplementing our aspiration for a safe work culture, we also have TNB's Life-Saving Rules (LSR), which comprises nine rules focused on saving lives and preventing serious injuries.

We also seek to attain and maintain the most stringent certifications where all our power plants and grid have been Occupational Health and Safety Assessment Series (OHSAS 18001:2007) certified, while our Distribution Network Division is in the process of implementing this standard and expects to be certified by end-2019.



All our power plants and grids have been certified with Occupational Health and Safety Assessment Series (OHSAS 18001:2007)

## LIFE-SAVING RULES

In May 2017, we introduced TNB's Life-Saving Rules (LSR) to instil personal safety practices both at work and on the road among all our employees and contractors. These nine rules were previously embedded in TNB's safety practices and it is now bundled and presented in a more structured manner under the LSR, which we believe will ensure greater impact and adherence. These are being enforced gradually, as any cultural change takes time. To-date, the three core rules have been enforced and action will be taken for non-compliance under our LSR Consequence Management.

### CORE RULES

Isolate, earth and test before touch	Valid permit to work mandatory	Wear arc flash suit when switching

### SUPPLEMENTARY RULES

Use fall protection	Obtain authorisation before entering confined space	Wear helmet/safety belt. No speeding	Suspended load	No phones while driving	No drugs. No alcohol

In FY2019, two new rules will be enforced to ensure the required behaviour in confined spaces and working with suspended loads. All nine rules are targeted to be fully implemented by FY2021.

## IDENTIFYING HEALTH, SAFETY AND ENVIRONMENTAL (HSE) RISKS

TNB's Generative Safety Culture requires every employee to play a role in identifying HSE risks. Hazards and risks in TNB are identified through Hazard Identification, Risk and Determining Control (HIRADC) procedures. These are then analysed and mitigated through a hierarchy of controls. Work-related hazards and hazardous situations are reported through various channels to raise awareness and minimise the potential risks. All incidents and near misses are reported online, followed by investigations to identify the cause with correction action to be taken to prevent recurrence. Lessons learnt from incidents are disseminated to all relevant employees through internal communication channels such as Tenaga Safe bulletin, emails and social media.

We encourage the sharing of best practices and lessons learnt across TNB. This is perhaps best reflected in the Behaviour Based Safety (BBS) programme. Initially launched in FY2016 at the Sultan Azlan Shah Power Station in Manjung (TNBJ) to nurture a safety mindset among employees, it has subsequently been adopted by eight other TNB power stations. As a result of the programme, more than 200,000 safety observations have been reported by employees, indicating a high level of awareness of proper procedures. More than 20 safety hazards have also been successfully identified and removed at TNB's premises, further strengthening our safety culture.

## Embracing Relationships

### SAFETY PERFORMANCE, TRAINING AND AWARENESS

In FY2018, we recorded a Lost Time Injuries Frequency (LTIF) of 2.08 with higher incidents reported throughout the Company. Unfortunately, we recorded two employee fatalities and four fatalities involving contractors. Our statistics showed that 48% of Lost Time Injury (LTI) cases were motor vehicle-related incidents.

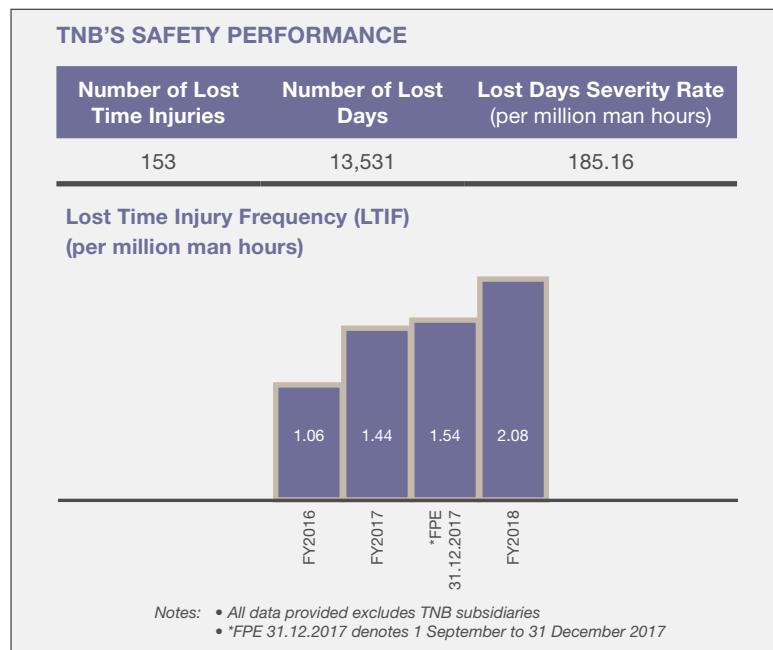
To increase awareness and to re-double our incident mitigation efforts, we have conducted motorcycle safety programmes for all our meter readers in collaboration with the Malaysian Institute of Road Safety Research (MIROS), and audited our safe riding implementation.

At this year's Tenaga Safety Day, we rolled out our Tenaga Safety Culture that further reinforces a safe working culture among employees and contractors via four safety focuses, namely: Assess, Comply, Intervene and Actively Caring.

In addition, a wide range of HSE training was organised based on employees' needs. These were conducted using different methods and platforms.

We also allow our employees to participate in conversations with the Management on issues related to HSE. For instance, HSECare is an e-mail platform for employees to send enquiries and feedback on HSE matters. We also implemented the Potential Incident (PI) reporting platform, where unsafe behaviour and work conditions are reported, followed by corrective actions to eliminate HSE threats at the workplace. The PI informant will then assign the corrective action tasks to the relevant person in-charge. These initiatives are in addition to the various engagement sessions held with employees and the unions.

Moving forward, we strive to enforce greater awareness and inculcating a stronger safety culture to improve our overall safety performance.



### EMERGENCY PREPAREDNESS

Integral to our safety framework are the policies and procedures to manage emergencies. As the nation's largest electricity supplier, it is critical for TNB to ensure we are able to maintain our service even during times of crisis, or restore our service with minimal delay should there be any disruption. Our emergency response systems not only help to safeguard electricity supply, they are also designed to prevent loss of life, and minimise injury and damage to equipments/assets and the environment.

Our group-wide business continuity is safeguarded by the TNB Business Continuity Management (BCM) Framework which enables prompt, coordinated and effective response and recovery in the event of a crisis. At the corporate level, the effectiveness of the framework was tested through crisis communication and full-scaled drills during electricity supply disruption scenarios. BCM training for employees is an ongoing activity carried out by Risk Management Department and respective business units.



**The TNB Business Continuity Management (BCM) Framework ensures our business continuity, group-wide**

**In FY2018, our Integrated Community-Based Disaster Management (ICBDM) exercises were conducted for communities close to our hydroelectric power plants in Cameron Highlands, Hulu Terengganu and Kuala Kangsar districts**

This framework is the reference point for business units in formulating and implementing its BCM strategy and practices tailored to its business objectives and critical functions. For example, power plants are responsible to design, implement and regularly test their respective Emergency Response and Recovery Plans (ERP).

The effectiveness of an ERP lies in the ability of deploying a trained and coordinated emergency response team, as well as kickstarting an emergency management team to implement the necessary response operation in a timely and effective manner. As such, drills are conducted at individual sites and the respective crisis scenarios are rotated every year to ensure all scenarios in the ERP including fire, bomb threats and tsunami are covered. The type of drills carried out varies according to the rotated scenario and includes tabletop, walk-through, functional, evacuation and full-scale exercises. In FY2018, 14 drills were conducted under the ERP.

Our Integrated Community-Based Disaster Management (ICBDM) exercises are also conducted for communities residing within the vicinity of our hydroelectric stations. In FY2018, ICBDM exercises were conducted in Cameron Highlands, Hulu Terengganu and Kuala Kangsar districts.

### KEY ICBDM ACTIVITIES CONDUCTED IN FY2018



**9 October**

#### Cameron Highlands Hydroelectric Stations

Briefing on Dam Safety and Emergency Response with the local disaster management agency of Cameron Highlands and the local community



**18 October**

#### Cameron Highlands Hydroelectric Stations

Dam Safety ERP and Community Evacuation Drill involving Bertam Valley community, SJK(C) Bertam Valley and orang asli villages along Sungai Bertam at the Sultan Abu Bakar Dam



**20 October**

#### Sungai Perak Hydroelectric Stations

Training on Emergency Response with the community at Sekolah Kebangsaan Cegar Galah



**26 October**

#### Kenyir Hydroelectric Stations

Briefing on Dam Safety and Emergency Response with the local disaster management agency and the local community



**8 November**

#### Kenyir Hydroelectric Stations

Dam Safety ERP and Community Evacuation Drill involving villages and five schools at the downstream of Kenyir Dam

# SUPPORTING EMPLOYEE HEALTH AND WELLNESS

At TNB, we are staunch advocates of healthy living recognising of the fact that good health is essential to achieving work satisfaction and productivity. We actively promote emotional, mental and physical well-being and encourage our employees to adopt a healthy work-life balance.

