



POWERING BETTER BRIGHTER NATIONS



SUSTAINABILITY REPORT 2017

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

Committed to
Sustainable Value



CREATING A SUSTAINABLE, BETTER AND BRIGHTER FUTURE

At Tenaga Nasional Berhad (TNB),
we are committed to
enhancing lives and livelihoods.

AT TNB, WE BELIEVE OUR VALUE LIES NOT ONLY
IN PROVIDING ELECTRICITY TO COMMUNITIES,
BUT ALSO IN ADOPTING SUSTAINABLE ACTIVITIES
IN OUR OPERATIONS TO IMPROVE SOCIETAL AND
ENVIRONMENTAL OUTCOMES.

We seek to understand our stakeholders, so we may go beyond their expectations and create long-term shared value. TNB remains committed to operating in a manner that is receptive to the needs and expectations of our people, the communities we serve, and our surrounding environment.

As TNB moves toward a better and brighter future, we will continue our quest to provide Malaysia with safe, secure and reliable energy as part of our contribution to the nation's development.

We are at an exciting juncture in redefining the way we do business to enhance our capabilities to become a world-class energy player. We seek to expand beyond Malaysian shores by diversifying our business, with greater focus on renewable energy. Wherever we operate, we will continue to contribute to social and economic development, just as we do here in Malaysia.

The sustainability of our business is integral to our future, and as a reflection of a greater focus on transparency, we are publishing our first Sustainability Report titled Powering Better Brighter Nations. The intent is to provide stakeholders with deeper insights into our sustainability journey.

This report supplements our Integrated Annual Report (IAR) FY2017.

WHAT'S INSIDE THIS REPORT

Sustainability Report
2017



OUR VISION

WE ARE
COMMITTED
TO EXCELLENCE
IN OUR PRODUCTS
AND SERVICES

OUR MISSION

TO BE AMONG
THE LEADING
CORPORATIONS
IN ENERGY AND RELATED
BUSINESSES GLOBALLY



SUSTAINABILITY AT TNB

- //3 About This Report
- //4 CEO's Message
- //6 Engaging with Our Stakeholders
- //7 Our Material Sustainability Matters

SPIRIT OF RESPONSIBILITY

- //10 Sustainability Governance
- //10 Responsible and Ethical Business Practices
- //12 Disaster Management
- //13 Cyber Security Management

DELIVERING WITH PURPOSE

- //16 Our Business Performance in FY2017
- //18 Growing Our Business and Financial Performance
- //19 Reliable Energy and Fair Tariffs
- //19 Fuel Mix Policy
- //20 Embracing Renewable Energy
- //22 Efficient Technologies and Innovation
- //23 Asset Optimisation
- //24 Sustainable Supply Chain

ENVIRONMENTAL STEWARDSHIP

- //28 Managing Our Environmental Impacts
- //28 Mitigating Our GHG Emissions

- //31 Biodiversity Management

- //33 Natural Resource Consumption

EMBRACING RELATIONSHIPS

- //36 Partnering with Our Customers
- //40 Empowering Our People
- //48 Building Communities

FEATURE STORY

- //56 Positive Imprints of Hydroelectric Power Stations

APPENDIX

- //58 Performance Data
- //66 GRI G4 Content Index



ABOUT THIS REPORT

Sustainability
Report
2017

TNB is committed to operate in a manner that is sensitive to the needs and expectations of the people who work with us, to the communities that we serve and to the surrounding environment. We intend for our Sustainability Report to provide insights into the actions we are taking to fulfil this commitment.

In the past, we have reported on our efforts to respond to the needs of those impacted by our business, and who influence our business, within the Corporate Social Responsibility (CSR) section of our Annual Report. Last year, we produced an Integrated Annual Report (IAR) in which we highlighted how our sustainability efforts are inextricably linked with our operations. However, we felt there was a need to delve deeper into our programmes and provide our stakeholders with a more comprehensive account of the efforts being made to create tangible and intangible values for them. This Sustainability Report serves to provide a more comprehensive and substantive account of our corporate values, governance, strategies and vision as well as our financial, social and environmental performance.

In determining and developing content for this report, we have been guided by the Global Reporting Initiative (GRI) G4 Sustainability Reporting Guidelines and Bursa Malaysia Securities Berhad (Bursa Malaysia)'s Sustainability Reporting Guide. Qualitative and quantitative data have been provided on various material matters relating to TNB that are important to us as an organisation as well as to our stakeholders.

This report covers TNB's operations which are primarily in Peninsular Malaysia, and features highlights of our international operations and subsidiaries. This report does not include outsourced activities, nor those of our joint ventures or suppliers, unless otherwise specified.

Most of the information and performance indicators presented covers the period from 1 September 2016 to 31 August 2017, unless otherwise stated. Where data for FY2017 is not available, the most recent data is provided. Additionally, background information preceding FY2017 has been included to provide context for our initiatives.

As part of our sustainability journey, we seek to continually enhance the scope of our reporting as well as the measurement of performance indicators. To this end, we will continue to implement better systems of internal control for better data quality.

CEO'S MESSAGE

DATUK SERI IR.
AZMAN BIN MOHD

—
President/Chief
Executive Officer



It gives me great pleasure to present TNB's inaugural Sustainability Report. As organisations around the world over face increasing pressure from issues such as climate change, globalisation, population growth and technology advancements, sustainability is no longer something that enhances brand value but is critical to ensuring we remain relevant in our fast-changing environment.

The year 2017 marked a milestone in TNB's sustainability journey. In that year, we launched our Strategic Plan 2017–2025 themed Reimagining TNB that serves to enhance our position as the leading energy provider in the country. The plan outlines a blueprint to transform TNB in a way that prepares us to meet current and future challenges in the energy and Electricity Supply Industry (ESI).

Within the international ESI, we are witnessing massive developments in renewable energy to gradually replace fossil fuel usage; and increasing

WE HOPE TO DEMONSTRATE OUR COMMITMENT TO CREATING A BETTER AND BRIGHTER FUTURE – NOT JUST FOR TNB, BUT FOR ALL OUR STAKEHOLDERS.

use of advanced technologies to automate processes as well as to connect better with customers.

Through Reimagining TNB, we are managing these challenges by redefining the way we do business. In this Sustainability Report, we explain the initiatives being undertaken that will enable us to keep providing Malaysia with safe, secure and reliable energy. In the process, we hope also to demonstrate our commitment to creating a better and brighter future – not just for TNB, but for all our stakeholders.



POWERING A BETTER AND BRIGHTER FUTURE

One of our long-term goals is to be ranked among the world's top 10 utility organisations by 2025. To achieve this, we are realigning our focus on four strategic pillars: Future Generation Sources, Grid of the Future, Winning the Customer and Future-proof Regulations.

To strengthen our ability to supply future power generation sources, we are partnering with global companies that are leaders in renewable energy. Our latest acquisition of 50% interest in Vortex Solar Investments Sarl demonstrates this commitment. Locally, we continue to invest in various renewable energy projects. Towards this objective, we have commenced work on our first Large Scale Solar (LSS) farm in Sepang, Selangor, which is scheduled to be operational by end 2018. The solar farm supports the Government's agenda to decarbonise our economy by reducing our CO₂ emissions from power generation by an estimated 64,000 tonnes/year.

In developing the Grid of the Future, we have identified several game-changing technologies and innovations, and have already made significant progress with the introduction of Advanced Metering Infrastructure (AMI) and Distribution Automation (DA). In early 2017, we started to utilise drones to perform aerial patrolling and inspection of our grid infrastructure. Drones increase the visibility of grid equipment conditions and reduce the safety risk on maintenance staff. Though the programme is still in its infancy, we are very keen to incorporate this initiative for the operational efficiencies and safety benefits.

Customers are the cornerstone of our business; we exist to serve them. Along with shifts in the energy industry landscape, our customers' expectations have increased. With this in mind, we constantly engage our customers and channel their feedback into the development of better, value-added products and services. As an example, we are empowering our customers to be more energy efficient by providing them with Home Energy Report (HER). The initiative not only helps customers reduce their electricity bills but also supports our broader agenda of managing electricity demand and reducing the nation's carbon emissions.



SUSTAINABILITY WILL INFLUENCE HOW WE RUN OUR BUSINESS. WE LOOK FORWARD TO SHARING MORE OF OUR SUSTAINABILITY JOURNEY IN THE COMING YEARS.



As our business is a regulated industry, we work closely with the relevant regulatory agencies to maintain a conducive operating environment to achieve both TNB and the Governments' aspirations. We constantly keep abreast of the regulatory environment globally to allow us to provide input for the nation's progressive and sustainable energy policies.

EMPOWERING OUR PEOPLE

To achieve the goals we have set, we need to have people who share our vision and have the capability to drive the changes integral to Reimagining TNB. We are not only intensifying our employee engagement to ensure organisation-wide understanding of where we want to be, but are also creating a mindset shift through leaders at every level. Various training programmes and initiatives have been developed to empower our employees and enable them to contribute towards TNB becoming a leading energy player internationally.

BUILDING OUR COMMUNITIES

While enhancing our business in a manner that is socially and environmentally responsible, we continue to support our local communities through various outreach programmes. Key among these are initiatives that promote education, which is crucial to empowering communities, as well as to developing the level of knowledge and competency needed for national progress. We provide scholarships through Yayasan Tenaga Nasional to assist deserving students in need of financial support. We also contribute to national educational development through our fully-owned university, Universiti Tenaga Nasional (UNITEN) which promotes engineering and energy research through its engineering, information technology (IT) and

business management programmes. Meanwhile, Integrated Learning Solution Sdn Bhd (ILSAS) provides technical training and specialised services for the energy industry.

COMMITMENT TO OUR ENVIRONMENT

Climate change is a major issue for all power utilities as the world still relies predominantly on hydrocarbon-based fuels to satisfy energy needs. However, as a major energy player, we recognise our responsibility to support the transition towards a low carbon and sustainable future. At TNB, we are not only developing our renewable energy portfolio and promoting energy efficiency, we are also investing in clean coal and more efficient gas turbine technologies to reduce our carbon emissions. Additionally, we continue to offset our carbon emissions through the "Tree for a Tree" programme.

NAVIGATING OUR FUTURE

Transformation of the energy industry will necessarily bring with it many more challenges in the years to come. However, we are prepared for the challenges by maintaining a keen focus on sustainable operations. While remaining responsive to the evolving needs of our internal and external stakeholders, we will pursue new business avenues and equip our workforce with the right skills and capabilities to achieve our long-term targets. As we proceed, sustainability will continue to influence our decisions and actions for a better, brighter future.



ENGAGING WITH STAKEHOLDERS

Core to TNB's success is our ability to develop strong and meaningful relationships with our stakeholders. We have various communication channels in place for us to foster meaningful conversations with our stakeholders. Our different stakeholder groups provide important feedback to us throughout the year.

Understanding our stakeholders allows us to better respond to their needs and interests. It provides further clarity on what our stakeholders expect to be reported and such views are taken into account during our materiality assessment.

CUSTOMERS

Domestic, commercial and industrial consumers including Small & Medium-Sized Enterprises (SMEs) and large corporations



How do we engage?

- Customer service and hotline centres
- Online portals
- Customer surveys
- Social network
- Roadshows
- Campaigns

INVESTORS

Institutional and retail investors, analysts and potential investors with interest



How do we engage?

- Financial Results announcements
- Investor Relations conferences and roadshows
- One-to-one engagement
- Site visits

TRADE UNIONS

Three registered unions and two workers associations that cover all categories of staff



How do we engage?

- Joint meetings and engagement sessions
- Negotiations
- Collective Agreement
- Direct contact

COMMUNITY

Local communities in or near areas where we operate including those affected by our operations



How do we engage?

- Outreach programmes
- CSR programmes
- Townhall engagement sessions
- Dialogue sessions
- Sporting events

GOVERNMENT

The Malaysian Federal and State Governments, parliamentarians, municipal councils and regulators



How do we engage?

- Meetings and briefings
- Site visits
- Round table sessions
- Direct contact
- Outreach programmes

EMPLOYEES

Our 35,009 employees throughout TNB Group
Note: Full time employees and does not include contractors



How do we engage?

- Direct contact
- Townhalls, *Turun Padang* & other outreach programmes
- Family Day event
- Online portal (intranet), newsletters, emails
- Employee surveys
- CSR programmes

VENDOR

4,514 contractors and suppliers



How do we engage?

- Direct contact
- Trainings and workshops
- TNB Vendors Day
- Outreach programmes

NON-GOVERNMENTAL ORGANISATIONS (NGOS)

Consumer/human rights groups, environmental groups and chambers of commerce



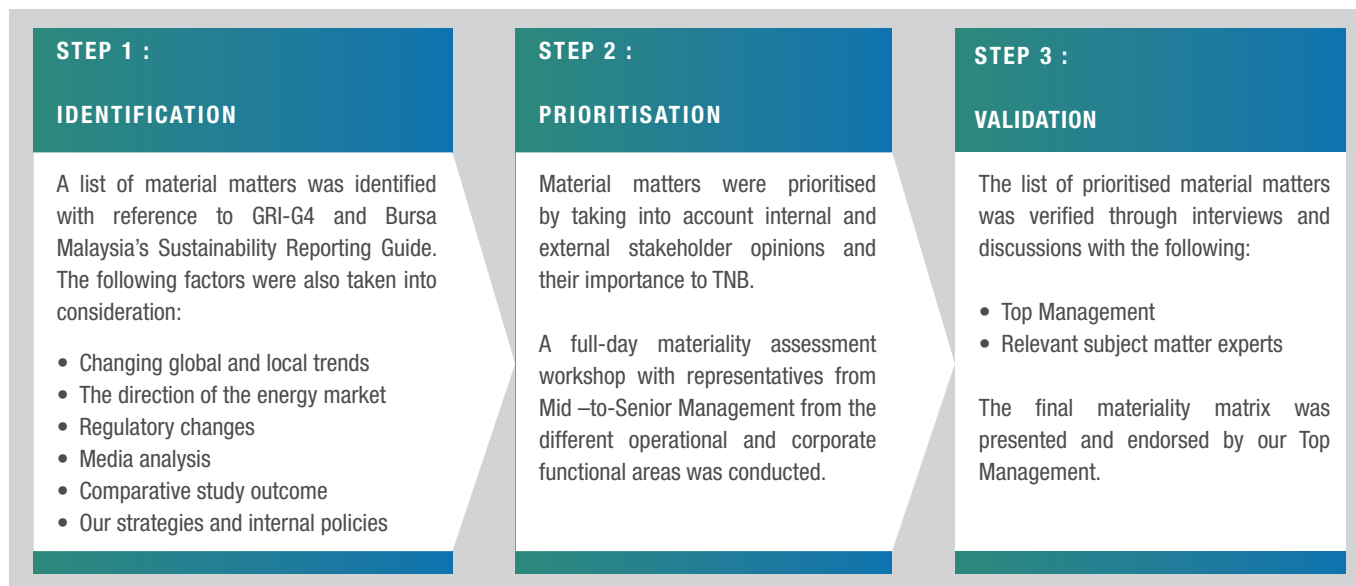
How do we engage?

- Direct contact
- Outreach programmes
- Seminars and knowledge sharing sessions



OUR MATERIAL SUSTAINABILITY MATTERS

This year, we conducted a comprehensive materiality assessment to identify material matters that are relevant to our business and stakeholders. In conducting this assessment, we followed a step-by-step approach to identify a list of the most material matters for TNB.



The outcome resulted in the following list of material matters reported throughout this report and anchored to the following four themes.



Spirit of Responsibility

Marks our commitment, driven by our Board to reinforce ethical and safe business governance and forward-looking culture

Material Matters

- Responsible and ethical business practices
- Stakeholder relationship
- Disaster management
- Cyber security management



Delivering with Purpose

Defines our continued aspiration to provide reliable and efficient energy in the local and international energy supply industry (ESI) for a better brighter future

Material Matters

- Business and financial performance
- Fuel mix policy
- Reliable energy and fair tariffs
- Renewable energy
- Efficient technology and innovation



Environmental Stewardship

Defines our commitment to minimise our environmental impact wherever we operate

Material Matters

- Greenhouse Gas (GHG) emissions and environment management
- Biodiversity
- Natural resource consumption



Embracing Relationships

Revolves around how we develop long-term meaningful relationships with our customers, employees and communities to gain their trust

Material Matters

- Customer experience
- Energy efficiency
- Workplace culture
- Capability development
- Employee engagement
- Health and safety
- Education
- Community development







SPIRIT OF RESPONSIBILITY



Material Matters

- Responsible and ethical business practices
- Disaster management
- Cyber security management

FY2017 HIGHLIGHTS



Continuously manage disaster response through TNB's **INTEGRATED COMMUNITY-BASED DISASTER MANAGEMENT (ICBDM)** programme to minimise damage and risk



One of the **FIRST CORPORATION IN MALAYSIA** to adopt ISO 37001:2016, an **ANTI-BRIBERY MANAGEMENT SYSTEM**



CONDUCTED A NATIONAL LEVEL CYBER DRILL in collaboration with National Security Council



SPIRIT OF RESPONSIBILITY

This spirit of responsibility marks our commitment, driven by the TNB Board and shared by our management with all our employees to promote ethical and safe practices that reinforce sound business and a forward-looking culture.

SUSTAINABILITY GOVERNANCE

Sustainability is embedded in our company policies and is intrinsically linked to our business strategy and decisions. It influences our investments, operational efficiency programmes, stakeholder engagement and climate risk mitigation efforts, among others.

Our sustainability initiatives come under the purview of the Sustainability Development Committee (SDC) and TNB Leadership Group (TLG), comprising Management executives and chaired by the President/CEO. Their key roles are to review, challenge, evaluate and advise on initiatives related to the implementation of 'Sustainability and Green Energy' projects to be implemented by TNB, prior to further review by other committees including the Board of Directors. Decisions to escalate issues to higher approving authorities are dependent on our Procurement & Policy as well as Limit of Authority guidelines.

We regularly review our governance structures and update our controls and policies to ensure compliance with regulations, making sure they are relevant and in line with industry good practices.

RESPONSIBLE AND ETHICAL BUSINESS PRACTICES

To protect the interests of our stakeholders, we remain committed to operate in an ethical, transparent and responsible manner to earn and maintain their trust. We comply with all relevant regulations to ensure integrity and good governance by adhering to the Companies Act 2016, Bursa Malaysia Securities Berhad (Bursa Malaysia)'s Main Market Listing Requirements and the Securities Commission (SC)'s Malaysian Code on Corporate Governance 2012 (MCCG). Details of compliance with MCCG and other guidelines are provided in the Governance section within the IAR FY2017. For more information, please refer to "Our Governance in Action" section and "Statement of Risk Management and Internal Control" on pages 118 and 144 of our IAR FY2017 respectively.

Adherence to practices of good governance has strengthened TNB and contributed significantly to our years of growth and success. Today, as we strive to position TNB globally, we are aligned to Reimagining TNB. The aim is to ensure that our policies and business practices are ready to meet future regulation, as well as adapt and thrive in a more competitive and market-driven environment. Our drive to operate at the highest level of integrity with zero tolerance for bribery or corruption is reflected in our Code of Ethics.