In 2013, we introduced a Total Wellness Programme to promote a healthy lifestyle among employees and their families. The programme, run by our Health and Wellness Management Unit, focuses on six scopes: healthy eating, avoiding smoking, leading an active lifestyle, maintaining an ideal weight, having regular health screening and keeping one's mind positive.

To date, the Total Wellness Programme was conducted at 135 TNB stations nationwide, where face-to-face awareness and education sessions were held with employees. We have also compiled the basic health data of 16,634 employees based on health screening results.

Supporting our health and wellness initiatives, TNB's 72 Kelab Kilat around Malaysia organises various health-promoting activities throughout the year. The Group is also a signatory to the Ministry of Health's "Komuniti Sihat Pembina Negara" (KOSPEN PLUS) programme, which focuses on healthy diet, putting a stop to smoking, adopting an active lifestyle, weight management, health screening and maintaining a positive mental outlook. This year, our annual TNB Family Wellness Day involved a total of 9,657 TNB employees, many of whom also brought their family members along.

The year also saw eight TNB cafeterias being certified "healthy" by the Ministry of Health as a result of offering healthier eating options. There are plans to roll out more healthy cafeterias across TNB branches nationwide. A total of 61 TNB gymnasiums have been installed in TNB premises with the latest equipment and in-house certified fitness trainers to help our employees maintain an active lifestyle through proper guidance and facilities.



**To date, our Total Wellness Programme has been conducted at 135 stations nationwide**

**Based on health screening results, we managed to compile the basic health data of 16,634 employees**



TNB encourage wellness in our workplace by adopting various approaches to monitor employee' health and promote regular physical activities.

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## Embracing Relationships

### AWARDS RECEIVED BY TNB RELATED TO PROMOTING EMPLOYEES HEALTH AND WELLNESS



### PROMOTING HEALTH AND WELLNESS THROUGH TECHNOLOGY

- Introduced StayFit, which is a web-based system developed as a tool to monitor and evaluate employees' health data. It replaces the previous e-card system
- Launched TNB's health and wellness Instagram account (social media) @totalwellness.tnb
- To release the Total Wellness Bookdoc App, a mobile step tracker that rewards the user based on wellness tiers achieved each month. This will kick-off by March 2019

## MATERIAL MATTERS

- Community Development
- Education

### Direct Contribution

08 DECENT WORK AND ECONOMIC GROWTH

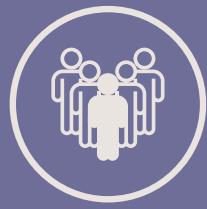


17 PARTNERSHIPS FOR THE GOALS





*We seek to create better, brighter lives by imparting a positive impact on the communities in which we operate.*



# EMBRACING RELATIONSHIPS

## Brightening Surrounding Communities

We strive to make people's lives better and brighter through our conviction in sustainability and commitment towards improving livelihoods and conserving the environment. We do this by helping them attain skills, sustaining the environment and enhancing their quality of life. We engage in a wide range of programmes that leave a long-lasting positive impact on the people and the communities

### KEY HIGHLIGHTS



Total **contributions/  
sponsorships** valued at approximately **RM14.2 million**



Allocated **RM10 million** for the **My Brighter Future programme**



**110,335 streetlights replaced with LED lights nationwide**

# GIVING BACK TO THE COMMUNITY

We seek to create better, brighter lives by providing a positive impact on the communities through our initiatives and investments in community programmes that support Nation-building. This is reflected in the various community programmes and initiatives that we have established over the years. Aside from self-initiated programmes, we also form partnerships with the Government, charitable bodies and NGOs. In FY2018, our total community contributions and sponsorships stood at approximately RM14.2 million.

## OUR FOCUS ON OUR COMMUNITY INVESTMENT PROGRAMMES AND INITIATIVES ARE BASED ON OUR BELIEFS AS FOLLOWS:



Economic and Social - We believe that capability, social and community development support liveability and enhance livelihoods by uplifting the economic and social quality of life.



Environment - We believe that the future of our planet and the next generation depends on our responsible behaviour today.



Education - We believe education can transform the life of not just one individual but families and generations.

## ECONOMIC AND SOCIAL TRANSFORMATION PROGRAMMES



### RURAL ELECTRIFICATION PROGRAMME (BEKALAN ELEKTRIK LUAR BANDAR , (BELB))

#### Background

Collaborating with the Government, we develop electricity infrastructure in villages throughout East and West Malaysia that are beyond the jurisdiction of local authorities. This includes communities in remote areas, Orang Asli settlements and islands. TNB was engaged by the Ministry of Rural Development (KPLB) and its agency, the Department of Orang Asli Development (JAKOA) as the main contractor. The purpose of this programme is to support the bigger agenda to improve the well-being and socio-economic status of the rural communities.

#### Highlights

Under the BELB Kampung Orang Asli Sungai Siput, Perak (Phase 1) - electricity infrastructure for Pos Yum, Kuala Mu and Kampong Jong were tested and commissioned on 24 December 2018, and had been fully completed. For BELB 2017-2018, TNB was contracted to supply electricity to 30 orang asli villages across six states in Peninsular Malaysia. This project is ongoing and the installation of the electricity infrastructure is 41% complete. Details of this project are as follows:

No	Project Title	Funded by	Cost (RM million)	No of villages	Expected date of completion	Progress as of Dec 2018
1	BELB KPLB Peninsular Malaysia 2017-2018	KPLB	55.86	30	24 April 2020	41%

### VILLAGE STREET LIGHTING PROJECT (PROJEK LAMPU JALAN KAMPUNG)

#### Background

The purpose of this programme is to ensure that public areas in remote villages such as police stations, religious buildings and roads are well lit at night to support safe communal activities. A maximum of 30 street lights are installed in every designated villages. The programme, funded by the Ministry of Rural Development (KPLB), was launched in 2003 and includes villages in Sabah.

#### Highlights

Phase 8 was completed with 91,782 street lights installed - 81,249 in Peninsular Malaysia and 10,533 in Sabah. For Phase 9, progress is currently at 90.53% completion, where 25,131 out of 27,760 units have been installed to-date. The total cost of this phase is RM30.76 million.



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## Embracing Relationships



### BETTER BRIGHTER SHELTER (BBS) PROGRAMME

#### Background

This programme upgrades dormitories/transit homes in Government-owned hospitals to provide safe and comfortable accommodation for underprivileged folk who need to be with their family members who are undergoing treatment. TNB, in partnership with the National Welfare Foundation or Yayasan Kebajikan Negara (YKN), has targeted to enhance the accommodation provided for underprivileged families at the Hospital Serdang. In addition, a partnership with the National Heart Institute (IJN) Foundation in Kuala Lumpur was established. TNB has allocated RM2 million for the upgrading, renovation and maintenance costs of the designated accommodation from 2017 until 2021.

#### Highlights

The total amount sponsored for the programme in FY2018 was RM2.2 million. As of 2018, 19,857 people have benefitted from this programme, which is expected to expand to the state of Melaka by end-2019.

The Better Brighter Dormitory in IJN was launched on 14 November 2017 and can accommodate up to 56 people at a time, offering three categories of rooms (family rooms for three people, individual, male and female beds and bunk beds) priced from RM10 to RM50 per night. The dormitory is equipped with basic amenities like air-conditioners, washing machines, dryers, irons, personal lockers and pantry.

The Better Brighter Anjung Kasih at Hospital Serdang YKN launched in 2018, has 100 beds that will be available for free. The facility includes family rooms and bunk beds for men and women. To-date, 2,000 people have benefitted from this dormitory.

### HOME FOR THE NEEDY PROGRAMME

#### Background

This programme builds new homes for the underprivileged and transforms dilapidated residences into comfortable places to stay, equipped with electricity, water supply and proper sanitation. The umbrella programme encompasses Projek Baiti Jannati and Program Mesra Rakyat which were launched in 2007 and 2013, respectively. Both projects prioritise homes for single parents, senior citizens and the disabled.



#### Highlights

In 2018, both programmes benefitted 150 families with a total contribution of RM7.5 million. Projek Baiti Jannati benefitted 122 families with a total contribution of RM6.1 million, while Program Mesra Rakyat benefitted 28 families with a total contribution of RM1.4 million.

### HOME REWIRING PROGRAMME

#### Background

A social programme that aims to build, rewire, repair and extend full settlement assistance to needy households across Peninsular Malaysia. Through the programme, which was officially rolled out nationwide in the third quarter of 2017, TNB targets to rewire 1,000 homes for the underprivileged.

#### Highlights

For FY2018, 83 homes were refurbished at a cost of RM192,987.18.



## ENVIRONMENTAL SUSTENANCE PROGRAMMES



### TREE FOR A TREE PROGRAMME

#### Background

The programme is a continuous conservation effort to restore all forests impacted by the development of power supply infrastructure. The programme is carried out in collaboration with NGO Pelindung Khazanah Alam Malaysia (PEKA) since 2009 to mitigate carbon emissions while re-greening and re-energising urban public areas.

#### Highlights

To-date, we have invested a sum of RM1.56 million to plant a total of 17,608 trees since the programme's inception. For FY2018, a total of 2,505 volunteers assisted to plant 6,943 trees. In the future, mangrove planting will be a new programme under tree for a tree, focus in Manjung, Perak.

### FIREFLIES CONSERVATION PROJECT

#### Background

This project aims to conduct research on the *kelip-kelip* (fireflies) as an effort to protect firefly colonies, while helping to develop physical infrastructure and generate publicity to promote eco-tourism in the villages. In 2005, TNB collaborated with the State Government of Selangor, through the Kuala Selangor District Council (MDKS), to protect and conserve the firefly colony in Kampung Kuantan.



#### Highlights

In FY2018, a total of RM5.78 million was disbursed for this project. In addition, a total of RM1.9 million was disbursed in FY2018 for Research and Development (R&D). Kampung Kuantan in the state of Selangor is home to one of the largest firefly colonies in Southeast Asia. We also provided new boats and language tutorials for the local boatmen to help improve their income through eco-tourism. As a result of our dedicated conservation efforts, the firefly colony now thrives as does the local community who make a living from eco-tourism. Due to the success of Kampung Kuantan, three more villages were added into the programme, which are Kampung Yak Yah, Kemaman (Terengganu), Kampung Sungai Timun, Rembau (Negeri Sembilan) and Kampung Dew, Taiping (Perak).

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## Embracing Relationships

# TRANSFORMING LIVES THROUGH EDUCATION

We recognise the immense power of education as a catalyst for social mobility and have focused a great deal of our community investments on elevating educational standards, as well providing opportunities to students from underserved areas to pursue academic programmes up to the tertiary level.

Our efforts in ensuring quality and inclusive education are undertaken by our foundation, Yayasan Tenaga Nasional (YTN) as well as our EduHub, which groups together Universiti Tenaga Nasional (UNITEN); Leadership Development Centre (LDC) and our in-house capacity building centre, TNB Integrated Learning Solutions (ILSAS). Our aspiration is to leave a long-lasting impact on people's lives and to nurture a brighter future generation.

### **YAYASAN TENAGA NASIONAL (YTN)**

YTN was founded in 1993 to provide financial aid to various deserving communities and organisations. The foundation focuses primarily on education and specifically its scholarship programme. The foundation's objectives are:

- To foster, develop and improve education of all kinds approved under the Educational Law of Malaysia;
- To establish, maintain and administer scholarship funds and to award scholarships for pre university, under graduate or post graduate studies in any institutions;
- To subscribe and grant donations to local or national institutions or organizations approved by Director General of Inland Revenue; and
- To assist, aid and give relief to poor and needy.

YTN is governed and overseen by a Board of Trustees. At the operational level, it is led by a Director who is supported by an organisation committee and team.

### **YTN UPDATES IN FY2018**



Investment in **YTN scholars**  
**RM35 million**



**YTN scholarships awarded**  
**816 students**

To-date, more than 12,000 students have been able to pursue their tertiary education, either locally or abroad through funds of more than RM1 billion. In FY2018, YTN channelled RM35 million in scholarships to 816 outstanding Malaysians. In addition, it runs motivational and thought-leadership programmes for its scholars and Malaysian youths.



**YTN has provided opportunity to over 12,000 students to pursue tertiary education both locally and abroad**



*TNB continues to uplift the lives of the communities in the areas of education, human capital development and community enrichment.*

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## Embracing Relationships

YTN KEY INITIATIVES	
Initiatives	Description
 Global Outreach Programme	Nurtures forward-thinking students who are also globally competitive
 Study Abroad Programme	Offers YTN scholars at undergraduate and postgraduate levels the opportunity to gain international exposure to broaden their academic and personal outlook
 Academic Improvement Programme	Boosts the academic achievements of YTN scholars at UNITEN Putrajaya Campus and Sultan Haji Ahmad Shah Campus through <i>Lonjakan Akademik Biasiswa</i> UNITEN
 Internship Abroad	Students get to experience working overseas and enhancing their ability to adapt in both their personal and professional space
 Nurturing Future Leaders	Run in collaboration with the Ministry of Education (MoE), the programme aims to mould promising young students into future leaders of the nation
 Program Mutiara Timur	A joint effort between YTN and TNB that is designed to provide exposure to less fortunate students, particularly those from Sabah and Sarawak and inspire them to excel academically
 MARA Enriching Young Talents Programme	A joint effort with Majlis Amanah Rakyat (MARA), this programme provides students with hands-on working experience in the engineering field



For further information on YTN's initiatives, visit <https://ytn.tnb.com.my/>

## UNITEN - THE ENERGY UNIVERSITY

UNITEN plays a significant role in offering local and international students quality engineering, computing, informatics and business management programmes at the foundation, undergraduate and postgraduate levels. It is also at the forefront of energy research since its establishment in 1997, leveraging on TNB's extensive industry experience in power generation, transmission, distribution and retail.

A bold vision – aptly named BOLD2025 – has been set, laying the path for UNITEN to become a leading global energy university. Towards this end, concerted efforts are being made to ensure the teaching, learning and research environment at UNITEN matches world-class standards. The progress in achieving the key milestones set for each year until year 2025 is deliberated at the BOLD2025 Steering Committee monthly meeting.

## UNITEN LATEST RANKING PERFORMANCE AMONG WORLD UNIVERSITIES

Ranking System	Latest Ranking	Target set under BOLD2025
 QS Asia University Rankings	2019: 234	Top 200 by 2021
 QS World University Rankings	2019: 251-300 in Electrical and Electronics	Top 150 in Electrical and Electronics by 2025
 Times Higher Education (THE) World University Rankings	2019: Top 7 in Malaysia	To be featured in the Times Higher Education (THE) World University Rankings

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## Embracing Relationships

### UNITEN HIGHLIGHTS IN FY2018

**3,145**  
graduates in FY2018

**93.69%**  
Employability rate within  
**six months of graduation**

**TOP 7 in**  
**Malaysia**  
in the Times Higher  
Education (THE) World  
University Rankings 2019



Entry into the  
**Malaysia Book of Records**  
for the  
**Most Number of Paper**  
**Bags**  
made from Recyclable  
Newspapers



UNITEN embraces diversity among its student populace, welcoming students from different backgrounds and nationalities. The university is equipped with adequate facilities to assist students with special needs, such as those with physical disability, to pursue their studies. In FY2018, 21 disabled students enrolled in UNITEN. As part of the university's ongoing efforts to lend a helping hand to the underprivileged and make education more accessible, UNITEN continuously provides financial aid through education funds and scholarships.

### FUNDING AND SCHOLARSHIPS OFFERED BY UNITEN IN FY2018

Programmes	Total Spend (RM)	Number of Recipients
<b>Dermasiswa Pelajar Cemerlang</b> Tabung Amanah Zakat UNITEN (TAZU) provides incentives to students who obtain excellent results for two consecutive semesters. The incentives are given on an annual basis.	221,200	464
<b>Program Biasiswa</b> Students receive full sponsorships from TAZU which cover tuition fees and allowance.	179,397	265
<b>Biasiswa Kecemerlangan Sukan UNITEN</b> The scholarship is awarded to students with high achievements in sports. The scholarship entails a 100% or 50% waiver on the tuition fee, depending on whether the student is competing at the national or state level.	275,486	9
<b>Dermasiswa Yayasan Canselor UNITEN (YCU)</b> A contribution to students during the course of their study based on household income and the number of household dependents. The disbursement is made according to academic year and is made on average over the course of study at UNITEN.	61,508	36
<b>Dana Pendidikan UNITEN</b> A sponsorship to cover the surplus of tuition fees payable after payment by Perbadanan Tabung Pendidikan Tinggi Nasional (PTPTN) is covered by YCU. Meanwhile, TAZU covers other fees - registration fees for Foundation Programme, accommodation, meal coupons, daily allowance and other fees. This sponsorship covers students' needs from Foundation to Degree programmes.	81,577	10

## Embracing Relationships

### UNITEN KEY INITIATIVES IN FY2018

#### Smart UniverCity

##### Smart UniverCity

UNITEN Smart UniverCity, which was launched in June 2017 and implemented in 2018, is a collaboration between UNITEN and TNB to enable UNITEN to become a living lab for smart city solutions. There are five aspects of Smart UniverCity, namely: Smart Lifestyle, Smart Infrastructure, Smart Energy, Smart Mobility and Smart Education.