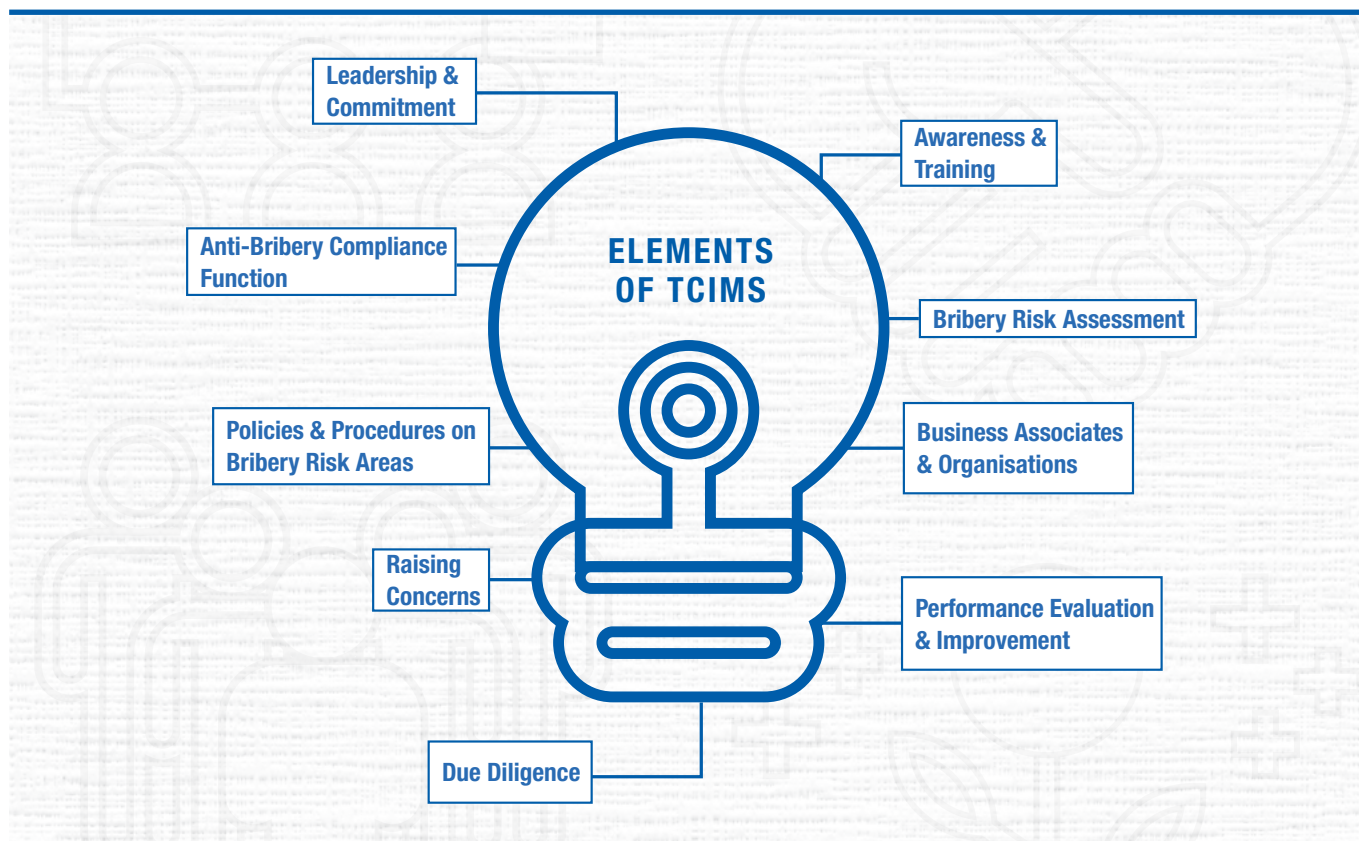
TNB Corporate Integrity Management System (TCIMS)

TNB Integrity Department has embarked on implementing TCIMS based on the new ISO 37001:2016 Anti-Bribery Management System on 15 October 2016. The TCIMS instils an integrity-based culture that drives high business ethics and compliance with local and international anti-bribery standards.

In FY2017, our Integrity Department formed a TCIMS Steering Committee, chaired by the Chief Financial Officer, to roll out the management system which consists of nine elements as illustrated. It's planned implementation were divided into seven project phases. Implementation commenced in February 2017 and is expected to be completed by late 2018. Adopting the new ISO standard makes us one of the first corporations in Malaysia to adopt this.

TCIMS 7 Project Phases

- 1 FOUNDATION
- 2 LEADERSHIP & PLANNING
- 3 SUPPORT & OPERATION
- 4 OPERATION
- 5 APPROVALS, TRAINING & COMMUNICATION
- 6 REVIEW & IMPROVEMENT
- 7 PREPARATION FOR ISO CERTIFICATION & MALAYSIA ANTI-CORRUPTION COMMISSION CORPORATE INTEGRITY PLEDGE ASSESSMENT



BENEFITS OF TCIMS

<p>Instil an integrity-based culture with high business ethics and compliance with local and international anti-bribery laws</p>	<p>Avoid costs arising from bribery and misconduct</p> 	<p>Recognition as a trustworthy organisation</p> 
---	---	---



To protect the surrounding communities in areas where we operate, we do what we can to minimise any potential consequences that can potentially disrupt our operations. Disaster management plans are in place to enhance teams' readiness and capability to respond to emergencies throughout the organisation.

DISASTER MANAGEMENT

Business continuity management is a matter of good governance and is essential to fulfil our implicit mandate of powering the Nation safely. The TNB Business Continuity Management Framework implemented groupwide, provides a holistic and structured approach to managing business continuity.

Drills are used to evaluate and improve the effectiveness of our business continuity plans. It is conducted at individual sites covering numerous emergency scenarios such as fires, oil spills, bomb threats, gas and chemical releases, explosions, floods and tsunamis. Different kinds of exercises are organised to enhance preparedness to respond to possible emergencies. These drills cover tabletop drills, walk-through drills, functional drills, evacuation drills and full-scale drills.

TNB power plant-specific Disaster Management Plans caters to individual risk exposures. We periodically perform drills according to plan to ensure that our employees and the immediate communities are ready to respond to any adversity.



Malaysian Armed Forces participating in the simulation of a terrorist attack at the Sultan Azlan Shah Power Station, Manjung, Perak.

In November 2016, we conducted TNB's first counter-terrorist drill at the Sultan Azlan Shah Power Station, Manjung, Perak. The full-scale emergency drill tested the joint readiness of TNB Janamanjung Sdn. Bhd. (TNBJ) employees and relevant agencies in dealing with terrorist threats. A total of 527 members from 33 departments and national security agencies were involved in the three-day exercise.

We also regularly organise Integrated Community-Based Disaster Management (ICBDM) exercises. ICBDM is an emergency response system developed to minimise damage and risk within communities with close proximity to our hydroelectric power plants. These exercises involve Management, employees, members of the local communities and representatives from state government agencies.

ICBDM FOR STATIONS

AT CAMERON HIGHLANDS AND KENYIR

Cameron Highlands

To prepare ourselves and the community should a flood situation arises, a full-scale and controlled joint flood drill was held between TNB and other agencies at the flood-prone Bertam Valley. This was to ensure that they were fully prepared to carry out their tasks in the event of an emergency. The drill served as a rehearsal for residents to evacuate promptly upon hearing emergency sirens go off, warning them of rising water levels at the dam. The drill involved 140 personnel and approximately 300 households in the vicinity.



THE DRILL AT THE CAMERON HIGHLANDS HYDROELECTRIC STATIONS INVOLVED

140 Personnel
AND WAS PARTICIPATED BY
APPROXIMATELY

300 HOUSEHOLDS
IN THE VICINITY



Sultan Mahmud Hydroelectric Dam, Kenyir, Terengganu.

Kenyir

In May 2017, we organised a Safety Day at our hydroelectric dam in Kenyir Lake. Approximately 1,000 members of the Kuala Berang community which consisted of students and state disaster management agencies took part in this one-day programme. The event was officiated by the local assemblyman who commended TNB's efforts in building and maintaining the Kenyir Hydroelectric Dam in accordance to international standards. This has indirectly improved the socioeconomic status of the community living around the area. Participants were given the opportunity to visit the Kenyir Dam to witness the safety level of the infrastructure alongside safety exhibitions and demonstrations.

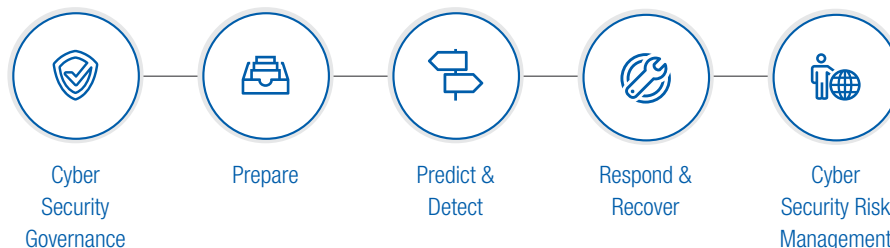
CYBER SECURITY MANAGEMENT



Our Cyber Security Operating Model

In October 2016, we launched a Cyber Security Strategy & Roadmap to ensure cyber resilience as we work towards achieving our business strategies. The roadmap supports our strategies and transformation agenda under Reimagining TNB.

The Cyber Security Operating Model highlights the following framework



In today's digital era, corporations are increasingly at risk of having their operations sabotaged via cyber intrusions. This poses a real and significant threat to TNB given the criticality of our role in powering the nation. Recognising this, we invest in maintaining robust controls to protect our assets, which are classified as Critical National Information Infrastructure (CNII).

We comply with regulatory requirements such as the Electricity Supply Act (ESA) 2015 (Amendment), Personal Data Protection Act (PDPA) 2010 and the Malaysian National Security Council (MKN) Regulation No. 24 in order to ensure reliable, sustainable and secure electricity supply for the nation. TNB is certified with ISO 27001:2013 Information Security Management System (ISMS). Various audits are conducted by the Scientific and Industrial Research Institute of Malaysia (SIRIM) throughout TNB including generation plants and control centres to certify compliance.

Additionally, we conduct security and vulnerability assessments periodically on all IT systems to protect critical TNB information. Critical systems are assessed annually by independent third-party service providers, who also provides updates on industry leading practices.

Cyber Security Project

Our cyber security improvement themes revolve around the following and will be implemented within the next three years:



Cyber security drill

Safeguarding our systems from cyber threats is equally important to prevent disruptions to our business. Similarly to protect our physical assets, TNB participated in the National Cyber Crisis Exercises (cyber drill) in collaboration with the National Security Council. The exercise simulated cyber attacks and assessed TNB's internal and external communication capabilities, readiness, processes and procedures to manage cyber security incidents.







DELIVERING WITH PURPOSE



Material Matters

- Business and financial performance
- Fuel mix policy
- Reliable energy and fair tariffs
- Renewable energy
- Efficient technology and innovation

FY2017 HIGHLIGHTS



ACHIEVED 84% REDUCTION

in System Minutes to
**0.23 minutes from 1.47
minutes in 2016**



Equivalent Unplanned Outage
Factor (EUOF) recorded
39% IMPROVEMENT
from 4.44% to 2.69% in
FY2017



IMPROVED
System Average
Interruption
Frequency Index (SAIFI)



Sultan Azlan Shah Power Station, Manjung, Perak.

DELIVERING WITH PURPOSE

We support the transition towards a low-carbon economy by promoting renewable energy generation, embracing new technologies throughout our operations and empowering our customers to make better use of their energy usage.

To continue supporting the nation's development, we intend to further enhance our capabilities to become a world-class energy player. Our business over the years has been defined by our primary responsibility of ensuring a reliable supply of energy to Malaysians at a fair tariff.

OUR BUSINESS PERFORMANCE IN FY2017

Generation

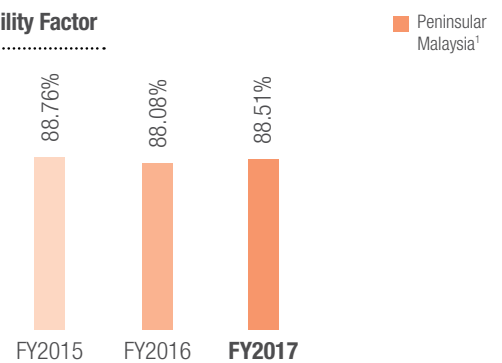
To us, providing reliable energy means ensuring that our core business assets are maintained at optimal performance levels. The performance of our plants is measured by two internationally-recognised parameters, namely the Equivalent Availability Factor (EAF) and Equivalent Unplanned Outage Factor (EUOF).

EAF indicates the percentage of time during which our plants are available to generate electricity over a year. Our generation business recorded high plant reliability performance over the last three years.

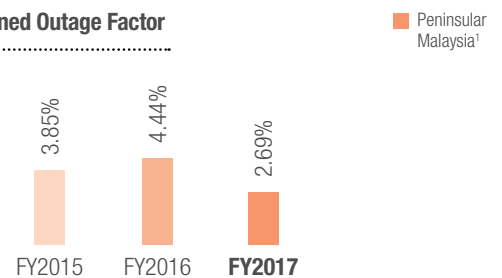
EUOF indicates the fraction of a given operating period in which our plants are not available due to forced and maintenance outages. Our EUOF performance for FY2017 improved by 39% compared to FY2016.

We also achieved improved cost efficiency performance of our legacy plants, which delivered significant cost savings in line with targets under our Generation Excellence initiative.

Equivalent Availability Factor



Equivalent Unplanned Outage Factor



¹ Performance of TNB's wholly-owned power plants in Peninsular Malaysia



Grid (Transmission)

System minutes and system availability targets have been consecutively met as a result of various initiatives such as loss minimisation projects and preventive maintenance of assets. In FY2017, we successfully improved our grid reliability and performance by achieving 84% reduction in System Minutes to 0.23 minutes from 1.47 minutes in 2016.

We completed two loss minimisation projects in the Klang Valley comprising the Central Area reinforcement project of 275kV overhead lines (Bukit Tarek-Chubadak) and 275kV/132kV overhead lines (Salak South-Mahkota Cheras) for the Langat 2 Water Treatment Plant and Mass Rapid Transit (MRT) electrification. Other loss minimisation projects include the commissioning of new 500kV overhead lines (OHL) and the use of high-capacity low-loss conductor for new 500kV & 275kV OHL.

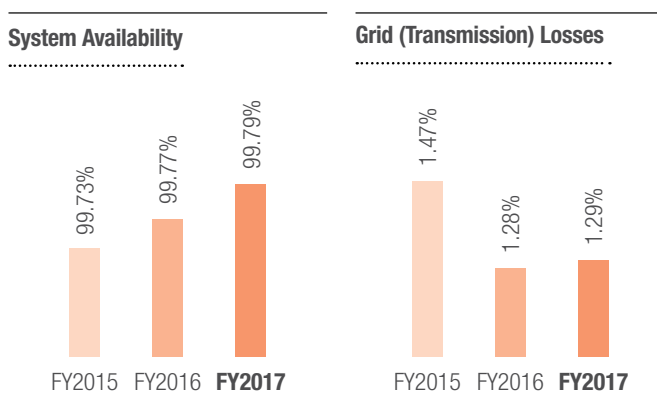
By maintaining and monitoring our assets performance, we are able to deliver energy and at the same time reduce outages. The Grid Division has established an effective preventive maintenance programme. It involves carrying out maintenance work at pre-determined intervals in accordance with prescribed criteria as determined by the Original Equipment Manufacturer (OEM) using Reliability Centred Maintenance Methodology.

Distribution

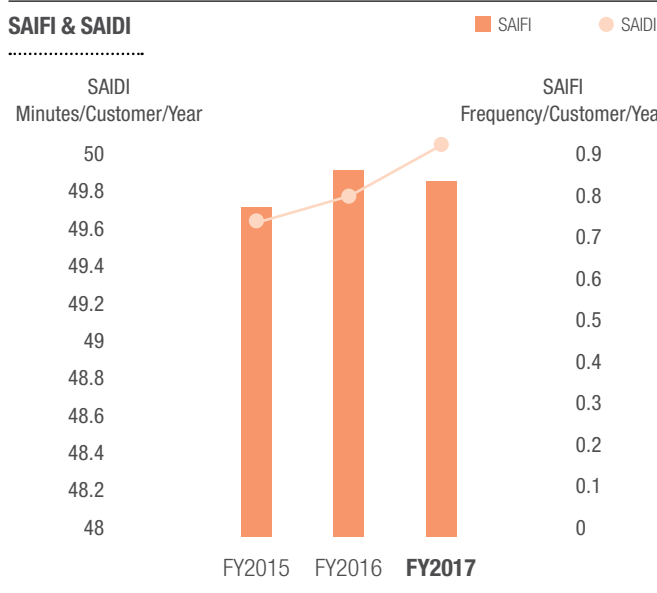
Two key performance indicators that measures the reliability of our network are System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI). As presented in the graph, the performance of both indicators have improved over the years. Our distribution business continues to maintain distribution grid availability performance, SAIDI at 50.24 minutes/customer/year. This is achieved as a result of concerted efforts to prevent major failures through early detection, asset replacement and investment in new technologies. We have also adopted best practices in Preventive Maintenance (PM) and Condition-Based Maintenance (CBM).

The Distribution Automation project is another initiative which has served to reduce the duration of outages and increase the speed of restoration. This project which started in 2014, designed to deliver better grid reliability and operational efficiency is expected to be completed in 2025.

Another project is the implementation of the Geospatial Information System (GIS) designed to help engineers manage distribution network planning, construction, operation and maintenance. This project was successfully completed and deployed as a pilot in TNB Cheras.



- OTHER INITIATIVES WE HAVE IN PLACE:**
- 1 FY2015-FY2020 Refurbishment and Replacement Plan
 - 2 Reviewing existing maintenance practices focusing on Risk Based Maintenance
 - 3 Establishment of forced outage criteria
 - 4 Zero Tripping Action Plan (ZTAP)



	FY2015	FY2016	FY2017
SAIFI	0.79	0.87	0.84
SAIDI	49.66	49.71	50.24



GROWING OUR BUSINESS AND FINANCIAL PERFORMANCE

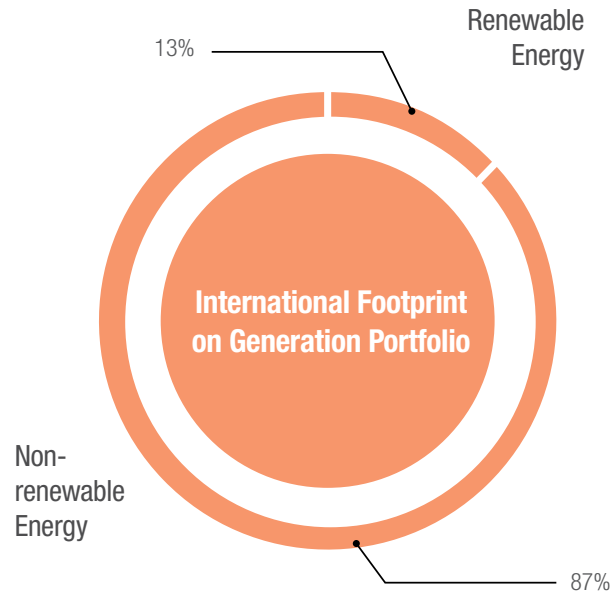
Our business over the years has been defined by our primary responsibility to ensure a reliable supply of energy to Malaysians at all times. The percentage of electricity coverage in Peninsular Malaysia has exceeded 99% as of 2017.