The initiative will see the introduction of the following:

- A mobile app and Smart Campus Blueprint
- 400kW Solar PV system
- Smart Virtual Energy Manager for Smart Building Automation
- Advanced Video Analytics for Smart Building System
- Smart Street Lighting
- Electric Buses
- E-wallet
- Smart Heating Ventilation and Air-conditioning (HVAC) system with video and data analytics
- Hybrid Energy Storage System

#### Research Highlights

UNITEN Research Hub was officially launched in 2018 and comprises six research entities namely the Institute of Power Engineering (IPE), Institute of Sustainable Energy (ISE), Institute of Energy Policy & Research (IEPRe), Institute of Informatics and Computing in Energy (IICE), Institute of Energy Infrastructure (IEI) and Innovation & Research Management Centre (iRMC). The establishment of this hub defines the determination of UNITEN in producing cutting-edge research that will best serve the society. The hub also provides opportunities, research and programmes that correspond to the long-term needs of the university's stakeholders.

#### Reducing Plastic Pollution through "Project Newspaper"

A total of 300 volunteers from UNITEN descended on The Mines in Seri Kembangan to take part in Project Newspaper "There's No Planet B", an effort organised by the university's College of Foundation and General Studies (CFDS) in the fight against plastic pollution. Together with visitors, they made 21,505 paper bags from used newspapers, earning an entry into the Malaysia Book of Records for the Most Number of Paper Bags made from Recyclable Newspapers.

#### Zero Waste Awareness Campaign 2018

UNITEN launched a Zero Waste Awareness Campaign that saw it centralising its waste disposal and creating facilities for self-service recycling to create a more hygienic environment. At the same time, it will reduce the amount of wastes sent to the landfill as well as reduce its waste disposal fees, which exceeds RM16,000 per month with about three tonnes of waste produced daily.

UNITEN also launched a Fabric Recycling Campaign concurrently by installing 10 Pink Fabric Recycle Bins within the campus. Textiles collected will be recycled for the benefit of social welfare, environment and economy. This is the latest in a string of environmental initiatives that have been undertaken to establish UNITEN as a Green Campus.

#### Empowering Women Summit 2018

Held on 27 October 2018, the summit brought together prominent women from the Government and healthcare sector to engage with female students at UNITEN. Guest speakers included the Deputy Minister of Women, Family and Community Development, YB. Hannah Yeoh Tseow Suan and YB. Nurul Izzah Anwar, Member of Parliament for Permatang Pauh, who spoke on topics related to "Working and Society Lifestyle" and "Safety Awareness" respectively. Healthcare practitioners spoke on self-awareness and self-enhancement, as well as general well-being. The event was organised to inspire leadership skills among young women and to encourage greater sharing of ideas, as well as networking among students.



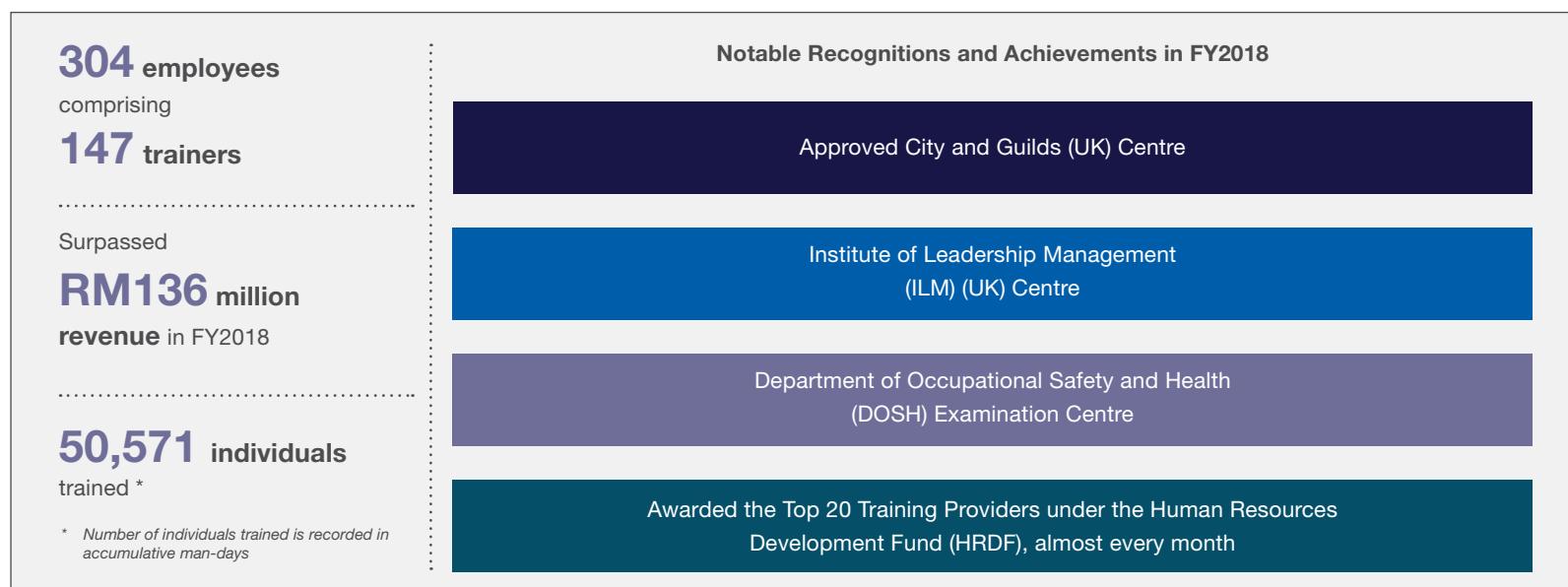
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## Embracing Relationships

### TNB INTEGRATED LEARNING SOLUTION (ILSAS)

ILSAS has been providing technical training and specialised services to TNB and the Malaysian energy supply industry for over 30 years. The range of programmes and services offered supports its transformation to become a leading energy learning centre. IILSAS is ISO9001:2015 certified and adopts the United Kingdom Accreditation Service (UKAS) standards by Standard and Industrial Research Institute of Malaysia (SIRIM) for the quality of its training and administration. All ILSAS trainers are Certified Training Professionals recognised by the Institute of Training and Development (ITD). Looking forward, ILSAS has developed a business plan for 2019 – 2030 that will set them on course to be a Global Leader Learning Solutions Provider.

#### ILSAS KEY PERFORMANCE IN FY2018



#### LATEST TRAINING FACILITIES IN ILSAS

- The ILSAS Renewable Energy Centre, a state-of-the-art solar photovoltaic installation workshop (providing hands-on training for technicians, engineers and contractors on installation and maintenance of solar PV panels);
- Generator synchronising workshop (for GenSet operation and maintenance);
- Supervisory Control and Data Acquisition (SCADA) and remote terminal unit laboratory (for SCADA and telecommunication training of technicians and engineers);
- SF<sub>6</sub> Gas Management and 33kV Gas-Insulated Switchgear (GIS) workshop;
- Medium voltage pluggable connection system workshop; and
- Electrical Power System Protection simulator.



**Moving forward, ILSAS has strategised a business plan for 2019-2030 to drive the institute towards becoming a Global Leader Learning Solutions Provider**

ILSAS continues to contribute to the Nation by conducting programmes for school-leaving youths for skills empowerment in the electrical and related industries, carried out in collaboration with organisations such as Yayasan Peneraju and the Ministry of Finance. ILSAS also collaborates with the Ministry of Foreign Affairs for a Government-to-Government (G2G) technical exchange programme, dubbed the Malaysian Technical Cooperation Programme (MTCP) since 2009, hosting over 100 delegates from over 30 countries around the world.



## EDUCATIONAL DEVELOPMENT PROGRAMMES



### TRUST SCHOOLS PROGRAMME

#### Background

The programme aims to boost the quality of education in schools by developing high-quality leadership and management among the school staff, and improving the overall quality of learning and teaching by exposing teachers to new teaching and learning methods and techniques. It also encourages collaboration among students, maximising students' achievements and potential through an effective co-curriculum framework and strengthening engagement with parents, communities and other stakeholders. The programme is a public-private partnership between Ministry of Education (MoE) and Khazanah Nasional's Yayasan AMIR, a non-profit foundation. Trust Schools and public schools that are carefully selected by MoE and Yayasan AMIR undergo the programme for a period of five years for the express purpose of nurturing the school staff's leadership potential.

#### Highlights

TNB has committed to providing RM800,000 to each of the eight schools per year over a period of five years. In FY2018, TNB contributed RM6.4 million to our eight adopted Trust Schools, namely: Sekolah Menengah Kebangsaan Seri Samudera and Sekolah Kebangsaan Seri Samudera in Perak, Sekolah Menengah Kebangsaan Kg. Jawa and Sekolah Kebangsaan Kg. Jawa in Selangor, Sekolah Menengah Kebangsaan Seri Paka and Sekolah Kebangsaan Paka III in Terengganu and Sekolah Menengah Kebangsaan Jeli and Sekolah Kebangsaan Jeli I in Kelantan.