We see global expansion as a measure to grow our business portfolio and build our credibility as a reliable renewable energy developer. We have identified opportunities in emerging and developed markets such as India, Turkey and the United Kingdom. This has sparked the growth of our generation portfolio through strategic foreign acquisitions. To date, we have acquired significant foreign portfolio of 4,888MW generation capacity of which 13% comprises renewable energy assets. TNB's accumulated portfolio of international renewable energy generation capacity amounts to over 600MW.

In early 2016, we acquired 30% of Turkey-based GAMA Enerji A.S. which has provided us with a foothold in an emerging market with one of the fastest-growing energy markets in the world. This has also helped to diversify our renewable energy capabilities with the inclusion of 117.5MW of wind generation capacity.

In 2017, as we further seek to expand our international presence and increase our renewable energy assets, we completed the acquisition of a 50% interest in Vortex Solar Investments Sarl which operates a 365MW solar photovoltaic (PV) portfolio in the United Kingdom. This investment marks our first foray into the European renewable energy market, and increases our international renewable energy portfolio.

Internationally, we have also ventured beyond energy generation to include provision of operations and maintenance services including parts supply to Southeast Asian countries such as Brunei, Indonesia, Thailand and Vietnam.



Company Name	Country	Generating Capacity	TNB Shareholding
GMR Energy	India	Solar 26MW	30%
Gama Enerji AS	Turkey	Wind 117.5MW Hydro 131.3MW	30%
Vortex	UK	Solar 365MW	50%

List of TNB's foreign renewable energy investments as at 31 August 2017



TNB completed a 50% interest acquisition in one of Britain's largest solar portfolios, Vortex Solar UK Ltd, with a combined net installed capacity of 365MW.



A stunning view of TNB's men at work stringing the lines of the Monopole Tower, Pulau Besar, Melaka.

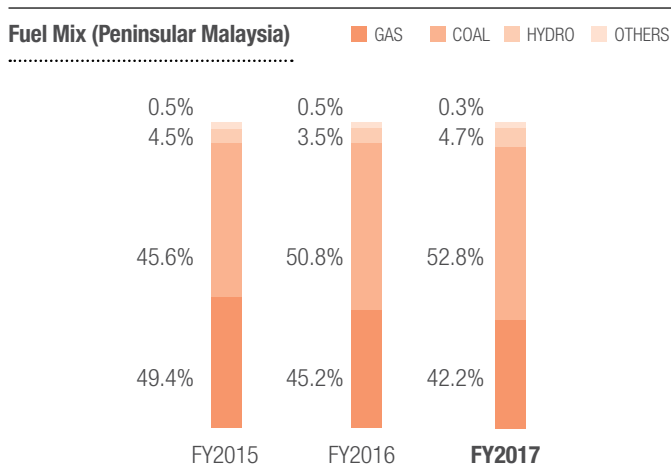
RELIABLE ENERGY AND FAIR TARIFFS

The Incentive-Based Regulation (IBR) and Imbalance Cost Pass-Through (ICPT) mechanisms are part of the Malaysia Electricity Supply Industry (MESI) reform initiatives, introduced by the Government to ensure continuous reliability and efficiency of electricity supply and sustainability of the electricity industry. The implementation of the IBR and ICPT mechanisms has improved transparency and investor confidence, whilst incentivising TNB to deliver reliable and efficient services at fair price to our customers.

We continue to partner with the Government to educate Malaysians to be more energy efficient. More details can be found on pages 38 - 41 under the "Partnering with Customers" section.

FUEL MIX POLICY

To deliver reliable energy at a fair tariff, we utilise a diversified electricity generation fuel mix. Coal currently makes up the bulk of our fuel mix based on the optimal generation capacity plant up established by the Planning & Implementation Committee for Electricity Supply and Tariff (JPPPET), helmed by Ministry of Energy, Green Technology and Water (KeTTHA). This plan takes into consideration the economic, environment and energy security factors. TNB is committed towards the development of Malaysia's renewable energy by investing in infrastructure that allows more renewable energy to be connected to the grid. This is in line with the Government's renewable energy target, as stated in the 11th Malaysia Plan, to achieve 2,080MW of renewable energy installed capacity by the year 2020. In response, we have set our own target, under Reimagining TNB, to achieve renewable energy capacity of 1,700MW by 2025.



RENEWABLE ENERGY TARGET

11th Malaysia Plan

2,080MW
of renewable energy installed capacity by the year 2020

TNB

1,700MW
of renewable energy capacity by the year 2025



EMBRACING RENEWABLE ENERGY

Together with the Sustainable Energy Development Authority (SEDA), TNB administers and manages the implementation of the Feed-in-Tariff (FiT) programme mandated under the Renewable Energy Act 2011. This programme pays Feed-in Approval Holders (FIAH) a fixed price for their electricity as an incentive. This has led to the commissioning of 7,367 FiT projects in Peninsular Malaysia with an installed capacity of 379.4MW as of July 2017.

With the solar photovoltaic (PV) quota under the FIT programme reaching its limit for customers, the Government has introduced the Net Energy Metering (NEM) programme. Under this programme, customers can install rooftop solar PV systems for their own electricity consumption and sell any excess electricity to TNB. The NEM target is to achieve 500MW of installed capacity from 2016 to 2020 (450MW from Peninsular Malaysia and 50MW from Sabah). This translates to NEM quota of 90MW per year for Peninsular Malaysia in the period of 2016 to 2020.

Our other initiatives to promote the use of renewable energy in Malaysia have included:

- 1 A Joint venture (JV) with Sime Darby Plantation Berhad to develop two biogas power plants in December 2016 and January 2017 respectively located in Layang-Layang, Johor and Bagan Datuk, Perak
- 2 JV with Felda Global Ventures Holdings Berhad to build a biomass power plant in Jengka, Pahang commissioned in October 2016 with a generating capacity of 10MW
- 3 Managing 19 mini hydropower stations with a capacity of 9MW as a whole, located in several rivers in Peninsular Malaysia



Two biogas power plants developed by TNB and Sime Darby Plantation Berhad were launched at Layang-Layang, Johor and Bagan Datuk, Perak.



TNB gained a foothold in the country's first Large Scale Solar (LSS) farm through a 50MW project in Kuala Langat, Selangor.

BUILDING RENEWABLE ENERGY CAPACITY FOR MALAYSIA'S SUSTAINABLE FUTURE

In March 2017, we won a competitive bid by the Energy Commission to develop the country's first Large Scale Solar (LSS) farm with a capacity of 50MW. Construction work on the project located on 97 hectares in Mukim Tanjung 12, Kuala Langat, Selangor began in July 2017. It is being undertaken by our wholly owned subsidiary TNB Sepang Solar Sdn. Bhd. (TSS). On 2 March 2017, TNB signed a 21 years Solar Power Purchase Agreement with TSS for it to supply electricity from the farm to the national grid.

The project, to be operational by end of 2018, is expected to cut CO₂ emissions by 64,000 tonnes/year. Besides its environmental benefit, the development will enrich the local community's livelihood through the provision of new job opportunities and the promotion of educational tourism and research in the region.

DEVELOPMENT OF THE COUNTRY'S FIRST FLOATING SOLAR PHOTOVOLTAIC (FSPV) SYSTEM

Solar PV requires a large footprint be it installed on the roof or on the ground. On the other hand, Malaysia is blessed with many lakes and water basins that are exposed to sunlight all day long, creating large potential for FSPV installations.

Our subsidiary, TNB Research Sdn. Bhd. (TNBR) conducted research on the development of the country's first floating solar project that was being undertaken in Sepang, Selangor utilising the Malaysian Electricity Supply Industries Trust Account (MESITA) fund. The project was launched in March 2015 and had a capacity of 108kWp, covering 1,000m² on a 50-hectare lake in the Sungai Labu Water Treatment Plant (WTP).



Launched in **March 2015**
WITH A CAPACITY OF 108kWp,
COVERING 1,000M² ON A 50-HECTARE LAKE

in the Sungai Labu Water Treatment Plant



Country's first floating solar project at Sungai Labu Water Treatment Plant, Sepang, Selangor.

Supporting the growth of renewables requires modern grid infrastructure development to allow for better system control and management. We are embarking on a programme to enhance the Energy Management System/Supervisory Control and Data Acquisition (EMS/SCADA) system at Grid and Distribution level. We are also proposing to develop a new weather forecasting technology that enables us to predict with better accuracy the power generated from solar PV in order to improve the ability to control and manage the grid. At regulation level, the Malaysia Grid Code (MGC) has been updated to accommodate the technicalities and requirements of renewable energy generation sources.

MOVING FORWARD

EXPLORING RENEWABLE ENERGY
 can open more possibilities in products and services within the renewable energy sector



EFFICIENT TECHNOLOGIES AND INNOVATION

In the current economic climate in which the financial and environmental costs of energy are increasing, it is imperative to be efficient and environmentally conscious. Innovative technologies have proven to be major contributor to manage energy in a more efficient way.

While adopting efficient technologies in our new developments, we also ensure older plants are properly maintained and where possible, upgraded to maintain their efficiency. We have decommissioned inefficient and ageing Open Cycle Gas Turbine (OCGT) and Combined Cycle Gas Turbine (CCGT) plants and replaced these with more efficient and economical CCGT plants. Our latest CCGT development at the Perai Power Station, runs on the latest gas turbine technologies enabling the plant to achieve generation efficiency of up to 60%.

Ultra-Supercritical Coal Generation and Clean Technology Power Plants

Our latest coal-fired power plant in Perak, Manjung 4 utilises ultra-supercritical steam generation technology, a gold standard in the industry and is the most efficient coal-fired power plant in Southeast Asia. The ultra-supercritical technology refers to the steam generation process for plant production at steam pressure and temperature beyond “critical point”, resulting in lower coal consumption, higher efficiency, improved operation flexibility and reduced emissions. This technology enables Manjung 4 to operate at an efficiency exceeding 40% and generate more energy per unit of coal burned compared to the “subcritical” steam generation technology used by older plants within the complex, namely Manjung 1, 2 and 3.



Manjung 4 & 5 are the first ultra-supercritical coal-fired power plants in Southeast Asia.

**1,000MW
Manjung 4**

- operates with steam over 600° Celsius & 4,000 psi of pressure
- achieve more than **40%** efficiency
- 14% more power** per metric tonnes of coal burned in Manjung 1, 2 and 3

Manjung 4 is also equipped with continuous emission monitoring systems to monitor parameters like smoke density, particulate, sulphur dioxide, nitrogen oxide and carbon monoxide. The readings are connected to an online system that allows for real time monitoring by the Department of Environment (DOE).

TNB has also built a new generation unit called Manjung 5 with a 1,000MW capacity using the same high efficiency ultra-supercritical technology next to the Manjung 4 plant. Manjung 5 was recently commissioned on 28 September 2017, three days ahead of schedule. The entire Manjung power plant complex now accounted for 20% of Peninsular Malaysia’s total generation capacity.

Cutting-edge technology and automation

We have in place an Innovation and Technology Plan to enable TNB to shift its focus from time-based to risk-based maintenance. The plan includes the development of an Asset Health Index for every asset, with automated monitoring and online sensors implemented to provide quicker access to information. We are then able to reduce maintenance frequency and dependency on labour-intensive activities, resulting in cost avoidance.

By utilising predictive analytics software, our Generation Division developed its own Intelligent Predictive and Diagnostic Monitoring System. The system enables plant operators to detect symptoms of failure in advance, thus allowing the operator to take early preventive action.

Drones have been introduced by the Grid Division for substation inspection and to complement the 500kV overhead lines ground patrolling. A pilot project was conducted focusing on patrolling and inspection works on 500kV Transmission Lines (inclusive of Right-Of-Way) and main intake substations. As a result, this increased visibility of equipment conditions which was previously limited and reduced the risk exposure to our maintenance staff who previously performed inspection works manually. Turnaround rate in responding to requests for inspections has also improved.

For states that do not have 500kV installations, applicators are trained and familiarised with the drones for verification of rentice clearing works. By FY2018, plans are in place to equip maintenance offices in each zone with drones to complement conservative ground patrolling before being fully dependent on this application.

To support the Grid of the Future initiative, our Distribution Division has embarked on several key projects that represent a new and broader approach to improve reliability, service quality and operational efficiency such as:

- 1 **Advanced Metering Infrastructure** - that enhance meter reading by introducing remote automatic readings and detailed load profile information resulting in less time and manpower resources
- 2 **Mobility Solutions** - that provide a platform for work efficiency amongst field staff
- 3 **Volt-Var Optimisation** - that improves electricity supply quality
- 4 **Geospatial Information System** - that provides near-real-time information on TNB's distribution network
- 5 **Distribution Automation** - provides real-time management of network operations and we intend to equip substations and feeders with this facility in the near future

ASSET OPTIMISATION

TNB was granted ISO 55001 certification, a process of streamlining asset management best practices and processes benchmark to international standards, in accordance with the British Standards Institutions of the Publicly Available Specification. TNB has a robust system of capturing accurate and up-to-date asset information, integrating risk management as part of the asset management system, and continuously improving the existing asset and system performance. Besides being among the pioneers in Southeast Asia to be PAS 55 certified, TNB has a remarkable record of excellence with the achievement of numerous milestones in operational and corporate performance over the last financial year.

BY FY2018, TNB'S GRID DIVISION PLANS TO EQUIP MAINTENANCE OFFICES IN EACH ZONE WITH DRONES IN ORDER TO COMPLEMENT CONSERVATIVE GROUND PATROLLING BEFORE BEING FULLY DEPENDENT ON THIS APPLICATION.



TNB staff doing their maintenance works at one of the power plants.

SUSTAINABLE SUPPLY CHAIN

Local vendors play an integral part in supporting to deliver our services and simultaneously, socio-economic growth within the country. In 2017, TNB procured from 4,514 suppliers and contractors. For this financial year, our total amount spent on local procurement amounted to almost RM6.64 billion.

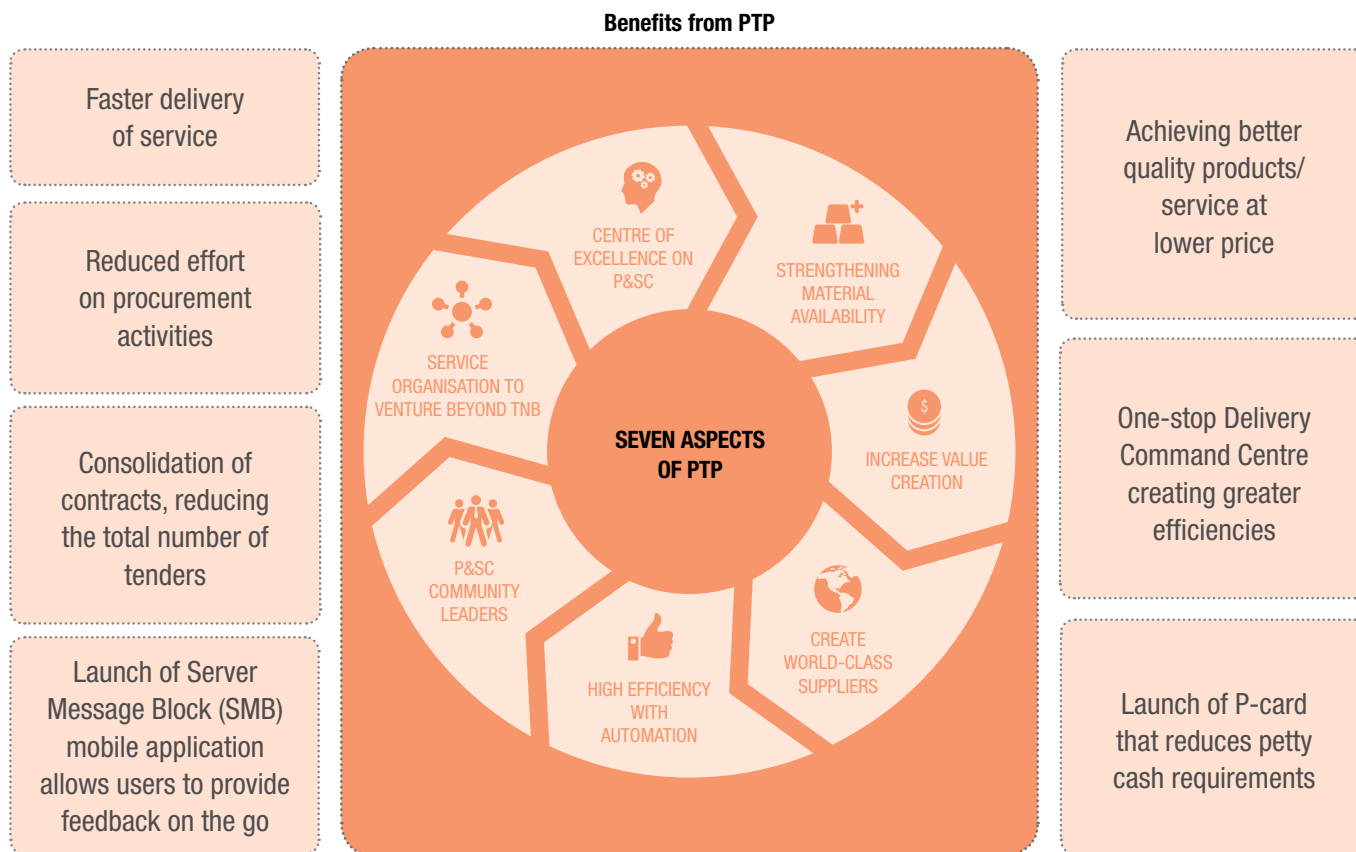
We go beyond providing contract opportunities and make a conscious effort to build the capabilities of our vendors. This is in line with the Government's economic agenda to contribute to further the development of the Malaysian Small and Medium Enterprise (SME) industry. One example of how we do this is by selecting performing vendors to participate in "ExploreAce", an annual gathering of SMEs and Government-Linked Companies (GLCs) that allows vendors to showcase vendors can showcase their products and expand their clientele base.

Description	Unit	FY2015	FY2016	FY2017
Procurement Practice				
Total spent on procurement	RM billion	8.637	8.060	7.179
Total number of suppliers	Number	4,638	4,685	4,514
Local Suppliers Support				
Total number of local suppliers	Number	4,534	4,550	3,281
Total spent on local procurement	RM billion	7.91	7.44	6.64
Percentage of local suppliers	Percentage	98%	97%	73%

* Note: Data provided is for Tenaga Group excluding fuel and energy procurements

Procurement Transformation Programme (PTP)

In January 2016, we embarked on a PTP journey towards becoming a Procurement and Supply Chain (P&SC) leader, which has since been completed. This journey focuses on seven aspects which have helped us to improve our function significantly.