### PINTAR SCHOOL ADOPTION PROGRAMME

#### Background

The programme's objective is to help under-performing schools in enhancing their academic and non-academic outcomes. A collaboration between the PINTAR Foundation and private corporations, primarily government-linked companies, the programme organises motivational camps, tuition classes, examination seminars and clinics at the adopted Pintar Schools. We also provide students with sports training hockey in particular to nurture well-rounded individuals.



#### Highlights

In FY2017, we adopted a new batch of 18 schools for a period of three years, bringing our total number of adopted Pintar Schools to 58 nationwide. In FY2018, TNB contributed a total of RM1 million to the programme.



### BACK-TO-SCHOOL PROGRAMME

#### Background

Launched in 2013, the programme alleviates the financial burden of poor families preparing for a new school year. We provided school supplies such as uniforms and stationery set to rural and underprivileged primary school students nationwide.

#### Highlights

This programme benefitted 13,040 underprivileged primary school students across 50 locations nationwide in FY2018. Students received school uniforms, scarves, shoes, socks, school bag and stationery set, with a total contribution amount of RM1.94 million during the year.

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## Embracing Relationships



### DERMASISWA MY BRIGHTER FUTURE (MYBF) PROGRAMME

#### Background

A special scholarship programme available for 1,000 students from low-income families to pursue tertiary education. Launched in FY2018, the scholarship is offered to students who study in the fields of Science, Technology, Engineering and Mathematics (STEM) in selected universities in Malaysia.

#### Highlights

For FY2018, TNB allocated RM10 million for the scholarship programme through YTN. As of FY2018, 945 students from B40 families were able to pursue their tertiary education without financial worry in STEM-related courses in local universities.

#### B40 PROGRAMME

#### Background

The programme aims to help secondary school students from lower-income (B40) families (with a family income of RM3,000 or less per month). This programme, a joint collaboration with Yayasan Raja Zarith Sofia Negeri Johor, was launched in FY2018. It currently caters to Form 3 students from three schools located within the vicinity of TNB's Headquarters, in Kuala Lumpur - Sekolah Menengah Kebangsaan Bukit Bandaraya, Sekolah Menengah Kebangsaan Bangsar and Sekolah Menengah Kebangsaan Seri Pantai.



#### Highlights

A total of 54 students from these three schools receive RM1,500 per year for a period of three years (2018-2020) and are fully-sponsored to attend value-added self-development programmes organised by TNB such as, motivational camps, outreach programmes and others. Among them are include the Score A Programme organised by the Persatuan Kebajikan Pekerja Islam (PKPI) and the B40 Motivational Camp, themed "Success Secrets Revealed", where 46 students were selected to attend.

### NATIONAL HOCKEY DEVELOPMENT AND THUNDERBOLTS PROGRAMME

#### Background

This programme's objective is to nurture the next generation of hockey players under the guidance of ex-nationals in one line hockey players who are also TNB employees and contribute to hockey development in the country. A key initiative under the National Hockey Development initiative is the Thunderbolts Programme, under which sports schools are adopted and hockey talents are provided with intensive hockey coaching.



Since its inception in 2006, a number of hockey players from the adopted schools have become national players.

#### Highlights

The four schools adopted under this programme since its inception are Sekolah Sukan Bukit Jalil, Selangor; Sekolah Sukan Tunku Mahkota Ismail, Johor; Sekolah Menengah Kebangsaan Seberang, Temerloh, Pahang; and Sekolah Menengah Kebangsaan Anderson, Ipoh, Perak. TNB's contribution of RM6 million in FY2018 included sponsorships to the Malaysian Hockey Confederation to support the national hockey tournament.



Janamanjung Fellowship Ride (JMFR) is an annual cycling event organised by TNB Janamanjung (TNBJ), TNB's wholly-owned subsidiary, as part of the Company's effort to sustain our good rapport with the local community, while promoting health awareness and wellness. It has been a mainstay event since 2008, with the initial intention to promote environmental conservation as well as employee health and wellness. This yearly event is held at Lumut, Manjung, Perak, which is in close proximity to the Sultan Azlan Shah Power Station. JMFR is a collaboration between TNB and the Manjung Town Council, Tourism Perak, Jawatankuasa Pelancongan, Kesenian, Kebudayaan, Komunikasi dan Multimedia Negeri Perak and Polis Diraja Malaysia (PDRM).

In 2018, on its 11<sup>th</sup> reiteration, it has gathered a participation of over 1,300 cycling enthusiasts ranging from 7 to 70 years old, including 14 national Paralympian cyclists, 4 national hockey players and 10 visually-impaired riders. The participants started off their 147km ride at Teluk Batik, riding along Lumut's scenic roads, passing through Sitiawan, Ayer Tawar and towards the Pasir Salak Historical Complex, where they then made their way back to Teluk Batik via the coastal roads of Seri Manjung. All participants received a finisher medal and a jersey as memento.

JMFR receives positive responses year-on-year by the participants, with the feedback received being that it not only put their physical and mental endurance to the test, the event also encouraged the spirit of kindness and strengthened ties within the community. A carnival was also held in

conjunction with this event, which involved 3,000 visitors over a span of three days. A total of 60 booths were set up for visitors to enjoy a range of exhibitions, including the promotion of the MyTNB app, information on the TNB Thunderbolts Hockey Team, as well as various stalls selling local products.

This event, widely acknowledged by stakeholders as a successful eco-tourism initiative by TNB, not only boosts tourism in Perak, especially in Teluk Batik, Manjung and Lumut, but subsequently generates income for the local communities in the sum of approximately RM6 million. Then Perak Chief Minister, Datuk Seri Dr Zambry Abd Kadir, who officiated the event, said programmes like this can contribute to the internationalisation of Perak, as this event also attracted participants from Singapore, Thailand, Japan, Indonesia, China and parts of Europe. In the future, TNB intends to organise more eco-tourism related activities for the benefit of the community and the local economy.

For FY2019, the JMFR event will be themed "Cycle for Green", in alignment with our ambition to create a "Better Environment, Brighter Future". Each participant of JMFR 2019 will be contributing towards this ambition, with the planting of a mangrove tree, similar to JMFR 2015's theme of "1 rider 1 plant". TNBJ will be collaborating with Sahabat Bakau Lekir (SBL) to carry out the mangrove planting activity, scheduled to take place on 21 April 2019 in Kampung Sungai Tiram, Lekir.

# APPENDIX

## PERFORMANCE TABLE

All data presented are covering TNB Company, unless otherwise stated.

### Delivering with Purpose

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark	
<b>BUSINESS PERFORMANCE</b>								
<b>GENERATION</b>								
G4 - EU1	Generating capacity broken down by primary source and regulatory regime							
	Gas	MW	5,233.43	5,023.43	4,251.43	4,251.43		
	Coal	MW	3,080.00	3,080.00	4,080.00	4,080.00		
	Hydro	MW	2,335.10	2,536.10	2,536.10	2,536.10	Excludes mini hydro	
	Solar	MW	-	-	-	50.00	First Large Scale Solar (LSS) plant commercialised in November 2018	
	Total	MW	10,648.53	10,639.53	10,867.53	10,917.53	Restated to report only for wholly-owned power plants in Peninsular Malaysia	
<b>TRANSMISSION AND DISTRIBUTION LINES</b>								
	Transmission	km	22,478	22,835	22,840	23,082		
	Distribution	km	1,222,562	632,929	645,257	660,038		
<b>SYSTEM EFFICIENCY</b>								
	Average generation of efficiency of thermal plants by energy source and by regulatory regime							
	- Equivalent availability factor (EAF)	%	88.08	88.51	84.96	89.92	For wholly-owned power plants in Peninsular Malaysia.	
	- Equivalent Unplanned Outage Factor (EUOF)	%	4.44	2.69	4.46	3.24		
G4 - EU12	Transmission and distribution losses as a percentage of total energy							
	Transmission and distribution network losses							
	- Transmission in Malaysia	%	1.28	1.29	1.30	1.43		
	- Distribution in Malaysia	%	6.11	6.21	6.13	6.39		
	<b>Electricity Transmission System</b>							
Transmission System Minutes		Minutes	1.47	0.23	0.05	0.35		
Percentage of System Availability		%	99.77	99.79	99.82	99.79		