"ExploreAce" is an annual gathering of SMEs and GLCs where vendors can showcase their products.

As part of our transformation programme, we have centralised our procurement functions, established a new Procurement and Supply Chain (P&SC) Centre of Excellence, elected P&SC community leaders and enhanced internal efficiencies through automation.

With centralisation of the function, tender committees at the division and department levels have been replaced with a tender committee at the P&SC function. A new P&SC Policy and Procedures was approved effective September 2017 to standardise operations and create greater transparency without compromising on control or risk management for faster and more effective decision-making.

Through a new Supply Chain Management System (SCMS), we are enhancing technological ability to implement and standardise best procurement practices to create value by driving efficiency, transparency and consistency. The launch of electronic-Purchase Order (e-PO) in 2017 is a perfect example of our efforts. To date, it has accounted for more than 99.9% of the 60,000 purchase orders created, enhancing efficiencies and supporting our environment-friendly culture. We are now working on the architecture for e-payment and e-invoice which we hope to introduce in the near future.

Robotics and analytics as a leverage to strengthen our supply chain

We are in the process of automating our P&SC functions in order to increase efficiencies and reduce the risk of unavailability of important materials. TNB has created an automation roadmap in which we plan to achieve 45% automation through quick wins and 80% automation through mid-term solutions.

Two quick-win systems that had been identified and implemented are robotics process automation (RPA) and the performance analytics tool (PAT). RPA, which went live in May 2017, automates our material notification and allocation, stock transfer management and product inspection upon delivery. It covers the entire process from purchase requisition (PR) to purchase order (PO), and is expected to save up to 309 man-hours per day. PAT is an interactive dashboard that provides end-to-end visibility of material availability. It issues alerts and provides insight into service performance including inventory turnover and stock transfer orders (STOs).







ENVIRONMENTAL STEWARDSHIP



Material Matters

- Greenhouse Gas (GHG) emissions and environment management
- Biodiversity
- Natural resource consumption

FY2017 HIGHLIGHTS



11,243 trees

Planted to-date under
“Tree for a Tree” programme



0.55 tCO₂e/MWh

Greenhouse Gas (GHG)
emissions intensity¹



**6 Distribution
buildings**

selected as models of
energy efficient buildings for
Malaysia

¹ For TNB operations in Peninsular Malaysia only



TNB has become a champion of Renewable Energy (RE) as part of our commitment to promote a greener and more sustainable energy sector.

ENVIRONMENTAL STEWARDSHIP

Energy companies must confront growing interest in environmental protection and global issues such as climate change. These have led to an increasing need for corporations to work jointly with Governments and communities to protect the environment.

MANAGING OUR ENVIRONMENTAL IMPACTS

TNB remains committed to ensuring that all our activities are conducted in a responsible manner to continuously improve our environmental performance.

We adhere to TNB's Environmental Policy in all our decision-making guided by our Environmental Management System (EMS). To minimise our environmental impact surrounding our power plants and dams, various actions are taken to manage emissions, effluents, waste and biodiversity.

Additionally, we work towards adopting good practices. This is reflected through the adoption of clean energy technologies that can generate electricity with minimal impact to the environment and at the same time reduce Greenhouse Gas (GHG) emissions over the long-term.

TNB's Green Policy reflects our commitment to minimise our environmental impact by applying the following principles:

1

Sustainability practices

2

Efficient operations

3

Delivering Green Technology via appropriate technology investment

MITIGATING OUR GHG EMISSIONS

GHG emissions as a result of human activities has contributed to global warming according to the United Nations Framework Convention on Climate Change (UNFCCC). Under the Paris Agreement, Malaysia has committed to reduce GHG emissions intensity of Gross Domestic Product (GDP) by 45% by 2030 in relation to 2005 level. This target was set with 35% on unconditional basis and 10% on conditional basis upon receipt of climate finance funding, technology transfer and capacity building from developed countries.

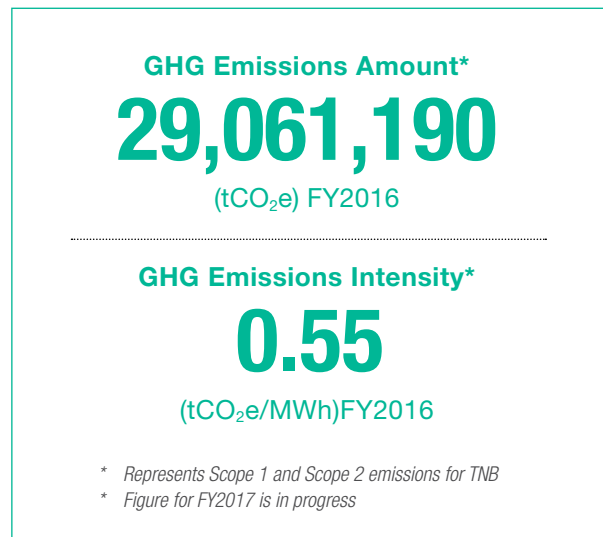
In response, we are committed to better measure and monitor our emissions, with the ultimate objective of reducing our emissions intensity. This is aligned with the demand of our stakeholders for greater transparency on our GHG emissions performance as well as growing expectations from them to limit our emissions. In our quest to reduce our emissions intensity, our next step entails developing a GHG management framework to drive a more systematic management of GHG emissions.

Carbon footprint assessment

In FY2016, GHG emissions from Generation, Grid and Distribution contributed to approximately 29 million tCO₂e. Power generation accounted for approximately 98% of the total GHG emissions in FY2016. The GHG emissions intensity for TNB has been relatively stable in recent years although it varies slightly depending on the generation mix, which in turn is determined by prevailing fuel prices. GHG emissions in the power sector are mainly attributed to the optimal generation development plan to meet increasing demand.

The nation's optimal generation development plan is established by KeTTHA's Planning & Implementation Committee for Electricity Supply and Tariff (JPPPET). The plan takes into consideration the economic, environment and energy security factors.

We have completed the first assessment of our carbon footprint and intend to continuously improve monitoring of GHG emissions.



"Tree for a Tree" Programme

For many years, TNB has been actively planting and replenishing trees through our "Tree for a Tree" programme. The idea is more than just to counterbalance our carbon emissions and rejuvenate forests; but aims to re-green and re-energise urban public areas. The type of trees planted were chosen carefully, based on properties such as the ability to filter pollutants from waterways and prevent erosion. We have invested a total of RM1.23 million in this programme that is carried out together with Pertubuhan Pelindung Khazanah Alam Malaysia (PEKA), local authorities, TNB staff and communities. To date, we have planted 11,243 trees and we will continue our efforts to plant more trees.



"Tree for a Tree" programme is part of our efforts towards rejuvenating forests, re-greening and re-energising urban public areas.



Carbon capture and utilisation

As part of our efforts to reduce CO₂ emissions, Tenaga Nasional Berhad Research (TNBR) is studying the viability of Carbon Capture and Utilisation (CCU), focusing on amine-based absorption and adsorption. Each technology is capable of capturing up to 99% of CO₂ from feed source. Complementing this, TNBR is also envisaging ways to convert the captured CO₂ into methane which has numerous chemical uses; or to feed microalgae which, in turn, can be converted into various bio-products.

Microalgae from the vicinity of our Sultan Azlan Shah power station in Manjung is being cultivated in a closed-system photobioreactor with absorption capacity up to 430kg of CO₂ annually. Meanwhile, we are looking forward towards commercialising our microalgae bio-products.





Our Wisma TNB Jalan Timur was awarded First Runner-up for the Energy Management for Buildings and Industries Awards in the Large Building Category.

Green buildings

Six of TNB’s Distribution buildings were selected as models of energy efficient buildings in the country.

In September 2016, under the ASEAN Energy Awards, Wisma TNB Jalan Timur was awarded First Runner-up under the Energy Management for Buildings and Industries Awards in the Large Building Category. Wisma TNB Jalan Timur was selected for demonstrating excellence, creativity, practicality and dedication in the field of energy efficiency. With this initiative, we managed to reduce up to 6% of energy consumption in our building.

Adopting efficient and clean technology

At high temperatures and pressures, boilers are able to produce the same amount of power using less fuel such as coal, hence are more energy efficient. Our research arm, TNBR supports adoption of supercritical and ultra-supercritical boilers in thermal power plants by researching on materials that can withstand high temperature and pressure. Research related to the application of new alloys for use in boilers, steam pipes and gas turbines are being conducted collaboratively with Korea Electric Power Corporation Research Institute (KEPRI) of South Korea. This effort has resulted in TNB gradually building our capacity in managing advanced heat resistance alloys which are widely used in modern boilers.

Meeting current and future regulatory needs

We continue to work closely with relevant stakeholders to maintain a conducive operating environment to ensure we continuously comply to all advancing regulatory requirements.

For instance, in support of the DOE’s Guidelines for Contaminated Land Management and Control in Malaysia, TNB has undertaken studies to develop environmentally sound methods to manage soil contamination.

BACTERIA TO COMBAT SOIL CONTAMINATION

We have made headway in the development of environmentally sound methods to manage soil contamination. This will prepare us to meet upcoming contaminated land management requirements which will come into force in the future, requiring companies to remediate the site to an acceptable level at the point of decommissioning. A team of our researchers have discovered that the bacteria *Pseudomonas* sp breaks down oil in soil into non-toxic compounds. This has important bearings in helping us to manage any oil spills.



BIODIVERSITY MANAGEMENT

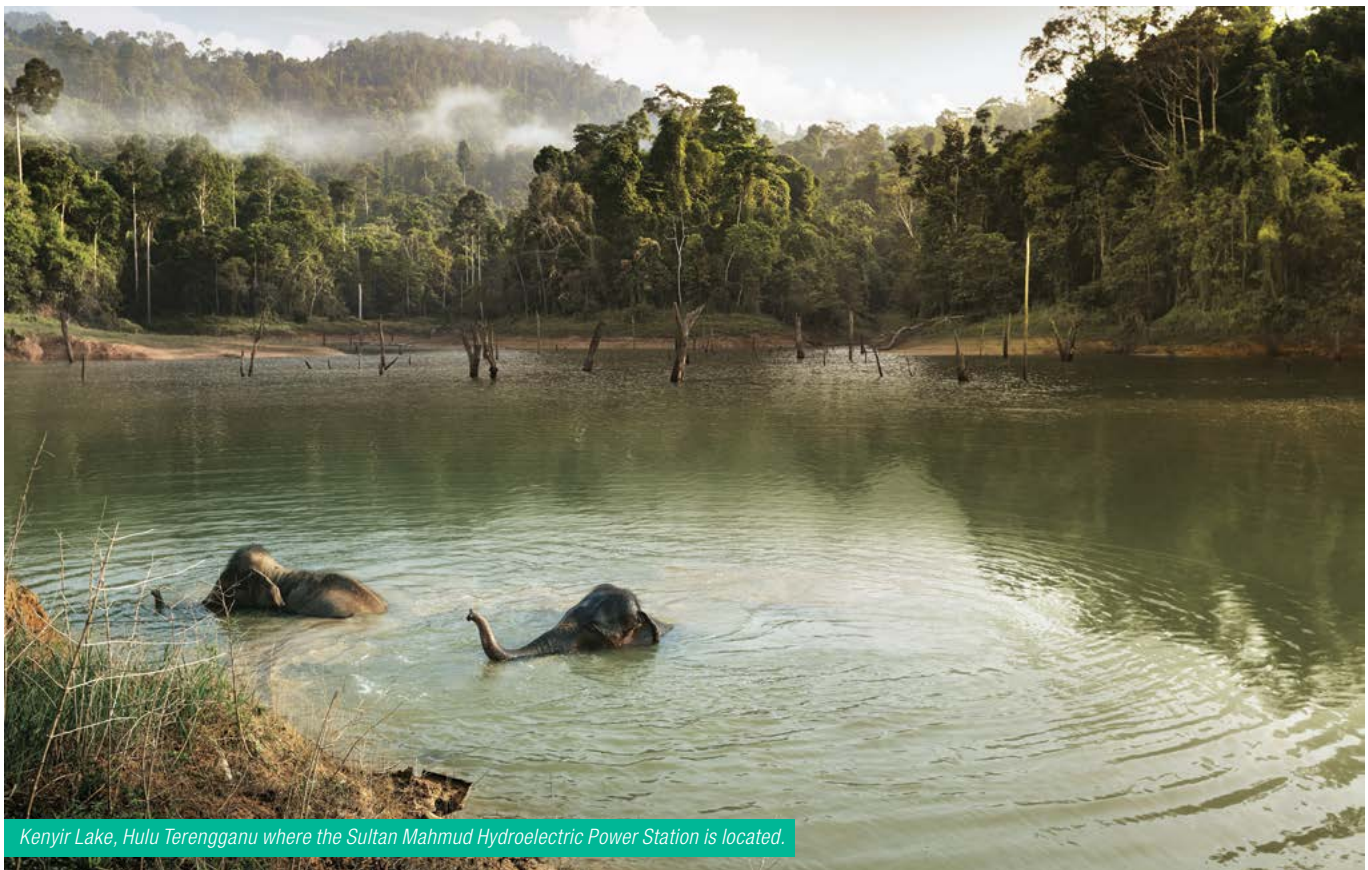
Malaysia ranks among the most megadiverse nations in the world. We are proud of this natural heritage and are committed to contributing towards its preservation for the economic, ecological and social value of biodiversity.

In the 38,000-hectare Kenyir Lake, Terengganu, where the Sultan Mahmud Hydroelectric Power Station is located, there are some 300 species of freshwater fish. The lake also supports wildlife in the surrounding jungle, which includes endangered mammals such as the Asian elephant and Malayan tiger. We are currently developing two dams, Puah and Tembat, under the Hulu Terengganu Hydroelectric Project, towards the north-west of Kenyir Lake. Prior to the commencement of the project, a detailed Environmental Impact Assessment (EIA) was undertaken in 2007. We noted that there would be changes in the aquatic ecosystem due to the development of the reservoirs and possible loss of wildlife habitat with animals trapped in isolated islands and disoriented due to changes in their migration routes, among others. TNB is taking measures to mitigate the impact of these changes on the flora and fauna in the catchment area. Accordingly, research has been initiated at TNBR on wildlife rescue & conservation and fish conservation & management.

Based on findings of the research, relevant actions have been taken to relocate wildlife, help preserve the fish population, while monitoring the quality of water in the lake and connecting rivers.

At the Sultan Abdul Aziz Power Station in Kapar, the surrounding mangrove ecosystem has become a haven for migratory birds. Every February, thousands of shorebirds descend here on their way from Siberia, Mongolia, Alaska and China to warmer climates further south. These include the endangered *Nordmann's Greenshank*, *Lesser Adjutant*, *Chinese Egret*, *Spoonbilled Sandpiper*, *Malaysian Plover*, *Asian Dowitcher* and *Far Eastern curlew*. We work closely with the East Asean Australasian Shorebird network to maintain this bird-friendly habitat.

MALAYSIA RANKS AMONG THE MOST MEGADIVERSE NATIONS IN THE WORLD. WE ARE PROUD OF THIS NATURAL HERITAGE, AND ARE COMMITTED TO CONTRIBUTING TOWARDS ITS PRESERVATION.



Kenyir Lake, Hulu Terengganu where the Sultan Mahmud Hydroelectric Power Station is located.





Ikan Kelah in Tembat, Hulu Terengganu.



The rescued fish are released at the upper stream of an unaffected river.

621 SMALL TO MEDIUM-SIZED ANIMALS

released into nearby Sungai Deka Protected Forest Reserve



APPROXIMATELY

772 FISH RESCUED

from Sungai Terengganu Mati and released into other rivers

SAVING MALAYSIA'S NATIVE FAUNA - BOTH BIG AND SMALL

Before impoundment of the Puah and Tembat dams began, wildlife surveys were conducted to determine the range of animal species found in the area, their estimated populations and their natural habitats. This helped in drawing up a wildlife rescue plan.

Larger mammals such as elephants, tapirs and tigers were relocated deeper into the forest. To monitor their movements, and avoid potential human-elephant conflict, we engaged a team from the Department of Wildlife and National Parks (PERHILITAN) to tag five elephants from four different groups with satellite collars.

However, some of the small to medium-sized mammals as well as reptiles and amphibians, continued to inhabit the site during construction.

We managed to trap 621 animals (mainly small animals) and subsequently released them into the nearby Sungai Deka Protected Forest Reserve.

We also rescued approximately 772 fish from Sungai Terengganu Mati before the river was diverted during the impoundment of the Puah and Tembat reservoirs. These fish were then released into other rivers.

Particular attention was given to the *Ikan Kelah*, which is highly valued as a delicacy. Kelah broodstocks were taken to a rearing site at the Fisheries Research Institute in Perlok. Fingerlings were later used as stock for a Tagal system developed in Sungai Tembat, upstream from the Tembat reservoir. Tagal is a sustainable fish management system that restricts fishing for consumption to just a few periods during the year, enabling the fish population sufficient time to propagate and thrive.

Restoring the richness of Royal Belum

In 2007, about 117,500 hectares of land surrounding our Temengor Hydroelectric dam encompassing 33.5% of the catchment area was gazetted as a protected area under the Royal Belum State Park (RBSP). RBSP is notable for being home to three different *Rafflesia* species, all 10 hornbill species found in Malaysia and a number of large mammals including elephants, tigers and the *seladang* (Malayan gaur). In recent years, however, fish stock in the lake has been decreasing along with the number of mammals visiting the salt lakes, indicating a general degradation of the ecosystem. Temengor dam was built prior to the introduction of the EIA as a regulatory requirement in 1987. Although we had no baseline data to gauge the extent of the environmental deterioration, we are determined to prevent any further degradation of this natural reserve and to restore the health of the natural surrounds as far as possible. We are currently assessing the wildlife in RBSP and developing a comprehensive environmental management plan to help sustain the flora and fauna.

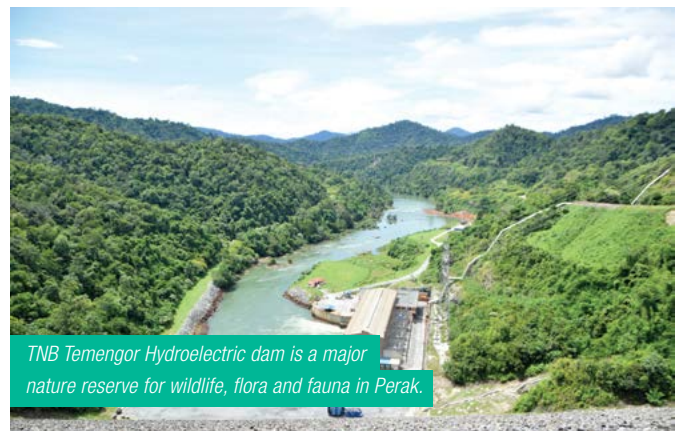
We have built a mobile pontoon, an observation platform and a boardwalk to assist researchers, and are also constructing a trail specifically for *Rafflesia* observation and monitoring. As we believe the best conservation efforts involve the participation of local communities, we are also educating the local community on conservation, especially fish breeding. To date, we have arranged numerous trips to the Kelah Sanctuaries in Sabah to witness the successful *Tagal* system implementation. We believe the wonders of Belum, especially the *Rafflesia*, should be shared with the rest of the world. To this end, we are in the midst of completing a coffee table book entitled "*Rafflesia of Royal Belum*".

NATURAL RESOURCE CONSUMPTION

In addition to research on preserving biodiversity, we invest in improving the way we manage natural resources especially water. Water is essential in our hydroelectric plants as well as in our thermal power plants where it is used for cooling, cleaning and steam generation. Our dependence on water and the realisation that it is a precious natural resource that supports life on this planet, have made us conscious of the need to use water efficiently.



Royal Belum is notable for being home to three different *Rafflesia* species.



TNB Temengor Hydroelectric dam is a major nature reserve for wildlife, flora and fauna in Perak.

Wastewater reclaimed plant

Our team of researchers developed a closed system of water consumption at our Sultan Iskandar Power Station (SIPS) in 2016. The small-scale pilot water treatment plant was built at SIPS to treat wastewater discharged from the plant every day. The treated water is then looped back into the system to feed the boilers. Results from a three-month pilot study indicate that all baseline data met the local regulators' requirements and the plant has been performing as per set specifications. In the long-term, this will not only save the plant's water intake, but also reduce the cost spent on water usage.







EMBRACING RELATIONSHIPS



Material Matters

- Customer experience
- Energy efficiency
- Workplace culture
- Capability development
- Employee engagement
- Health and safety
- Education
- Community development

FY2017 HIGHLIGHTS



8.1
CUSTOMER SATISFACTION
INDEX (CSI)



RM165
million
INVESTED IN TRAINING &
DEVELOPMENT



1.44
LOST TIME INJURY
FREQUENCY



YAYASAN TENAGA NASIONAL
PROVIDED ASSISTANCE TO
1,963
outstanding students



The young, diverse and digitally savvy population are well-positioned to benefit from the digital transformation.

EMBRACING RELATIONSHIPS

Our business relies on us building long-lasting and meaningful relationships with our stakeholders to gain their trust and maintain our social license to operate.

We aim to create shared values for all and remain committed to engaging and understanding expectations to serve our stakeholders better.

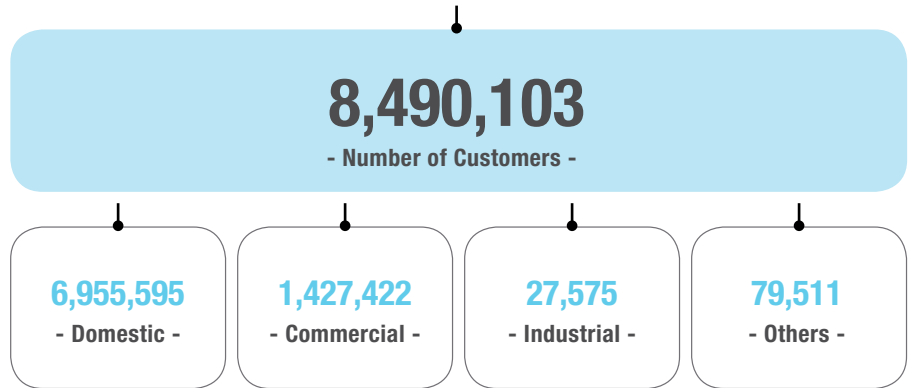


PARTNERING WITH OUR CUSTOMERS

With the digital revolution, we are able to connect and engage with our customers in more meaningful ways. To us, “customer experience” matters as we seek to win their trust and loyalty over the long-term. TNB has proven its dedication to enhancing customer experience and satisfaction through a host of convenient services. We utilise advanced analytics to develop customised products and services, and educate our customers on how to be energy efficient.

We monitor our Customer Satisfaction Index (CSI) annually to better understand our performance in service delivery and satisfaction towards products and services.

BREAKDOWN OF TNB CUSTOMERS IN PENINSULAR MALAYSIA FOR FY2017



Note: Others consist of mining, street lighting, agriculture, RE generators and free units.

We monitor our Customer Satisfaction Index (CSI) annually to better understand our performance in service delivery and satisfaction towards products and services.

For FY2017, we maintained our CSI score of 8.1 as compared to FY2016. Moving forward, maintaining the score will entail continuously improving our performance and services that we provide such as managing service recovery. We look to further ensure that Excellent Service Quality is rendered through TNB’s Value Added Services by engaging with domestic and industrial customers.



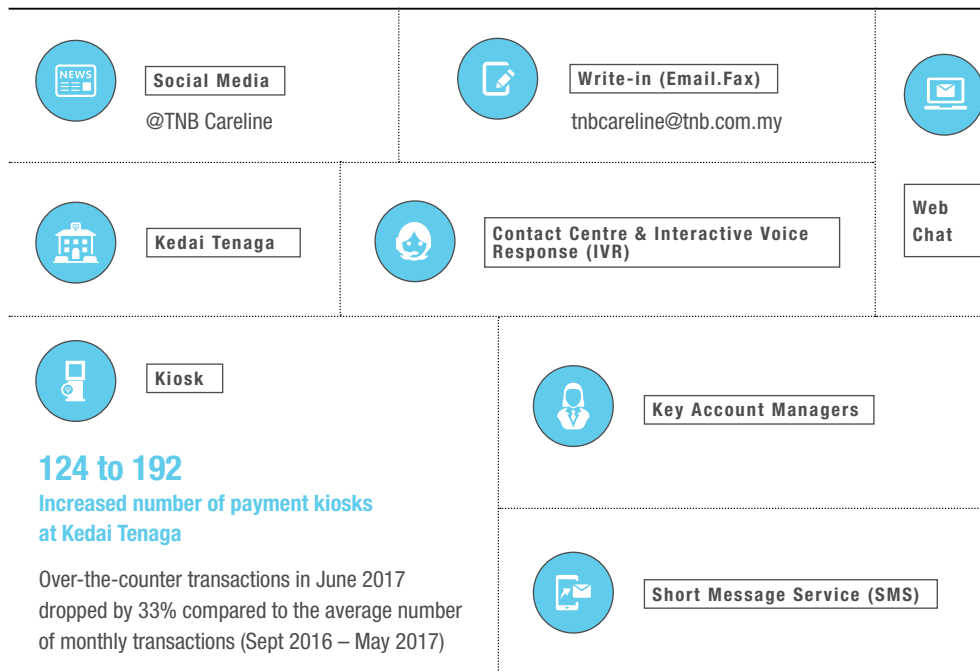
CUSTOMER EXPERIENCE

As we respond to the transformation of the energy supply industry, the way we interact with our customers is also evolving. TNB progressively provides quality customer experience by enhancing frontline engagement and encouraging greater customer migration to digital channels to enjoy quick, accessible, convenient, clear and effective services. As of 2017, we have 11 customer interaction channels, with our digital interactions making up 57% of total interactions. Our aim is to increase this to 70% by the year 2020.

These initiatives are a positive expansion from our earlier commitment to reduce face-to-face interactions by providing alternative channels such as kiosks, increased online payment and service options via apps and TNB Careline, and enhancements to the myTNB portal, among others, to our customers.

We see managing customer feedback as key to continuously improve our customer service. Numerous channels are available for our customers to provide feedback or request information. Our customers may contact us through our web-based myTNB portal email, text messaging, call, fax or via social media.

TNB CUSTOMERS' 11 INTERACTION CHANNELS
 AIM: TO INCREASE OUR DIGITAL CUSTOMER INTERACTION TO 70% BY YEAR 2020



124 to 192
 Increased number of payment kiosks at Kedai Tenaga

Over-the-counter transactions in June 2017 dropped by 33% compared to the average number of monthly transactions (Sept 2016 – May 2017)

3rd Party Services

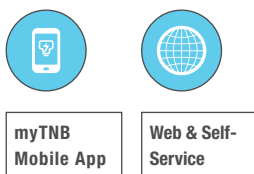
INCREASE ALTERNATIVE PAYMENT CHANNELS
 (3rd party payment channels)

We have expanded and simplified our payment and billing methods via e-payments.

e-Pay: Extended partnership with e-Pay – with at least two to three e-Pay retailers in each small town

Terminal Based Prepaid Distribution Infrastructure (MOLReload) at 7-Eleven – signed a new partnership with MOL AccessPortal Sdn Bhd (MOL) to set up electric payment terminals in over 1,905 7-Eleven outlets nationwide in June 2017

eBULK Centralised Large Power Consumers' (LPCs) Billing & Invoicing – provide eBULK payment solution catering to businesses with at least 50 TNB accounts and combined monthly bills of RM100,000 and above. It functions to serve our LPCs better and faster, while ensuring that sales revenue from this segment is captured accurately



myTNB Portal Features
 One-stop self-service portal that integrates existing web services for greater convenience and flexibility

- Remote Meter Reading Portal
- Home Energy Report
- Renewable Energy Application
- Bulk Payment
- Account Management
- Supply Application
- TNB Payment Gateway
- Home Energy Calculator
- Contractor Management
- Smart Billing Portal

TNB CARELINE: WORLD-CLASS CONTACT CENTRE (WCCC) JOURNEY



We have embarked on a WCCC project to implement 87 cross-pillar initiatives for our TNB Careline. The objective is to enhance our customer's experience when interacting with our contact centres. These initiatives serve to increase the level of professionalism at all call centres, including by upskilling our personnel when handling complaints and feedbacks. We are also creating greater self-service options for call-in customers.

In addition, to reduce avoidable call volumes, the system is being upgraded to include features for Outage Announcements, Call-back Assist for callers who may not wish to continue waiting in queue and Interactive Voice Response (IVR) Self Service that will convey outstanding TNB account amounts and payment due dates upon verification.

With Outsourced Management Services (OMS) on board, it has enabled us to realise new capabilities while improving our performance. The achievement post-OMS has improved service level (57% to 88%), lowered call abandonment rate (17% to 5%) and increased agent utilization (from 63% to 66%).

As part of becoming a World Class Contact Centre, the TNB Careline Office in Menara PKNS has incorporated design features and technological enhancements which have increased workforce collaboration leading to higher productivity and staff morale.

Protecting our customer's and data privacy



TNB is committed to protecting our consumers data and privacy.

Gaining and maintaining our customers' trust means giving priority to respecting their personal data. We do so by adhering to all relevant regulations on data privacy and safety. In Malaysia, we are guided by the Privacy Data Protection Act (PDPA) 2010 and have in place a PDPA Policy. Customers may view our PDPA Policy online.

More and more of customers are opting to make payments online. We have therefore implemented the Payment Card Industry Data Security Standard (PCI DSS) to secure the privacy of our customers' data. Our PCI DSS encompasses security management, policies, procedures, network architecture, software design and other critical protective measures. The standard highlights over 100 security controls to be put in place in order to ensure secured online customer transactions via credit card.

PROMOTING ENERGY EFFICIENCY

As part of TNB's demand-side management initiative and our commitment to preserve the environment, we continuously educate and encourage our customers to use energy efficiently.

Our Industrial Customers

Power Factor Solutions

We assist our industrial customers to improve their power factor index with free power factor system studies and offer the most appropriate power factor solution for each premise. Under this programme, we provide advisory services to our industrial customers to use energy efficiently and reduce their operational costs by avoiding the power factor surcharge.

Our Domestic Customers

Home Energy Report (HER) Programme

Through the Home Energy Report (HER) programme, customers are empowered to reduce their energy consumption. In this programme, we provide personalised reports that contain detailed information on a user's consumption compared against other users in similarly efficient homes. The aim is to reduce energy consumption, increase customer satisfaction and digital activity while building a larger knowledge base about TNB customers.

Subsequent to our pilot programme in 2016, phase 2 of the HER programme was launched in October 2017. The programme is jointly funded by both TNB and KeTTHA under the Malaysian Electricity Supply Industries Trust Account (MESITA). As a result of this initiative, all domestic customers can utilise personalised web tools on the myTNB web portal to obtain information about energy usage which allows for more accurate and personalised analysis. As of now, 450,000 selected customers receive the full communication package through mail, email and myTNB web portal.



Launching of HER phase 2 during the International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM) 2017.

HER Features



Moving towards Advanced Metering Infrastructure

As part of our Reimagining TNB initiatives for Grid of the Future, we are introducing smart meters, through Advanced Metering Infrastructure (AMI). This will provide customers with near real-time information on their energy consumption. Smart meters will support our initiatives to promote the use of renewable energy and the adoption of energy efficiency practices.

This infrastructure supports FIT and NEM requirements by allowing metering of bi-directional energy flows, time of use (ToU) tariffs and demand side management. It also improves customer response times and lowers the cost to serve.

Following the conclusion of a pilot project rollout involving 1,000 homes in Putrajaya and Melaka that began in 2014, we will deploy more smart meters with enhanced features. This new phase will commence in Melaka where smart meters will be made available throughout the state under the *Pelan Tindakan Bandaraya Hijau Negeri Melaka*.



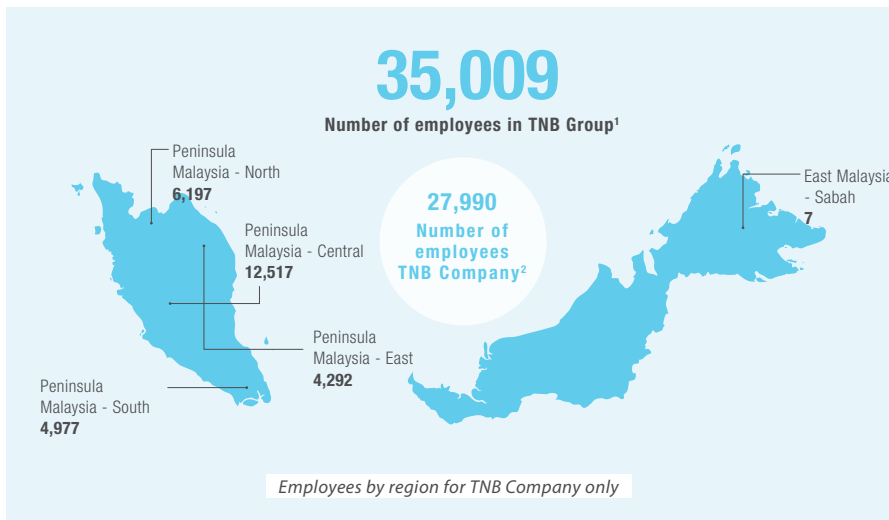
AMI/Smart meters are part of our Reimagining TNB initiatives for Grid of the future.



EMPOWERING OUR PEOPLE

Our people are the driving force behind our business operations. As we embark on a new phase in TNB's transformation, we will continue to focus on driving the productivity, efficiency and career development of our 35,009 valued employees.

Number of Employees in TNB



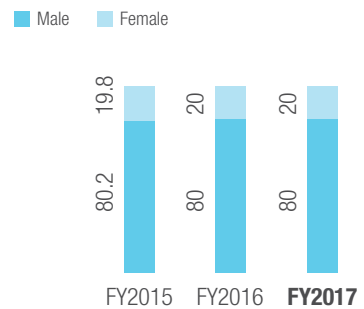
We believe that a diverse workforce is critical to achieving our goals and welcome people from all backgrounds. We see diversity as an essential component to achieve our targets and goals to promote productivity and innovation. This allows us to respond in the most strategic and effective manner to the increasing demands and expectations of our various stakeholders.

At present, women make up 20% of all employees in the TNB Company. There has been a gradual increase in female representation company-wide over the past three years, including among our Senior Management. In FY2017, 14.7% of our Senior Management were women as compared to 13% in FY2015. This signifies our support and commitment to develop women as leaders in our organisation.

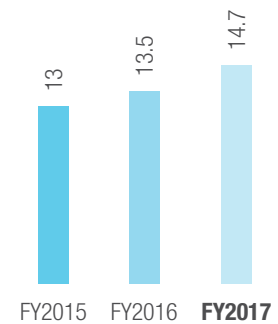
Additionally, as an inclusive employer, we seek ways to create a conducive work environment for our employees with families. For instance, we have established eight nurseries and eight kindergartens with minimal fees allowing our employees to meet their family obligations.

We have a diverse mix of age groups among our employees, with growing representation of younger recruits from various backgrounds. This provides a healthy pipeline of leaders as we embark on our expansion journey. In FY2017, we hired 641 new staff, of which 626 were millennials. We understand the importance of employing diverse age groups and ensure we engage and empower them effectively by training them with the right skills and competencies to promote job satisfaction and build a strong sense of belonging in the organisation.

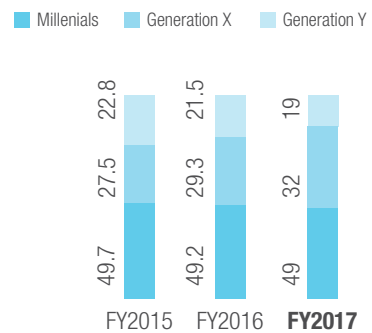
Breakdown by Gender (%)²



Women in Senior Management (%)²



Breakdown by age generation (%)³



Note:
 1. TNB Group consists of TNB company and its subsidiaries
 2. The above breakdown and numbers are based on TNB company
 3. Baby boomer (> 50 years old), Generation X (35-50 years old) and Millennials (Generation Y) (<35 years old)



As part of our commitment to maintain our employee diversity, we have an open-door policy with regards to persons with disabilities. We encourage persons with disabilities to apply, and make an effort to find areas within the organisation where they can contribute. We currently have 37 people with disabilities working with us.



TNB regularly engages the young generation to attract talents.

Talent attraction

In a competitive employment market, we seek to attract and retain the best talents. We do this by offering a dynamic work environment with ample opportunities for career development locally and abroad.

We look towards attracting bright and talented young individuals in order to proper our transformation into a digitalised global energy player. 2017 marked the first time we participated in the United Kingdom and Eire (Ireland) Council of Malaysian Students (UKEC) Malaysian Career Fair 2017 in London attended by over 17,000 Malaysian students in the UK and Ireland. We selected around 150 students to participate in an exclusive session with top management, conducted pre-assessments for recruitment and offered selected students the opportunity to join TNB.

Top 10 Companies
 “Malaysians aspire to work for” in 2017
 by Jobstreet.com

Malaysia’s Best Employer Brand 2017
 by World HRD Congress & Stars of Industry Group

WORKPLACE CULTURE

We seek to create a dynamic culture at TNB which gears our people for our upcoming global expansion, empowering them to brave any challenge. Our new culture is driven by a strong tone from the top. Among the initiatives in place includes our Value Unlocking Programme (VUP) and Leadership Development programmes. These programmes encourage greater efficiencies, higher motivation, and a high-performing work culture

by adapting to the changing energy demands in the utility markets. A high performing work culture can only better prepare our teams to meet changes to come.