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>BUSINESS PERFORMANCE</b>							
<b>ACCESS</b>							
G4 - EU28	<b>Power outage frequency</b>						
	System Average Interruption Frequency Index (SAIFI)	Frequency/ customer/year	0.87	0.84	0.29	0.86	
G4 - EU29	<b>Average power outage duration</b>						
	System Average Interruption Duration Index (SAIDI)	Minutes/ Customer/Year	49.71	50.24	18.05	48.22	
<b>ECONOMIC PERFORMANCE</b>							
GRI 201	<b>Value Added</b>						
	Revenue	RM million	44,531.50	47,416.90	15,692.20	50,392.50	Amounts for financial period ended 31 December 2017 have been restated for the Amendments to MFRS15 which was adopted in FY2018
	Operating expenses excluding staff costs, depreciation and amortisation	RM million	(26,304.50)	(29,218.10)	(9,689.00)	(33,677.60)	
	Net loss on impairment of financial instruments	RM million	-	-	(163.40)	(487.30)	
	Other operating income	RM million	711.50	1,021.30	512.60	825.10	
	Finance income	RM million	299.00	237.60	94.90	423.80	
	Finance cost	RM million	(1,039.30)	(1,456.00)	(531.40)	(1,688.50)	
	Fair value of financial instruments	RM million	-	-	(7.20)	36.70	
	Foreign exchange gain/(loss) on borrowings	RM million	(358.20)	7.90	310.20	(418.30)	
	Share of results of associates and joint ventures	RM million	93.30	128.30	(37.00)	(182.70)	
	<b>Value added available for distribution</b>	RM million	17,933.30	18,137.90	6,181.90	15,223.70	
<b>Value Distributed</b>							
<b>To employees</b>							
	Employment cost	RM million	4,144.30	3,751.10	1,288.50	3,685.80	
<b>To Government</b>							
	Taxation and zakat	RM million	746.00	1,369.70	235.00	1,301.60	
<b>To shareholders</b>							
	Dividends	RM million	1,636.70	2,505.50	2,493.00	2,931.90	
	Non-controlling interest	RM million	(46.80)	8.10	(13.80)	21.30	
<b>To reinvest to the Group</b>							
	Depreciation and amortisation	RM million	5,722.20	6,105.00	2,049.90	6,491.30	
	Retained profit	RM million	5,730.90	4,698.50	129.30	791.80	
<b>Total distributed</b>							
<b>INDIRECT ECONOMIC IMPACT</b>							
	<b>Development and impact to communities</b>						
	Contributions to community in charitable donations	RM million	18.10	23.60	9.60	14.20	

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**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark	
<b>CUSTOMER</b>								
<b>CUSTOMER ACCOUNTS</b>								
<b>G4 - EU3</b>	<b>Number of residential, industrial, institutional and commercial customer accounts</b>							
	Domestic	Number	6,910,081	6,955,595	7,171,421	7,378,425	Peninsular Malaysia only	
	Commercial	Number	1,442,908	1,427,422	1,506,108	1,553,607		
	Industrial	Number	27,210	27,575	28,796	29,749		
	Others	Number	70,006	70,262	81,522	77,416	The category of 'others' has changed from the previous year to cover mining, street lighting and free units. The change is also reflected in the figures as presented in the table.	
	<b>Total</b>	Number	<b>8,450,205</b>	<b>8,480,854</b>	<b>8,787,847</b>	<b>9,039,197</b>		
<b>PRODUCT AND SERVICE LABELLING</b>								
	<b>Results of surveys measuring customer satisfaction</b>							
	Customer satisfaction index	N/A	8.10	8.10	-	8.10	Surveys were only conducted on an annual basis	
	Corporate reputation index	%	82	81	-	89		
	Complaints received	Number	32,311	45,585	9,818	35,747		
	Complaints resolved	%	100	98	97	99		
	Service request received	Number	192,452	204,209	47,540	130,405		
	Service request resolved	%	100	98	97	99		
<b>PROCUREMENT PRACTICES</b>								
<b>GRI 204</b>	<b>Number of suppliers and total spent</b>							
	Total number of suppliers	Number	4,685	4,514	3,206	4,665	Procurement spent is for Tenaga Group, excluding TNB Fuel Services Sdn Bhd (TNBF), Petroliam Nasional Berhad (PETRONAS) and Electricity Generating Authority of Thailand (EGAT)	
	Total spent on procurement	RM billion	8.10	7.18	2.45	7.20		
	<b>Proportion of spending on local suppliers</b>							
	Total number of local suppliers engaged	Number	4,550	3,281	3,132	4,514		
	Percentage of local suppliers	%	97	73	98	97		
	Total spent on local suppliers engaged	RM billion	7.44	6.64	2.28	6.80		

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

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**Performance Table**
**Environmental Stewardship**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>EMISSIONS</b>							
<b>GRI 305-1</b>	<b>Direct greenhouse gas emissions (GHG) (Scope 1)</b>						Data is presented on a yearly basis and figures for FY2018 are still in progress.
	Total direct GHG emissions (Scope 1)	tCO <sub>2</sub> e	28,492,111.00	33,108,297.42	10,912,345.04	-	
<b>GRI 305-2</b>	<b>Indirect emissions of greenhouse gasses (Scope 2)</b>						
	Electricity consumption	tCO <sub>2</sub> e	569,079.00	395,506.80	64,631.08	-	
<b>GRI 305-4</b>	<b>Greenhouse gas emission intensity</b>						
	Intensity of CO <sub>2</sub> emissions	tCO <sub>2</sub> e/MWh	0.55	0.54	-	-	
<b>GRI 305-5</b>	<b>Reduction of greenhouse gas emissions</b>						
	Total of CO <sub>2</sub> avoided	tCO <sub>2</sub> e	2,359,770.65	5,030,079.70	-	-	
<b>EFFLUENTS AND WASTE</b>							
<b>GRI 306-3</b>	<b>Significant spills</b>						
	Total number of recorded significant spills	Number	0	1	0	0	
	Total volume of recorded significant spills	m <sup>3</sup>	0	1.8	0	0	
<b>WATER</b>							
<b>Total volume of water</b>							
<b>GRI 303-4</b>	Total water discharge by freshwater and other water	Megalitres	48.36	77.64	19.27	54.77	Total water discharge for surface water, groundwater, seawater, third-party water only for SJ Jambatan Connaught and SJ Tunku Jaafar
<b>GRI 303-5</b>	Total water consumption	Megalitres	443.93	430.97	119.82	435.66	Total plant and domestic consumption only for SJ Jambatan Connaught, SJ Tunku Jaafar, SJ Paka and SJ Gelugor

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

**Performance Table**

**Embracing Relationships**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>LABOUR PRACTICES AND DECENT WORK</b>							
<b>EMPLOYMENT</b>							
	<b>Total size of workforce**</b>						
	TNB Group	Number	35,615	35,009	35,030	35,574	
	TNB Company	Number	28,807	27,990	27,995	28,371	
	Generation	Number	1,676	1,406	1,295	1,086	
	Grid	Number	3,090	2,887	2,743	2,510	
	Distribution	Number	17,454	16,402	16,445	-	On 1 August 2018, "Retail" and "Distribution Network" divisions were separated.
	Retail	Number	-	-	-	4,365	
	Distribution Network	Number	-	-	-	11,011	
	Support/Others	Number	6,587	7,295	7,512	9,399	Entry for FY2017's "Support/Other" has been restated from 7,285 to 7,295 due to erratum.
	<b>Employee Engagement Score (EES)</b>	%	89	89	-	86	EES is conducted bi-annually.
<b>GRI 102-8, GRI 405-1</b>	<b>Workforce by geographic area</b>						
	<b>TNB Company (Malaysia)</b>						
	Peninsular Malaysia - East	Number	4,465	4,292	4,201	4,229	
	Peninsular Malaysia - North	Number	6,463	6,197	6,090	6,051	
	Peninsular Malaysia - South	Number	5,176	4,977	4,896	5,195	
	Peninsular Malaysia - Central	Number	12,697	12,517	12,801	12,890	
	Malaysia East - Sabah	Number	6	7	7	6	
	<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>	
	<b>Workforce by contract type and geographic area</b>						
	<b>Permanent employees</b>						
	Peninsular Malaysia - East	Number	4,395	4,189	4,067	3,947	
	Peninsular Malaysia - North	Number	6,377	6,041	5,891	5,620	
	Peninsular Malaysia - South	Number	5,115	4,844	4,713	4,675	
	Peninsular Malaysia - Central	Number	12,491	12,186	12,349	11,895	
	Malaysia East - Sabah	Number	6	7	7	6	
	<b>Total (Permanent)</b>	Number	<b>28,384</b>	<b>27,267</b>	<b>27,027</b>	<b>26,143</b>	
	<b>Contract employees (non-permanent)</b>						
	Peninsular Malaysia - East	Number	70	103	134	282	
	Peninsular Malaysia - North	Number	86	156	199	431	
	Peninsular Malaysia - South	Number	61	133	183	520	
	Peninsular Malaysia - Central	Number	206	331	452	995	
	Malaysia East - Sabah	Number	0	0	0	0	
	<b>Total (Contract)</b>	Number	<b>423</b>	<b>723</b>	<b>968</b>	<b>2,228</b>	
	<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>	