In line with this, we unveiled TNB People Matters in 2016, which serves as a platform to better manage each employee’s career development journey.



TNB People Matters

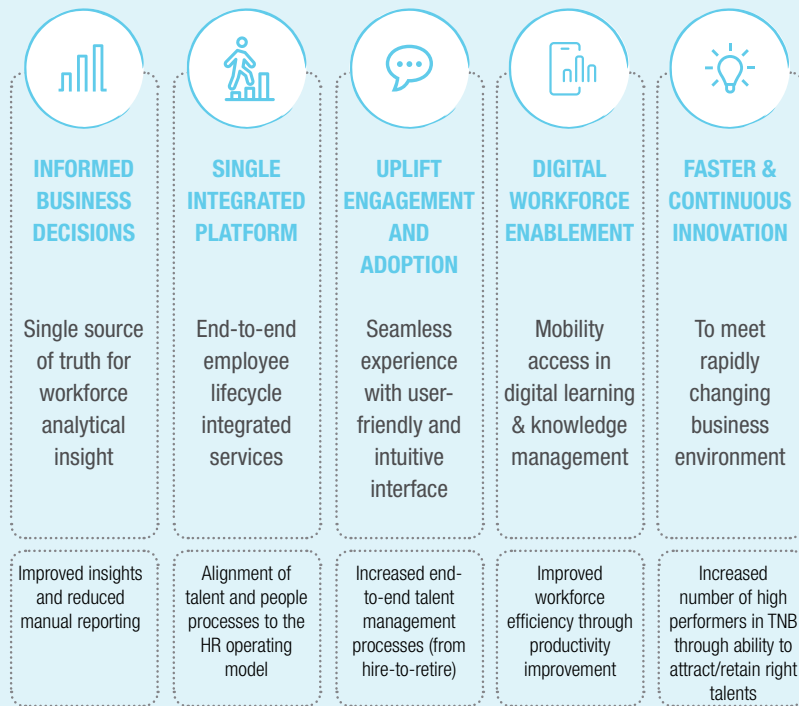
TNB People Matters introduces a more effective performance management programme based on a new competency framework, and offers leadership development at all levels. Outcomes of TNB People Matters aim to bring together people, processes and information to give space for better problem-solving and decision-making across the organisation.

The end result is a more agile workforce that is better equipped to deliver our envisaged business outcomes.

Intended outcomes include –

- 1 Leadership skills built at all levels
- 2 Effective career management
- 3 Efficient performance management
- 4 Increase in employee engagement and collaboration

The target is to increase the productivity and improve employee engagement by enabling mechanisms that promote



Through TNB People Matters, our people will have easy access to formal and social learning via a centralised and secured platform which enables us to connect and engage with one another, while forming collaborative communities for mutual sharing and learning.

With this new platform, we have also departed from our existing competency framework and taken a step forward towards building a workforce of capable leaders, with the introduction of a unified set of TNB Leadership Competencies. The TNB Leadership Competencies will be integrated into our employees' Competency Assessment alongside Technical Competencies.

Career Enhancement Management

Our Career Enhancement Management (CEM) ensures all our employees play a part in TNB and have the right fit based on their capabilities. This means training and developing our employees to fit into the new workplace culture and prepare them to embrace TNB's future goals and aspirations. A number of engagement sessions were held with employees to explain how the CEM will benefit their professional development. We have received positive responses to date, with many employees joining the Task Force SAIDI 150, created under CEM to improve the reliability of Sabah's electricity supply.

CAPABILITY DEVELOPMENT

As we believe everyone has the potential to enhance their work-related skills, we encourage all our employees, regardless of position and level to make the most of the learning opportunities available to them. Our educational arms, UNITEN, TNB Integrated Learning Solution Sdn Bhd (ILSAS) and Leadership Development Center (LDC), for instance, have been established to assist our employees to build their knowledge and competencies.

Engineering and technology capabilities have always been critical to our operations. Technical talents are encouraged to continuously enhance their capabilities by attending internal and external training courses at our technical training centre, ILSAS. As TNB continues to expand internationally under the guidelines of Reimagining TNB, we need to develop dynamic employees with the required soft skills to serve as dealmakers, data analysts and strategic negotiators. This year, we invested up to RM165 million on training and development.

Employee Category	Objectives	Highlights	Employees trained
Top Management	<ul style="list-style-type: none"> Leadership Capabilities Executive Coaching Business Strategy 	<ul style="list-style-type: none"> Leadership Corporate Forum by LDC Talent & Succession Development Programme Prestigious Programme by Group Human Resource (GHR) 	36
Management	<ul style="list-style-type: none"> Leadership Capabilities Executive Coaching Business Strategy Leveraging Networking 	<ul style="list-style-type: none"> Talent & Succession Development Programme Prestigious Programme by GHR Technical & Functional Excellence Programme 	296
Executive	<ul style="list-style-type: none"> Leadership Capabilities Executive Coaching Leveraging Networking Competencies Based Learning 	<ul style="list-style-type: none"> Leadership Capabilities Technical & Functional Capabilities Current & Future Jobs Needs Technology Driven Programme Education Programme 	5,321
Non-Executive	<ul style="list-style-type: none"> Upskilling & Upward Mobility Programme Competencies Based Learning 	<ul style="list-style-type: none"> Technical & Functional Capabilities and Leadership Capabilities Majority of programmes conducted in-house by Division/ Department or ILSAS 	29,347

Nurturing leaders

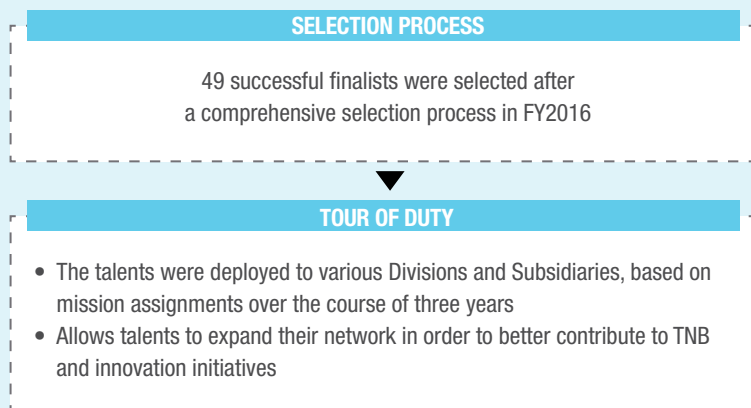
Providing our people with the tools to become leaders is essential to improve our performance and grow as a sustainable company. We perceive success and empowerment as elements to be implemented over time, rather than for a specific project.

Our Leadership Development Centre (LDC), provides experiential leadership and development programme to coach and mentor our employees at all levels. LDC aims to gain recognition as one of Malaysia’s leading institutions in its category. In FY2017, a total of 3,152 hours were utilised for Leadership Training, spanning across 197 sessions.

One of our key initiatives is the MBA programme offered at UNITEN in association with the Melbourne Business School, University of Melbourne in Australia. The MBA comprises five modules covering global business economics, mergers and acquisitions, business analytics, future thinking and strategy and managerial judgement. Differentiating the MBA programme is an online simulation Business Strategy game and the opportunity for participants to gain international exposure and network by studying alongside executives from major companies. The first cohort of students graduated from the 18-month programme in August 2016. Our second cohort comprises 34 students of which 12 were selected from the TNB Future CEO programme. For 2017, a total of 30 were selected to be part of the programme.

TNB LEADERSHIP DRIVE

The objective of this programme is to identify employees who possess the potential to lead TNB to new horizons. It is an extensive leadership development programme which blends experiential learning with classroom lessons and mission-based work assignments. The expected outcome is a result and value-driven leadership to spur TNB’s growth.



Updates for FY2017:

- Reassignment of 15 finalists to critical projects and those with bigger roles
- TNB Leadership Group (TLG) conducted the first performance review with 43 out of 49 finalists remaining in the programme
- In total 12 finalists pursued their MBA and were attached to the Melbourne Business School, University of Melbourne MBA-Executive Development Programme



Other leadership development highlights for the year include:

Objective	Target Audience	Programme start date	Highlights to-date since programme inception
Future, Engage, Deliver Programme that simplifies the understanding of leadership as a concept and aligns with TNB’s long-term goals	Top management and management	March 2015	18 sessions, 271 engaged
7 Habits Signature programme based on 7 Habits of Highly Effective People that aligns timeless principles of effectiveness with modern technology and practices to develop leadership at individual, team and organisational levels	All employees	May 2014	182 sessions, 4,981 engaged
Let’s Talk A framework for effective performance conversation based on responsibility, collaboration, self-accountability and influence	All employees	June 2014	140 sessions, 3,570 engaged
Selling to Decision-Makers Imparts an understanding of the three outcomes that need to happen inside the mind of listeners, namely to understand, see value and gain trust	Top management and management	September 2013	15 sessions, 164 engaged
Situation, Complication, Impact, Points, Action, Benefit Plan and link presented content to the audience’s needs, interests and “care about”; and strengthen communication framework	Executives	May 2014	69 sessions, 778 engaged

EMPLOYEE ENGAGEMENT

Our structured employee engagement platforms allow for us to communicate regularly with our employees, fostering a sense of belonging to TNB and increasing motivation levels. Our Management and team leaders engage frequently with employees through outreach sessions and internal communication platforms.

Internally, communication is kept pro-active via:

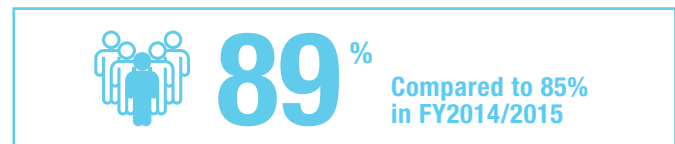


In engaging our employees, we also maintain harmonious relations with TNB Unions by constantly engaging in dialogue and engagement sessions with their leaders. TNB employees are represented by three registered TNB Unions and two workers associations which cover all categories of

staff. Management are currently engaged in negotiations to sign the ninth Collective Agreement (CA 9) for the period 2017-2019. There were no labour practice grievances in FY2017.

Employee Engagement Surveys (EES) are conducted every two years. We achieved a score of 89% for FY2016/2017, which was four percentage points higher than the previous score of 85% for FY2014/FY2015. This score was achieved with a strong response rate of 76% which is encouraging. Our next EES will be conducted in FY2018/2019.

Employee Engagement Survey (EES) Score FY2016/2017:



TAKING CARE OF OUR WORKFORCE



The Management of TNB considers its staff as assets to the organisation. Thus, TNB prioritises the healthcare of its staff and family and creates various health activities and programmes from time to time.

Employee well-being

We promote employee wellness as we believe that a healthy workforce is a productive workforce. A number of initiatives are in place to support the well-being of our people with Kelab Kilat serving as a platform to organise activities for our employees. In 2013, we introduced a Total Wellness Programme in line with encouraging our people to lead healthy lifestyles. We also signed a Memorandum of Understanding (MoU) to be part of the Ministry of Health (MoH)'s Healthy Community, Mighty Country (KOSPEN) programme which focuses on weight management through active and healthy lifestyles, health screening and maintaining a healthy mind. These programmes anchor our initiatives and pave the way for other initiatives.

Key highlights and initiatives for FY2017 include:

- 1 **An hour a week for sports and recreation for all employees**
- 2 **Rebranding of Family Day as 1TNB Family Wellness Day with the theme "1TNB Healthier Together"**
Numerous activities are conducted throughout the year under this programme with some activities happening simultaneously throughout Malaysia
- 3 **70 Kelab Kilat in Peninsular Malaysia serving as platforms to organise activities for employees**
- 4 **More than 1,000 attendees for the first Wellness and Fitness Fair at TNB Headquarters in August 2017**
The Fair consisted of talks on health and wellbeing, testimonies from TNB participants who were involved in our wellness programmes and health checks and activities. Agencies involved included Malaysian Ministry of Health, the National Heart Institute, National Heart Centre, Kuala Lumpur Pantai Hospital and KPJ Kajang

WE ARE COMMITTED TO ENSURING THE WELL-BEING OF OUR EMPLOYEES THROUGH HEALTH AND SAFETY PROGRAMMES

AVAILABLE TNB FACILITIES TO ENCOURAGE A HEALTHY LIFESTYLE

TNB Gymnasiums

There are 60 1TNB gyms located throughout Peninsular Malaysia which are furnished with the latest equipment to help our employees maintain an active lifestyle and further improve their health levels. Each individual gym has its own in-house certified fitness trainers, and organises various wellness programmes such as the weight-loss "Trim to Fit" programme.

Certified Healthy Cafeterias

We signed a memorandum of understanding (MoU) with the Ministry of Health (MoH) on 7 November 2016 to transform our cafeterias into healthy F&B outlets, with guidance from the respective state Health Departments. Officers from the MoH have spent time educating our cafeteria owners on how to create healthier menus. As a result, 3 cafeterias have been certified as Healthy Cafeterias by MoH within our premises. Healthy meal options are made available at each cafeteria. The certificates are valid for two years.





The tagline “Get Home Safe” serves as the foundation of our health and safety initiative, to ensure that everyone who works with us is protected. We continuously carry out safety trainings to nurture a culture of safety. We stand guided by our TNB Safety & Health Policy which encompasses all our operations Group-wide.

We are in the midst of developing a new system to manage health, safety and environment (HSE) called Health, Safety & Environment Management System (HSEMS) to replace the existing Safety Excellence Management System (SEMS) that has been in place since the late nineties. The new HSEMS will incorporate occupational health and safety as well as environmental management concepts that were largely missing in SEMS. We have completed 90% of the development and expect it to be fully implemented by end of FY2020.

To date, all of our power plants and the entire Grid Division are OHSAS 18001:2007 certified. As for the Environmental Management System ISO 14001:2015, all power plants and the Asset Maintenance Department of the Grid Division are also certified.



Life-Saving Rules are a critical part of our culture towards making TNB an accident-free workplace.

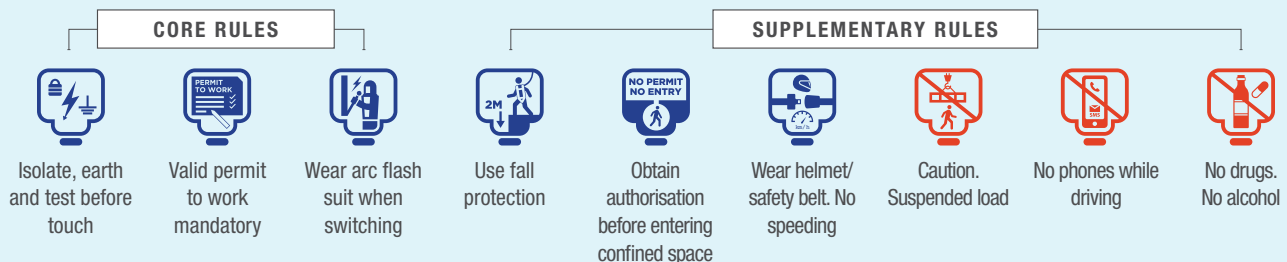
LIFE-SAVING RULES (LSR) – GET HOME SAFE

In line with our vision to create a safe culture, on our Safety Day on 15 May 2017, we launched our Life-Saving Rules (LSR). The LSR apply to all our employees and contractors, influencing their behaviour at work as well as on the road to ensure everyone “Gets Home Safe”. The objective is to save lives, prevent serious injuries and fatality for our employees and contractors, and achieve “Zero Accident” by improving compliance with safety standards/rules. Ultimately, we look to inculcate a Generative Safety culture, where it is possible to achieve ‘zero accidents’ and ‘no fatalities’.

The LSR comprise three core and six supplementary rules. Non-compliance with any of the rules will not be tolerated.

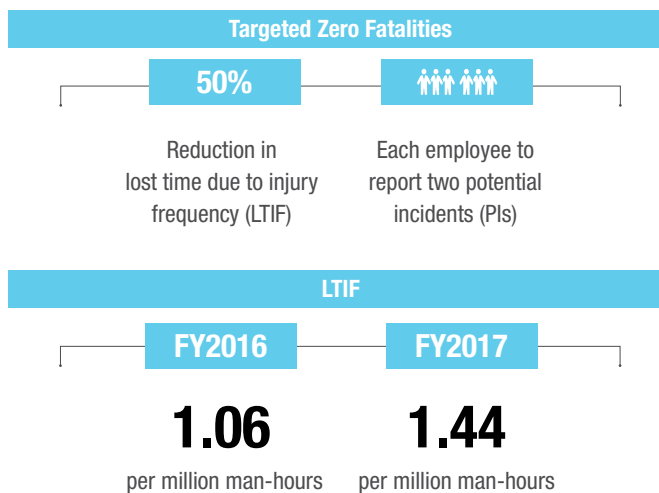
At the corporate level, HSE Handholding Programmes and Sessions were conducted throughout the year to create awareness of the LSR. Question and answer sessions were also held to clarify any queries. On the ground, our supervisors and managers are responsible for ensuring these rules are complied with and for reinforcing the message to stop work if any one of these rules cannot be adhered to at any time.

LIFE-SAVING RULES



For the financial year, we targeted zero fatalities, 50% reduction in lost time due to injury frequency (LTIF) and for each employee to report two potential incidents (PIs). The latter is to ensure employees are constantly on the lookout for potential hazards and play a part in keeping our workplace safe. Our employees participate in Occupational Safety & Health (OSH) courses and must attend at least one day of OSH training every year.

Our LTIF was recorded at 1.44 per million man-hours in FY2017. Regrettably, we also recorded four fatalities, two of whom were our employees and two who worked for our contractors. The fatality cases involving our employees included one electrical accident and one road accident while travelling on official duty. We are making every effort to keep reinforcing a safe working culture among our employees as well as contractors. Some additional initiatives being undertaken in addition to our LSR is our Behaviour Based Safety.



BEHAVIOUR BASED SAFETY

In the previous financial year, we embarked on a Behaviour Based Safety (BBS) programme at the Sultan Azlan Shah Power Station in Manjung (TNBJ), Perak, as part of an overarching Safety Culture Improvement (SCI) initiative. The programme, which seeks to change the mindset of employees and reinforce safe behaviours, led to noticeable improvement in TNBJ's safety scorecard with a significantly reduced number of days taken off due to illness or injury. From a Lost Time Injuries (LTI) of 35 days in FY2016, the number dropped to 11 days in FY2017 (up to 18 August 2017).

Following the success of this project, each of our nine power stations is developing its own comprehensive BBS programme. In FY2017, the power stations underwent four phases of the BBS roll-out which resulted in a specifically designed BBS programme for each power plant, inclusive of training to effectively implement the programme.

In FY2018, all power plants will implement the BBS under Phase 5, and follow up with sustaining and reviewing the programme.



TNB is committed to achieve zero accidents through the development of a Generative Safety culture.





BUILDING COMMUNITIES

As a utility company, we believe in brightening the lives of our communities, enhancing their livelihood and, ultimately, empowering the nation. We engage in a wide range of programmes that seek to enhance the quality of life of the underserved and under-privileged.