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

\*\* All TNB employees are employed as full-time

### Performance Table

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GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>LABOUR PRACTICES AND DECENT WORK</b>							
<b>EMPLOYMENT</b>							
<b>Workforce by gender</b>							
<b>TNB Company (Malaysia)</b>							
- Male	Number	23,060	22,311	22,266	22,589		
	%	80.00	79.70	79.50	80.00		
- Female	Number	5,747	5,679	5,729	5,782		
	%	20.00	20.30	20.50	20.00		
<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>		
<b>Workforce by contract type and gender</b>							
<b>Permanent employees</b>							
- Male	Number	22,668	21,640	21,394	20,582		
- Female	Number	5,716	5,627	5,633	5,561		
<b>Contract employees (non-permanent)</b>							
- Male	Number	392	671	872	2,007		
- Female	Number	31	52	96	221		
<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>		
<b>Workforce by level and gender</b>							
<b>Senior management</b>							
- Male	Number	263	266	266	285		
- Female	Number	41	46	50	57		
<b>Executive</b>							
- Male	Number	3,570	3,628	3,691	3,780		
- Female	Number	1,956	2,043	2,120	2,282		
<b>Non-executive</b>							
- Male	Number	19,227	18,417	18,309	18,524		
- Female	Number	3,750	3,590	3,559	3,443		
<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>		
<b>Workforce by age group</b>							
- <35	Number	14,174	13,646	13,687	14,071		
	%	49.20	49.00	48.90	49.60		
- 35-50	Number	8,429	8,930	9,162	9,703		
	%	29.30	32.00	32.70	34.20		
- > 50	Number	6,204	5,414	5,146	4,597		
	%	21.50	19.00	18.40	16.20		
<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>		

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

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**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>LABOUR PRACTICES AND DECENT WORK</b>							
<b>EMPLOYMENT</b>							
GRI 102-41	<b>Workforce by level and age group</b>						
	<b>Senior management</b>						
	<35	Number	0	0	0	0	
	35-50	Number	85	89	88	98	
	>50	Number	218	223	228	244	
	<b>Executive</b>						
	<35	Number	2,489	2,609	2,663	2,805	
	35-50	Number	2,221	2,323	2,423	2,599	
	>50	Number	817	739	725	658	
	<b>Non-executive</b>						
GRI 401-1	<35	Number	11,408	11,037	11,024	11,266	
	35-50	Number	6,273	6,518	6,651	7,006	
	>50	Number	5,296	4,452	4,193	3,695	
	<b>Total</b>	Number	<b>28,807</b>	<b>27,990</b>	<b>27,995</b>	<b>28,371</b>	
	<b>Employees covered by collective bargaining agreements</b>						
	Number of employees covered in TNB Company	Number	23,134	24,725	24,258	22,992	
	Percentage of employees covered in TNB Company	%	80.31	88.37	86.65	81.00	
	<b>Changes to size of workforce</b>						
	<b>Number of new hires by gender for TNB Company</b>						
	- Male	Number	349	527	345	1,547	
	- Female	Number	43	114	107	241	
	<b>Total</b>	Number	<b>392</b>	<b>641</b>	<b>452</b>	<b>1,788</b>	
	<b>Percentage of new hires by gender for TNB Company</b>						
	- Male	%	89.03	82.22	76.33	86.52	
	- Female	%	10.97	17.78	23.67	13.48	
	<b>Number of new hires by age group for TNB Company</b>						
	< 35	Number	382	626	444	1,768	
	36-50	Number	10	10	7	18	
	> 50	Number	0	2	1	2	
	<b>Total</b>	Number	<b>392</b>	<b>641</b>	<b>452</b>	<b>1,788</b>	
	<b>Percentage of new hires by age group for TNB Company</b>						
	< 35	%	97.45	97.66	98.23	98.88	
	36-50	%	2.55	1.56	1.55	1.01	
	> 50	%	0.00	0.31	0.22	0.11	
	<b>Number of new hires by region for TNB Company</b>						
	- Peninsular Malaysia - East	Number	60	90	56	203	
	- Peninsular Malaysia - North	Number	79	127	66	297	
	- Peninsular Malaysia - South	Number	63	115	80	422	
	- Peninsular Malaysia - Central	Number	190	309	250	866	
	- Malaysia East - Sabah	Number	0	0	0	0	
	<b>Total</b>	Number	<b>392</b>	<b>641</b>	<b>452</b>	<b>1,788</b>	
	<b>Percentage of new hires by region for TNB Company</b>						
	- Peninsular Malaysia - East	%	15.31	14.04	12.39	11.35	

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### Performance Table

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>LABOUR PRACTICES AND DECENT WORK</b>							
<b>EMPLOYMENT</b>							
- Peninsular Malaysia - North	%	20.15	19.81	14.60	16.61		
- Peninsular Malaysia - South	%	16.07	17.94	17.70	23.60		
- Peninsular Malaysia - Central	%	48.47	48.21	55.31	48.43		
- Malaysia East - Sabah	%	0.00	0.00	0.00	0.00		
<b>Employee turnover by gender for TNB Company</b>							
- Male	Number	1,022	1,279	390	1,189	Entries for FY2016 and FY2017 were restated due to errata.	
- Female	Number	155	188	57	188		
<b>Total</b>	Number	<b>1,177</b>	<b>1,467</b>	<b>447</b>	<b>1,377</b>		
<b>Employee turnover rate by gender for TNB Company</b>							
- Male	%	4.40	5.70	1.80	5.30	Entries for FY2016 and FY2017 were restated due to errata.	
- Female	%	2.70	3.30	1.10	3.30		
<b>Total</b>	Number	<b>1,177</b>	<b>1,467</b>	<b>447</b>	<b>1,377</b>		
<b>Employee turnover by age group for TNB Company</b>							
<35	Number	117	163	59	316	Entries for FY2016 and FY2017 were restated due to errata.	
35-50	Number	89	63	17	67		
> 50	Number	971	1,241	371	994		
<b>Total</b>	Number	<b>1,177</b>	<b>1,467</b>	<b>447</b>	<b>1,377</b>		
<b>Employee turnover rate by age group for TNB Company</b>							
<35	%	0.80	1.20	0.40	2.20	Entries for FY2016 and FY2017 were restated due to errata.	
35-50	%	1.00	0.70	0.20	0.70		
> 50	%	15.30	22.90	7.20	21.60		
<b>Employee turnover by region for TNB Company</b>							
- Peninsular Malaysia - East	Number	233	295	72	217		
- Peninsular Malaysia - North	Number	313	374	123	355		
- Peninsular Malaysia - South	Number	244	267	83	239		
- Peninsular Malaysia - Central	Number	386	531	169	566		
- Malaysia East - Sabah	Number	1	0	0	0		
<b>Total</b>	Number	<b>1,177</b>	<b>1,467</b>	<b>447</b>	<b>1,377</b>		
<b>Employee turnover rate by region for TNB Company</b>							
- Peninsular Malaysia - East	%	19.80	20.11	16.11	15.76		
- Peninsular Malaysia - North	%	26.59	25.49	27.52	25.78		
- Peninsular Malaysia - South	%	20.73	18.20	18.57	17.36		
- Peninsular Malaysia - Central	%	32.80	36.20	37.81	41.10		
- Malaysia East - Sabah	%	0.08	0.00	0.00	0.00		
<b>DIVERSITY AND EQUAL OPPORTUNITY</b>							
GRI 405-1	<b>Employees with disability by gender</b>						
	- Male	Number	36	33	44	48	
	- Female	Number	4	4	4	6	
	<b>Total</b>	Number	<b>40</b>	<b>37</b>	<b>48</b>	<b>54</b>	
	<b>Women in senior management</b>						
	- Female	Number	41	46	50	57	
		%	13.50	14.70	15.80	16.70	

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**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>TRAINING AND EDUCATION</b>							
<b>GRI 404-1</b>	<b>Training hours</b>						
	Training hours (inc. general and leadership training)	Hours	672,000	671,112	167,700	677,960	
	Average training hours (man-days per employee)	Hours	8	8	4	8	
	<b>Training hours by gender (inc. general and leadership training)</b>						
	- Male	Hours	8	8	4	8	
	- Female	Hours	8	8	4	8	
	<b>Training hours by level (inc. general and leadership training)</b>						
	- Senior management (i.e top management, management)	Hours	8	8	4	8	
	- Executive	Hours	8	8	4	8	
	- Non-executive	Hours	8	8	4	8	
	<b>General training</b>						
	- General training hours	Hours	3,552	8,880	2,120	3,120	
	- Average general training hours (man-days per employee)	Hours	8	8	4	8	
	<b>Programmes for skills management and lifelong learning</b>						
	Leadership training						
	- Total leadership training hours	Hours	2,416	3,152	758	2,496	
	- Average leadership training hours (man-days per employee)	Hours	8	8	4	8	
	Total spend on training (inc. general and leadership)	RM	192,595,081.16	165,381,626.24	67,112,700	142,771,483.08	
<b>GRI 404-3</b>	<b>Assessment of employees receiving regular performance and career development reviews</b>						
	Regular performance review (employees)	Number	28,807	27,990	27,984	28,371	
<b>LABOUR PRACTICES GRIEVANCE MECHANISMS</b>							
	Grievances about labour practices received	Number	2	0	0	0	
	Grievances about labour practices resolved	Number	2	0	0	0	
<b>OCCUPATIONAL HEALTH AND SAFETY</b>							
<b>NUMBER AND FREQUENCY OF INJURY</b>							
<b>GRI 403-9</b>	<b>Number of fatalities</b>						
	- Employees (Electrical)	Number	0	1	0	0	
	- Employees (Non-Electrical)	Number	2	1	0	2	
	<b>Total (Company)</b>	Number	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>	
	- Contractors (Electrical)	Number	0	2	0	1	
	- Contractors (Non-Electrical)	Number	1	0	2	3	
	<b>Total (Company)</b>	Number	<b>1</b>	<b>2</b>	<b>2</b>	<b>4</b>	
	<b>Fatality rate</b>						
	- Employees (Electrical)	per 1000	0	0.04	0	0	
	- Employees (Non-Electrical)	per 1000	0.07	0.04	0	0.27	
	- Contractors (Electrical)	per 1000	0	0.18	0	0.08	
	- Contractors (Non-Electrical)	per 1000	-	0	0.07	0.1	Data for FY2016 was not available.

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**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>OCCUPATIONAL HEALTH AND SAFETY</b>							
<b>NUMBER AND FREQUENCY OF INJURY</b>							
<b>Lost-Time Injuries</b>							
	Generation	Number	-	6	2	4	<ul style="list-style-type: none"> <li>• Data for FY2016 was not available. We examined the data collection process and started reporting the missing element in FY2017 as part of the transition to the GRI Standards.</li> <li>• The scope of reporting for FY2017 has been restated &amp; covers TNB Company (excluding subsidiaries) only.</li> </ul>
	Grid	Number	-	20	2	19	
	Distribution	Number	-	73	22	-	
	Retail	Number	-	-	-	72	
	Distribution Network	Number	-	-	-	40	
	<b>TNB Company</b>	<b>Number</b>	<b>-</b>	<b>115</b>	<b>37</b>	<b>153</b>	
<b>GRI 403-9</b>	<b>Lost-Time Injuries Frequency Rate (LTIF)</b>						
	Generation	Per million man-hours	1.1	1.09	1.54	1.49	
	Grid	Per million man-hours	1.76	2.73	0.91	3.06	
	Distribution	Per million man-hours	1.17	1.38	1.34	-	On 1 August 2018, "Retail" and "Distribution Network" divisions were separated.
	Retail	Per million man-hours	-	-	-	6.88	
	Distribution Network	Per million man-hours	-	-	-	1.07	
	<b>TNB Company</b>	<b>Per million man-hours</b>	<b>1.06</b>	<b>1.44</b>	<b>1.54</b>	<b>2.08</b>	The scope of reporting for FY2017 has been restated & covers TNB Company (excluding subsidiaries) only.

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

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**Performance Table**

GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>OCCUPATIONAL HEALTH AND SAFETY</b>							
<b>NUMBER AND FREQUENCY OF INJURY</b>							
	<b>Lost days of employees</b>						
	Generation	Number	-	-	2	24	Data for FY2016 was not available. We examined the data collection process and started reporting the missing element in FY2017 as part of the transition to the GRI Standards.
	Grid	Number	-	-	11	248	
	Distribution	Number	-	-	371	-	
	Retail	Number	-	-	-	6,585	
	Distribution Network	Number	-	-	-	6,454	
	<b>TNB Company</b>	<b>Number</b>	-	-	<b>476</b>	<b>13,531</b>	Data for FY2016 was not available. We examined the data collection process and started reporting the missing element in FY2017 as part of the transition to the GRI Standards.
	<b>Lost days severity rate of employees</b>						
	Generation	Per million man-hours	-	-	1.54	8.93	Data for FY2016 was not available. We examined the data collection process and started reporting the missing element in FY2017 as part of the transition to the GRI Standards.
	Grid	Per million man-hours	-	-	5.02	40	
	Distribution	Per million man-hours	-	-	23.08	-	
	Retail	Per million man-hours	-	-	-	617.60	
	Distribution Network	Per million man-hours	-	-	-	173	
	<b>TNB Company</b>	<b>Per million man-hours</b>	-	-	<b>21.45</b>	<b>185.16</b>	<ul style="list-style-type: none"> <li>• Data for FY2016 was not available. We examined the data collection process and started reporting the missing element in FY2017 as part of the transition to the GRI Standards</li> <li>• 1 fatality = 6000 lost days</li> </ul>

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**Performance Table**


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GRI	Indicator	Unit	FY2016	FY2017	*FPE 31.12.2017	FY2018	Scope/Remark
<b>EDUCATION</b>							
	<b>Yayasan Tenaga Nasional (YTN)</b>						
	Total spend on YTN Scholars	RM million	30.19	55.78	14.69	35	
	Number of YTN scholarships awarded	Number	777	1,963	654	816	
	<b>UNITEN</b>						
	Number of local students enrolled	Number	11,352	11,371	9,301	8,703	
	Number of international students enrolled	Number	690	567	472	458	
	<b>Total</b>	Number	<b>12,042</b>	<b>11,938</b>	<b>9,773</b>	<b>9,161</b>	
	Number of graduates (undergraduate programmes)	Number	2,233	2,781	-	3,001	
	Number of graduates (post-graduate programmes)	Number	167	178	-	144	
	<b>Total</b>	Number	<b>2,400</b>	<b>2,959</b>	-	<b>3,145</b>	
	Employability rate within 6 months	%	97.20	95.00	95.00	93.69	
<b>ILSAS</b>							
Total number of individuals trained (accumulative man-days)		Hours	48,434	62,769	23,236	50,571	Based on number of internal (TNB) and external participants
Number of TNB employees trained (accumulative man-days)		Hours	48,019	62,228	16,144	39,077	Subject to number of training program in ILSAS

\* FPE 31.12.2017 denotes 1 September to 31 December 2017

## GRI STANDARDS ASPECT BOUNDARY

Material Matters	GRI Standards	Where the impact occurs
Responsible and ethical business practices	GRI 205: Anti-corruption GRI 419: Socioeconomic compliance	Within and outside
Stakeholder relationship	GRI 102-40 to GRI 102-44 Stakeholder Engagement	Within and outside
Business and Financial Performance	GRI 201 Economic Performance EU 28 Power outage frequency EU 29 Average power outage duration	Within and outside
Fuel Mix Policy	EU1 Installed capacity, broken down by primary energy source and by regulatory regime	Within and outside
Reliable Energy and Fair Tariffs	EU 28 Power outage frequency EU 29 Average power outage duration	Within and outside
Energy Efficiency	GRI 302: Energy	Within and outside
Renewable Energy	GRI 302 Energy	Within and outside
Efficient Technology and Innovation	EU12 Transmission and distribution losses as a percentage of total energy	Within
Asset Optimisation	None - Disclosure on Management Approach only	Within
Cyber Security Management	None - Disclosure on Management Approach only	Within
Sustainable Supply Chain	GRI 204: Procurement Practices	Within and outside
Customer Experience	GRI 418: Customer Privacy EU3 Number of residential, industrial, institutional and commercial customer accounts DMA Demand-side Management	Within and outside
Indirect Economic Impact	GRI 203 Indirect Economic Impacts	Within and outside
Environment Management	GRI 307: Environmental Compliance	Within and outside
Greenhouse Gas Emissions	GRI 305: Emissions	Within and outside
Natural Resource Consumption	GRI 301: Materials GRI 303: Water and effluent (2018)	Within and outside
Waste Management	GRI 306: Effluents and Waste	Within and outside
Biodiversity	GRI 304: Biodiversity	Within and outside
Diversity and Inclusion	GRI 401: Employment GRI 404: Training and Education GRI 405: Diversity and Equal Opportunity	Within
Workplace Culture		
Employee Engagement		
Capability Development		
Safety and Emergency Preparedness	GRI 403: Occupational Health and Safety DMA Disaster/Emergency Planning and Response	Within and outside Within and outside
Health and Well-being	GRI 403: Occupational Health and Safety	Within and outside
Community Development	GRI 203: Indirect Economic Impacts	Within and outside
Education	GRI 203: Indirect Economic Impacts	Within and outside



# GRI STANDARDS CONTENT INDEX

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## GENERAL DISCLOSURES

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102-11	Precautionary Principle or approach	IAR 2018 (144-146)
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**GRI Standards Content Index**

**TOPIC SPECIFIC DISCLOSURES**

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"Asset optimisation" and "Cyber Security Management" are matters not covered by the GRI Standards, but have been identified as material to TNB.

 Further details of these matters are found on pages 32 and 33 of this Report respectively

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