We encourage a spirit of volunteerism among our 35,009 employees. Some of our programmes are also conducted in partnership with the government, charitable bodies and NGOs. In FY2017, our total contributions/sponsorships was approximately RM23.6 million.

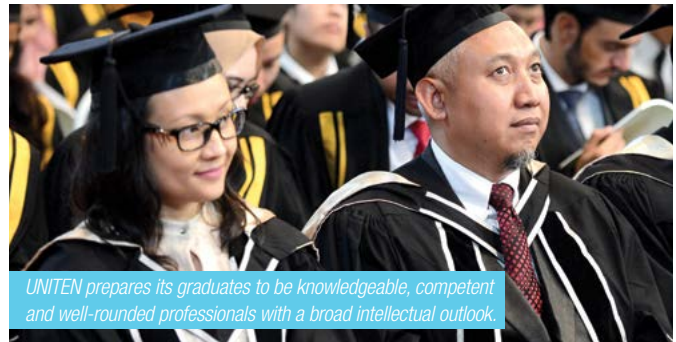
EDUCATION

Education is a powerful enabler of social and economic development, and serves as one of the main focus areas to give back to our people and local communities. We contribute towards unlocking the value of Malaysians to accelerate the nation’s transformation through our Education Hub (EduHub). While accelerating national development, EduHub supports TNB’s goal of becoming a Domestic Dominance Regional Champion (DDRC) by providing manpower training as well as leadership and talent development; leading value-creating research in energy; and enhancing TNB’s reputation as a national thought-leader and global player.

Together, Universiti Tenaga Nasional (UNITEN) and our technical training centre, TNB Integrated Learning Solution (ILSAS) plays a key role in providing our employees as well as the nation with continuous professional and academic development. Similarly, our corporate social responsibility efforts focusing on education leave an everlasting impact in developing people and uplifting their lives.

Universiti Tenaga Nasional

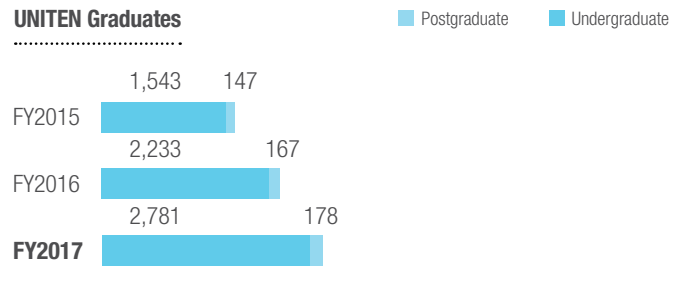
UNITEN is fully-owned by TNB and is committed to cutting-edge research as it gears towards becoming a globally competitive, energy-focused university by the year 2025. UNITEN has been at the forefront of energy research, leveraging TNB’s solid industry experience in power generation, transmission and distribution. The university continues to play its role in offering quality engineering, IT and business management programmes at the foundation, undergraduate and postgraduate levels. Its efforts have gained international recognition - amongst the world’s 26,000 universities, UNITEN was ranked in the top 2% based on the QS World University Rankings by Subject - Engineering and Technology in 2017.



UNITEN prepares its graduates to be knowledgeable, competent and well-rounded professionals with a broad intellectual outlook.

UNITEN welcomes students from all walks of life. It has programmes in place to suit students from different backgrounds such as for athletes and Islamic scholars (e.g. Huffaz). Outstanding students are steered towards considering exciting careers with TNB.

To date, UNITEN has produced over 27,729 graduates from its foundation, diploma, degree and postgraduate programmes. UNITEN’s graduates employability rate is 95% upon completion of studies in FY2017. We have also seen the number of graduates growing. Currently, UNITEN has 11,938 students enrolled of which 95% are Malaysians.



Note:
1. Number of students who completed their studies and were eligible to attend UNITEN’s yearly convocation during that Financial Year



UNITEN PROGRAMME HIGHLIGHTS

Better Brighter TNB Apprentice Programme

The programme enables third-year Malaysian engineering students to gain industrial training and exposure at TNB in preparation for the workplace. During the 12-week programme, they are guided through theoretical classes and provided on-the-job experience by TNB mentors. After completing the internship, apprentices are enrolled in a further two weeks' training programme focused on soft skills. Those who are successful are offered full-time employment, and join TNB's Young Executive Development Programme (YEDP) upon completion of their degree programmes.

Huffaz Professional UNITEN

This unique dual-programme in collaboration with the Department of Islamic Advancement Malaysia (JAKIM) enables students to study the Al-Quran in addition to their normal academic programmes. At the Convocation Ceremony 2015/2016 on 6 August 2016, 22 students received their Huffaz certificates from JAKIM.

UNITEN has achieved numerous international and local recognitions, winning several engineering and technology design awards. In FY2017, the university was awarded two gold medals at the Seoul International Invention Fair (SIIF 2016) and seven gold medals at the International, Invention, Innovation and Technology Exhibition (ITEX 2017). With increasing focus on the commercialisation of its research, UNITEN has obtained seven Malaysian and three international patents, with another 12 impending patents.

Driven by an ongoing Building Opportunities, Living Dreams 2025 (BOLD2025) plan, UNITEN aspires to achieve teaching and learning excellence, research excellence and ensuring financial sustainability for the university. The university's strong focus on research supports our innovation needs and further enhances Malaysia's engineering expertise as well as helps propel our nation to a better and brighter future.

UNITEN driving innovation through research

Given the nature of dams, there is great responsibility to ensure they are built and subsequently managed with the highest considerations for the safety of the communities and wildlife in their vicinity. Amongst numerous researches conducted at UNITEN, the following studies have helped to fortify our dam safety management to support this commitment.

UNITEN RESEARCH ON DAM SAFETY MANAGEMENT

Interactive Dam Safety Decision Support System (INSPIRE)

- An award-winning integrative system that allows dam operators to detect early warning signs of dam failure, allowing for safe evacuation of communities downstream.
- Comprises tools that enable operators to communicate with the relevant stakeholders and make effective decisions in a timely manner, thus potentially saving many lives.

Flood Mitigation Software (FaMous)

- Helps to identify Distribution assets located in flood prone areas based on a Flood Inundation Map and Flood Hazard Map.
- Software includes Proposed Mitigation Measures with Cost Benefit Analysis that guides our top management in adopting the most appropriate and effective mitigation measures.

Weather and Flow Forecasting System

- The Inflow Forecasting System, developed for the Sungai Perak Hydroelectric Scheme, predicts the level of water in Temengor Lake and Perak River based on rainfall forecast provided by the Malaysian Meteorological Department (MMD).
- It generates river level and inflow forecasts five to seven days into the future. Prediction of dam reservoir inflows helps to better manage water release thus mitigating floods downstream and improving the reliability of forecasting information with a lead period of at least 6 to 24 hours.

Evacuation Modelling & Development of Emergency Planning

- Taking into account factors such as road closures, warning dissemination, use of safe havens and awareness, the system uses 2D modelling to ascertain the impact of dam release on riverine flooding.
- An inbuilt Life Safety Simulator serves as a model for fatalities, injuries, vehicles swept away and buildings destroyed due to the floods.
- Such data helps decision-makers to formulate appropriate emergency plans for the different dams as well as to develop community awareness programmes to maximise their safety and minimise personal loss.





With three decades of experience in the field of utility engineering training, ILSAS is certified ISO9001:2015 by the Scientific and Industrial Research Institute of Malaysia (SIRIM).

TNB Integrated Learning Solution (ILSAS)

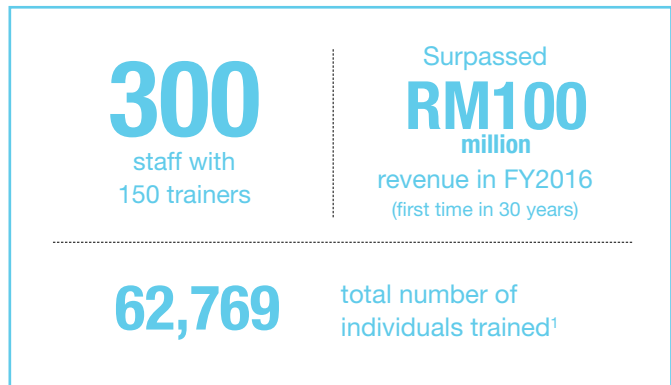
ILSAS has been providing technical training and specialised services to TNB and the energy industry for over 30 years. ILSAS aspires to be a transformational learning platform for TNB and the energy industry by supplying high-quality engineering, functional, leadership and managerial training that creates superior value for organisations and individuals. Its training capabilities cover technical courses in electrical, electronic and mechanical engineering as well as Information Technology (IT). Catering to engineering-related organisations, ILSAS offers programmes on asset management, project planning, cost efficiency, reliability, ownership and risk which are aligned to ISO requirements. ILSAS also provides management consultancy and advisory services to energy businesses, helping them to remain relevant. The range of programmes and services offered supports its transformation into a leading energy-focused learning centre.

As an Industry Lead Body (ILB), ILSAS is responsible for the development of the National Occupational Skills Standards (NOSS) for Chargemen and is a leading training provider for electrical industry competent persons (Chargemen, Cable Jointer and Competent Engineers), accredited by the Energy Commission and Board of Engineers Malaysia.

ILSAS has also been chosen by Yayasan Peneraju Bumiputera (Peneraju) a trust fund under the purview of the Economic Planning Unit (EPU), to upskill chargemen to the High Voltage BO category and is the only academy in the country able to provide such specialist training.

Enhancing trainers' skills

ILSAS ensures the best training capabilities by continuously upskilling its trainers, most of whom attained recognition as Certified Training Professionals from the Institute of Training & Development (ITD). In FY2017, some of the trainers were selected to undergo a specially designed in-house 'consultant development programme' to keep up with demand.



Note:

1. Number of individuals trained is recorded in accumulative man-days

Notable recognition and achievements in FY2017:

- Certified as a City & Guilds Centre in 2017**
- Recognised as a Department of Occupational and Health (DOSH) Examination Centre in 2017**
- Awarded the Top 20 Training Providers under the Human Resources Development Fund (HRDF) in 2016**
- Certified ISO 9001:2015**

EDUCATIONAL HIGHLIGHTS:

Legend:  Project Objective  Background  Highlights

Trust Schools Programme



- Boost quality of education in Malaysia through Trust Schools by:
- Developing high-quality leadership and management within the schools;
 - Improving overall quality of learning and teaching by exposing teachers to new methods and techniques, as well as encouraging more collaboration with students;
 - Maximising students' achievements and potential through the creation of an effective co-curriculum framework; and
 - Strengthening the engagement of parents, communities and other stakeholders



The programme is a public-private partnership between Malaysia's Ministry of Education (MoE) and Khazanah Nasional's Yayasan AMIR, a non-profit foundation. Trust Schools are public schools that have been carefully selected by MoE and Yayasan AMIR for a period of five years.



In FY2017, TNB committed to assist **EIGHT TRUST SCHOOLS** by contributing **RM800,000 a year** to each school over the course of five years

PINTAR School Adoption Programme



Adopt under-performing schools and provide the students and teachers with support to enhance academic and non-academic outcomes.



A collaboration between the PINTAR Foundation and private corporations, primarily GLCs. We run motivational camps, tuition classes, examination seminars and clinics at our adopted schools while also providing the students with sports training to nurture well-rounded individuals.



In FY2017, we adopted a fresh batch of **18 SCHOOLS NATIONWIDE**, after the previous batch of 13 schools 'graduated' from the programme. Our investment in PINTAR for FY2017 was **RM706,480 WHICH REACHED 1,417 STUDENTS**

Back to School Programme



This programme started in 2013, with the intention of providing school uniforms and stationery to rural and underprivileged primary school students nationwide.



In FY2017, **ABOUT 3,400 UNDERPRIVILEGED PRIMARY SCHOOL STUDENTS RECEIVED SCHOOL AID** such as uniforms, scarves, shoes, socks, bags and stationery sets.



EDUCATIONAL HIGHLIGHTS

Legend:  Project Objective  Background  Highlights

Yayasan Tenaga Nasional (YTN)



Our foundation, YTN, provides scholarships, study loans and education/welfare programmes focused in the fields of engineering, accounting and IT.



Long dedicated to advancing local educational excellence, YTN has awarded 11,000 scholarships since 1993, with an investment exceeding RM1 billion to date.



In FY2017, YTN provided **RM55.78 million TO SPONSOR 1,963 OUTSTANDING MALAYSIANS** to pursue tertiary education in local and foreign universities

Skim Latihan 1 Malaysia (SL1M)



Help graduates gain employment by providing soft skills and on-the-job training in various divisions in TNB



As part of realising the vision of 1Malaysia, TNB has developed strong human capital by being involved in comprehensive training schemes for graduates at bachelor degree level, in support of the Government's effort to further improve the employability of graduates in securing jobs in the job market.



In FY2017, **WE TOOK IN A TOTAL OF 500 TRAINEES FOR TWO SESSIONS;** the first began in September and the second in November 2016

Electrical Safety Awareness Campaign (Kempen Kesedaran Keselamatan Elektrik)



Aimed at educating the community on the safe usage of electricity and to increase awareness of activities that are being carried out near TNB's existing assets.



Since its inception in 2007 until 2016, we have engaged with primary and secondary school students and teachers nationwide.



In FY2017, we engaged with **PRIMARY AND SECONDARY SCHOOL STUDENTS AND TEACHERS IN 13 STATES ACROSS THE COUNTRY**

COMMUNITY DEVELOPMENT HIGHLIGHTS

Legend: Project Objective Background Highlights

Category:
Social - Government Electrical Infrastructure Projects

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



Developing electrical infrastructure in rural areas in collaboration with the Government to create better living conditions for the people.

Implemented with the purpose of providing electricity to houses in villages which are outside the operational areas of the Local Authorities throughout Peninsular Malaysia, Sabah and Sarawak. It is also inclusive of homes located in remote areas, Orang Asli settlements and villages located on islands. The three projects were awarded to TNB as the main contractor by the Ministry of Rural and Regional Development (KKLW) and its agency, the Department of Orang Asli Development (JAKOA).

The overall progress of the three contracted projects undertaken in FY2017 reached **88%, BENEFITING 1,486 HOMES TO DATE.**

Progress in FY2017

No.	Project Title	Funded by	Cost (RM million)	No. of villages	No. of houses	Progress as of August 2017
1.	BELB Kampung Orang Asli Sungai Siput Perak Phase 1 - Pos Yum, Kuala Mu & Kampung Jong	JAKOA	24.90	3	240	88%
2.	BELB Kampung Orang Asli Sungai Siput Perak Phase 2 - Pos Piah, Pos Poi & Kampung Langkor	JAKOA	21.80	3	394	78%
3.	BELB KKLW Peninsular Malaysia 2014-2015	KKLW	45.00	22	852	98.65%

VILLAGE STREET LIGHTING PROJECT (PROJEK LAMPU JALAN KAMPUNG)

Brightening public village areas to enable socio-economic activities to be carried out at night comfortably and safely

- 1. Completed Phase 7 as of November 2016 with 36,964 lights installed
- 2. For **PHASE 8**, our progress is at **57.84%** completion
 - 1 Total contract cost is RM82.79 million and is fully funded by KKLW
 - 2 Number of lights in the contract is 95,541 units with 40,240 units installed nationwide to-date
 - 3 For this phase, the Government introduced the usage of Light Emitting Diode (LED) lights for the project

Under the Village Street Lighting Project, street lights are installed at public areas (e.g. police stations, religious buildings) and roadsides with a maximum number of 10 units for every village.

COMMUNITY DEVELOPMENT HIGHLIGHTS

Legend:  Project Objective  Background  Highlights

Better Brighter Shelter Programme



Transit homes that provide accommodation to rural or underprivileged people who have family members undergoing treatments at hospitals. This initiative includes upgrading the facilities, increasing the number of beds and providing maintenance for the shelter.



The programme is in partnership with Yayasan Kebajikan Negara. TNB will cover the maintenance aspects of both transit homes over the course of five years from 2017 until 2021 for a total of RM2 million.



In FY2017, TNB contributed **A TOTAL OF RM985,192** to the cause in which RM386,192 was donated to the National Heart Institute Foundation and RM599,000 to the National Welfare Foundation

Home for Needy Programme



The aim is to improve the lives of the underprivileged communities by transforming their dilapidated houses into comfortable homes equipped with basic amenities such as electricity, water and proper sanitation.



We take pride in our Projek Baiti Jannati and Program Mesra Rakyat as they support to the needy by building new homes, assisting families to own apartments, and repairing and upgrading homes. For both projects, recipients consist of the underprivileged, senior citizens, single parents and disabled people.



In FY2017, this programme **CHANGED THE LIVES OF 144 FAMILIES** with a disbursed amount of **RM6.6 MILLION**

Lestari Community Project



Installation of solar panels at community care centres to generate electricity under the Feed-in-Tariff (FIT) scheme. Excess electricity will be sold to TNB and income generated from the sales will benefit the centres.



This project is part of the Government's efforts to assist welfare homes whilst promoting renewable energy.

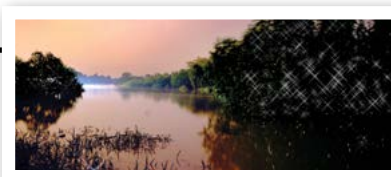


TOTAL AMOUNT DISBURSED for this project in FY2017 amounted to **RM3,843,427.50**

Kampung Kuantan Fireflies Conservation Project



Conservation and research of fireflies, developing physical infrastructure and generating publicity to attract more tourists to Kampung Kuantan.



TNB collaborates with the State Government of Selangor, through the Kuala Selangor District Council (MDKS), to protect the "kelip-kelip" or firefly colony in Kampung Kuantan, Kuala Selangor.



We have helped to generate additional income for the boatmen by **PROVIDING NEW BOATS AND LANGUAGE TUTORIALS TO ENHANCE THEIR COMMUNICATION SKILLS**

SPORTS HIGHLIGHTS

For decades, TNB has played a pivotal role in promoting social mobility through education and sports, apart from being the prime mover in powering the nation. We encourage a healthy and active lifestyle, and believe sports has the power to build character, instil discipline and change lives for the better – physically, mentally and emotionally. This belief has helped shape some of our community programmes.

National Hockey Development Programme

Hockey is in the company’s DNA, where we have produced many great hockey players and legends. We are proud of our history and role in contributing to Malaysia’s hockey development as well as in providing opportunities to young Malaysians to grow within this area. With the tagline “Powering Champions”, a programme was developed to shape players under the guidance of former national players who are also TNB employees.

Over the years, we have nurtured hockey players through our Thunderbolts Programme and have many defining stories to tell. With the intensive coaching received, a number of players from our Thunderbolts schools have gone on to become national junior and senior players. TNB Thunderbolts and UNITEN’s Pusat Kecemerlangan Sukan (PKS) Hoki also partner together for initiatives such as the UNITEN-MRSM Hockey Clinics throughout Malaysia.

We are also proud that the Malaysian Men’s hockey team has qualified for the 2018 Hockey World Cup in India, where four of the players are TNB employees and five are former players from our Thunderbolts Programme.



TNB Thunderbolts Programme: Developing and nurturing new generations of hockey talents.

Gold Partner for the Kuala Lumpur (KL) 2017 Southeast Asian Games (SEA)

Our passion and support for sports have seen TNB sponsor various domestic and regional developments and events. TNB, as a Gold Partner of the KL 2017 SEA Games, sponsored more than RM3 million which included cash and in-kind contributions. We were also the “Official Energy Partner” ensuring reliable power supply throughout the games.

At the SEA Games sponsorship handover ceremony held on 3 August 2017, our hockey coffee table book titled The Sticks was also launched. The book documents TNB’s involvement in promoting and supporting hockey as well as producing notable Malaysian hockey legends who had played at the World Cup and the Olympics.

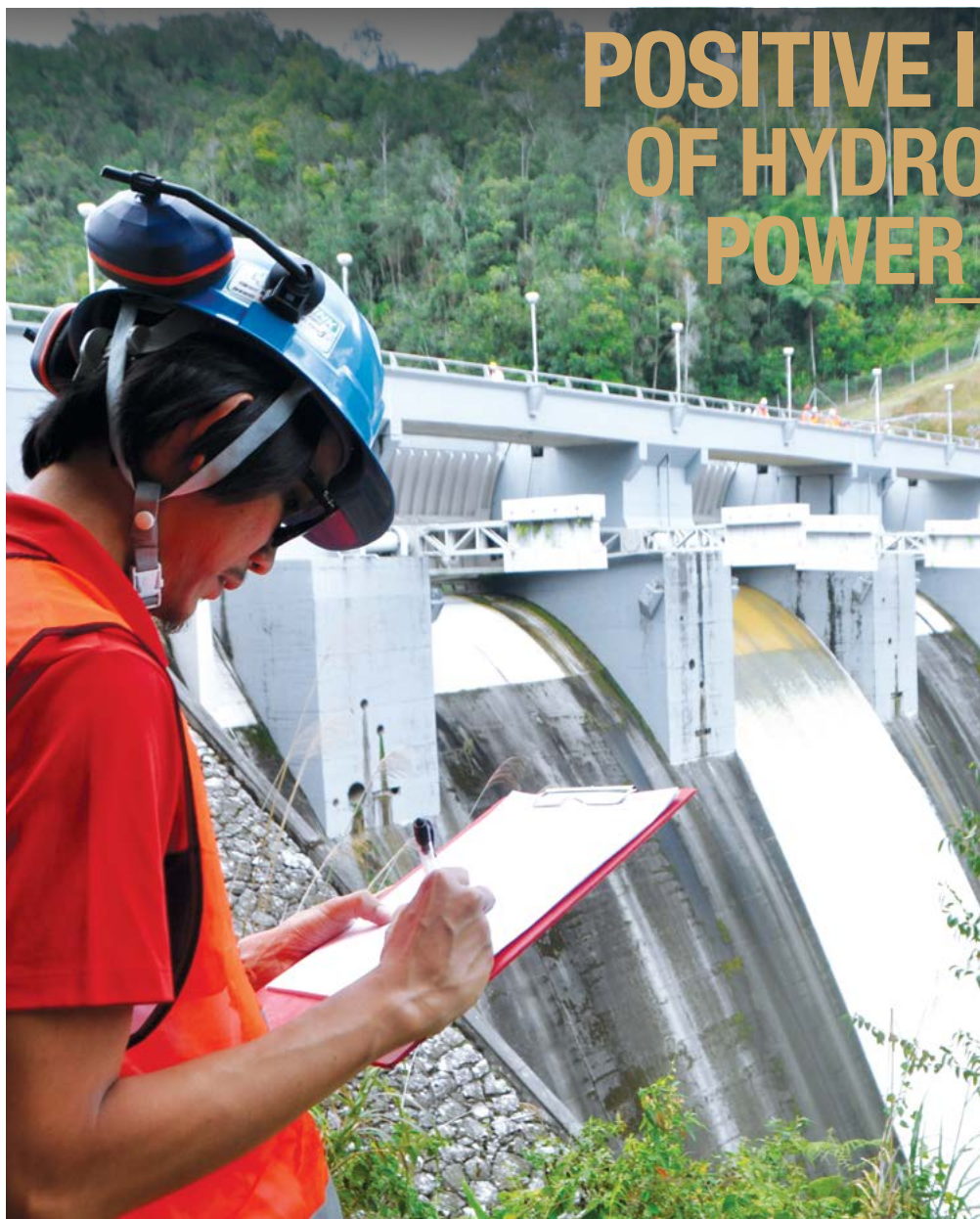


Sponsorship handover ceremony by TNB as “gold” sponsor of the SEA Games.

Our support of the SEA Games extends further to our Green Initiatives KL2017 as we co-sponsored the ‘One Medal, One Tree Programme’ (Program Satu Pingat, Satu Pokok). The programme covers four phases where the Malaysian Sea Games Organising Committee (MASOC) prepared 5,249 trees to represent medals from the SEA Games which will be planted all around Malaysia. TNB additionally, sponsored a further 145 trees to our Malaysian gold medalists. These trees were accompanying gifts for all podium winners and will form part of their contribution towards environmental awareness.



Together with MASOC, TNB
CO-SPONSORED 5,249 TREES
 to represent medals from the SEA Games
WHICH WILL BE PLANTED ALL AROUND MALAYSIA



POSITIVE IMPRINTS OF HYDROELECTRIC POWER STATIONS

TNB has been using hydropower to generate electricity for many years. Hydro makes up 21% of TNB's generation capacity in Peninsular Malaysia, equivalent to 2,548MW. Today we have a few major hydroelectric stations operating in Peninsular Malaysia, namely Kenyir, Sungai Perak and Cameron Highlands hydroelectric power scheme. This includes the newly commissioned 265MW Hulu Terengganu and 372MW Ulu Jelai Hydroelectric Station. In addition, 19 mini hydro stations located in several rivers in Malaysia have a total installed capacity of 9MW.

**HYDRO MAKES
UP 21% OF TNB'S
GENERATION
CAPACITY,
EQUIVALENT TO
2,548MW.**

Besides its primary function to generate power, hydroelectric stations has the capability to mitigate the impact of floods within a certain proximity. This is made possible through its ability to control water retention and its release. As such, we take great care in managing our dam operations, considering disastrous impact that may befall the local community and the environment, if not properly managed. To be well prepared for emergencies, we have in place a Emergency Response Plans (ERPs) that serves to coordinate actions by our emergency response personnel, relevant state authorities and local communities. It covers management of safe shut down of the power plants and evaluation plans for employees and nearby residents in the event of a serious incident.

Although there have been differing views from certain quarters over the environmental impact of hydroelectric development, we ensure that our hydro plants coexist in harmony with our environmental ecosystem. One of our success stories includes how we have preserved the biodiversity richness of the Royal Belum state park inhabited by unique flora and fauna species.

During the construction and development phases of our hydro plants, we conducted careful planning and took preventive actions in addition to complying with all environmental regulatory standards to minimise disruption to the environment. We continue to nurture the bio-diverse environments through environmental studies of restoration projects to ensure that the ecosystem balance is maintained.

Responsible resettlement of Orang Asli



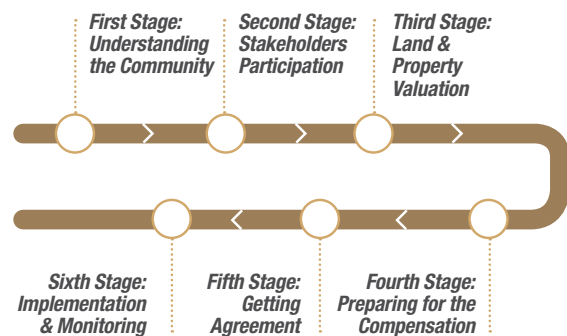
We work collaboratively with community groups to address their issues without compromising their well-being.

We also frequently engage and communicate with the communities located close to our dams. Certain areas where we have built dams were previously inhabited by communities of Orang Asli (Indigenous populations).

Mechanisms are in place to provide commensurable compensation packages to impacted community members.

We follow the guidelines of the Public Acceptance and Resettlement Plans for Orang Asli affected by the Hydroelectric Project in providing our compensation packages. The guidelines are based on four principles; transparency, sustainability, fairness and justice, and beneficial effect on the community. We also take into account the outcomes from our dialogues with the communities and land evaluation to finalise the compensation package. Our aim is to ensure that the compensation is fair and beneficial to the affected communities in support of sustainable development without compromising community well-being.

Summary on the process flows of the development of the Public Acceptance Program Programme (PAP) and Resettlement Action Plan (RAP) for the affected Orang Asli



RM88 MILLION
channelled towards resettlement and compensation for the Ulu Jelai Hydroelectric Project

GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
GENERATION						
G4-EU1	Generating capacity breakdown by primary fuel source					
	Gas	MW	4,935.4	5,694.8	5,484.8	Consists of TNB's majority-owned power plants in Peninsular Malaysia
	Coal	MW	3,971.6	3,971.6	3,971.6	
	Hydro	MW	1,911.0	2,347.0	2,548.0	
	TOTAL	MW	10,818.0	12,013.4	12,004.4	
G4-8	Breakdown and number of customer accounts					
	Number of customers in Peninsular Malaysia for TNB Company					
	- Domestic	Number	6,843,725	6,910,081	6,955,595	Others consist of mining, street lighting, agriculture, RE generator and free units
	- Commercial	Number	1,449,104	1,442,980	1,427,422	
	- Industrial	Number	28,054	27,210	27,575	
	- Others	Number	68,962	77,786	79,511	
	TOTAL	Number	8,389,845	8,458,057	8,490,103	
ECONOMIC PERFORMANCE						
G4-EC1, G4-9	Direct economic value generated					
	Revenue					
	- TNB Group	RM million	43,286.80	44,531.50	47,416.90	* Net profit attributable to owners of the Company
	Net profit*					
	- TNB Group	RM million	6,118.40	7,367.60	6,904.00	
INDIRECT ECONOMIC IMPACT						
G4-EC7	Development and impact to communities					
	Total Contributions/ Sponsorships	RM million	12.1	18.1	23.6	
PROCUREMENT PRACTICES						
G4-12	Total number of suppliers	Number	4,638	4,685	4,514	Procurement spent is for TNB Group excluding fuel and energy procurements
	Total spent on procurement	RM billion	8.64	8.10	7.18	

GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
PROCUREMENT PRACTICES <i>(continued)</i>						
G4-EC9	Proportion of spending on local suppliers					
	Total number of local suppliers engaged	Number	4,534	4,550	3,281	Procurement spent is for TNB Group excluding fuel and energy procurements
	- Percentage of local suppliers	%	98	97	73	
	Total spent on local suppliers engaged	RM billion	7.91	7.44	6.64	
SYSTEM EFFICIENCY						
	Power plant's availability and reliability performance					
	Equivalent Availability Factor (EAF)	%	88.76	88.08	88.51	Performance of TNB's wholly-owned power plants in Peninsular Malaysia
	Equivalent Unplanned Outage Factor (EUOF)	%	3.85	4.44	2.69	
G4-EU12	Transmission and distribution losses as a percentage of total energy					
	- Grid (Transmission) losses	%	1.47	1.28	1.29	For Peninsular Malaysia only
	- Distribution losses	%	6.21	6.11	6.21	
EMISSIONS						
G4-EN15	Direct Greenhouse Gas emissions (GHG) (Scope 1)					
	- Total direct GHG emissions (Scope 1)	tCO ₂ e	N/A	28,492,111	Figure for FY2017 in progress	
G4-EN16	Indirect emissions of GHG (Scope 2)					
	- Electricity consumption	tCO ₂ e	N/A	569,079		
G4-EN18	GHG emission intensity					
	- Intensity of CO ₂ emissions	tCO ₂ e/MWh	N/A	0.55		



GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
EMPLOYMENT						
G4-9	Total size of workforce					
	- TNB Group	Number	35,975	35,615	35,009	
	- TNB Company	Number	29,602	28,807	27,990	
	- Generation	Number	1,765	1,676	1,406	
	- Distribution	Number	18,365	17,454	16,402	
	- Transmission	Number	3,168	3,090	2,887	
	- Support/Others	Number	6,304	6,587	7,285	
	Employee Engagement Score	%	85%	89%	89%	Conducted bi-annually
G4-10, G4-LA12	Workforce by geographical area					
	TNB Company (Malaysia)					
	- Peninsular Malaysia - East	Number	4,551	4,465	4,292	
	- Peninsular Malaysia - North	Number	6,726	6,463	6,197	
	- Peninsular Malaysia - South	Number	5,365	5,176	4,977	
	- Peninsular Malaysia - Central	Number	12,955	12,697	12,517	
	- East Malaysia - Sabah	Number	5	6	7	
	TOTAL	Number	29,602	28,807	27,990	
	Workforce by gender					
	TNB Company (Malaysia)					
	- Male	Number	23,738	23,060	22,311	
		%	80.2%	80.0%	80.0%	
	- Female	Number	5,864	5,747	5,679	
		%	19.8%	20.0%	20.0%	
	TOTAL	Number	29,602	28,807	27,990	
	Workforce by contract type and gender					
	Permanent employees					
	- Male	Number	23,164	22,668	21,640	
	- Female	Number	5,815	5,716	5,627	
	Contract employees (non-permanent)					
	- Male	Number	574	392	671	
	- Female	Number	49	31	52	
	TOTAL	Number	29,602	28,807	27,990	

GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
EMPLOYMENT <i>(continued)</i>						
Workforce by level and gender						
Senior management						
	- Male	Number	247	263	266	
	- Female	Number	37	41	46	
Executive						
	- Male	Number	3,606	3,570	3,628	
	- Female	Number	1,932	1,956	2,043	
Non-executive						
	- Male	Number	19,885	19,227	18,417	
	- Female	Number	3,895	3,750	3,590	
	TOTAL	Number	29,602	28,807	27,990	
Workforce by age group						
	< 35	Number	14,717	14,174	13,646	
	35 - 50	Number	8,140	8,429	8,930	
	> 50	Number	6,745	6,204	5,414	
	TOTAL	Number	29,602	28,807	27,990	
G4-LA1	Changes to size of workforce for TNB Company					
Number of new hires by gender						
	- Male	Number	78	349	527	
	- Female	Number	54	43	114	
	TOTAL	Number	132	392	641	
Employee turnover by gender						
	- Male	Number	508	1,028	1,307	
	- Female	Number	97	156	198	
	TOTAL	Number	605	1,184	1,505	
Employee turnover rate by gender (% of total employees)						
	- Male	%	2.1	4.5	5.9	
	- Female	%	1.7	2.7	3.5	



GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
EMPLOYMENT <i>(continued)</i>						
	Employee turnover by age group					
	< 35	Number	134	121	168	
	35 - 50	Number	70	87	61	
	> 50	Number	401	976	1,276	
	TOTAL	Number	605	1,184	1,505	
	Employee turnover rate by age group (% of total employees)					
	<35	%	0.9	0.9	1.2	
	35 - 50	%	0.9	1.0	0.7	
	> 50	%	5.9	15.7	23.6	
DIVERSITY AND EQUAL OPPORTUNITY						
G4-LA12	Employees with disability by gender					
	- Male	Number	37	36	33	
	- Female	Number	4	4	4	
	Women in senior management					
		Number	37	41	46	
		%	13.0	13.5	14.7	
TRAINING AND EDUCATION						
G4-LA9	Training hours by employees					
	Training hours (inc. general and leadership training)	Hours	674,400	672,000	671,112	Based on total employees in TNB and average man-days
	Average training hours (man-days per employee)	Hours	8	8	8	
	Training hours by gender (inc. general and leadership training)					
	- Male	Hours	8	8	8	
	- Female	Hours	8	8	8	
	Training hours by level (inc. general and leadership training)					
	- Senior management (e.g. top management and management)	Hours	8	8	8	
	- Executive	Hours	8	8	8	
	- Non-executive	Hours	8	8	8	

GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
TRAINING AND EDUCATION <i>(continued)</i>						
	General training					
	- General training hours	Hours	2,904	3,552	8,880	
	- Average general training hours (man-days per employee)	Hours	8	8	8	
G4-LA10	Programmes for skills management and lifelong learning					
	Leadership training					
	- Total leadership training hours	Hours	2,480	2,416	3,152	
	- Average leadership training hours (man-days per employee)	Hours	8	8	8	
	Total spend on training (inc. general and leadership)	RM	162,142,182.13	192,595,081.16	165,381,626.24	Total spend for TNB Company
G4-LA11	Assessment of employees receiving regular performance and career development reviews					
	Regular performance review (employees)	Number	29,602	28,807	27,990	
LABOUR PRACTICES GRIEVANCE MECHANISMS						
G4-LA16	Grievances about labour practices received	Number	0	2	0	
	Grievances about labour practices resolved	Number	N/A	2	N/A	
OCCUPATIONAL HEALTH AND SAFETY						
G4-LA6	Number and frequency of injury					
	Number of fatalities					
	- Employees (Electrical)	Number	5	0	1	
	- Employees (Non-Electrical)	Number	1	2	1	
	TOTAL	Number	6	2	2	
	- Contractors (Electrical)	Number	0	0	2	
	- Contractors (Non-Electrical)	Number	2	1	0	
	TOTAL	Number	2	1	2	



GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
OCCUPATIONAL HEALTH AND SAFETY <i>(continued)</i>						
	Lost-Time Injuries Frequency (LTIF)					
	Generation Division	per million man-hours	2.75	1.1	1.09	
	Distribution Division	per million man-hours	1.15	1.17	1.38	
	Grid Division	per million man-hours	2.49	1.76	2.73	
	TNB Group	per million man-hours	1.26	1.06	1.44	
EDUCATION						
UNITEN						
	Number of undergraduates	Number	1,543	2,233	2,781	Number of students who have completed their studies and were eligible to attend UNITEN's yearly convocation during that Financial Year
	Number of postgraduates	Number	147	167	178	
	TOTAL	Number	1,690	2,400	2,959	
	Number of Malaysian students enrolled	Number	10,617	11,352	11,371	
	Number of foreign students enrolled	Number	815	690	567	
	TOTAL	Number	11,432	12,042	11,938	
	Employability rate within 6 months	%	97.2	97.2	95.0	
ILSAS						
	Total number of individuals trained (accumulative man-days)	Hours	36,511	48,434	62,769	Based on number of internal (TNB) and external participants
	Number of TNB employees trained (accumulative man-days)	Hours	36,061	48,019	62,228	Subject to number of training programmes in ILSAS

GRI G4	Indicator	Unit	FY2015	FY2016	FY2017	Scope/Remark
PRODUCT AND SERVICE LABELLING						
G4-PR5	Results of surveys measuring customer satisfaction					
	Customer satisfaction index	N/A	8.0	8.1	8.1	
	Corporate reputation index	%	76	82	81	
ACCESS						
G4-EU28	Power outage frequency					
	System Average Interruption Frequency Index (SAIFI)	Frequency/ Customer/ Year	0.79	0.87	0.84	For Peninsular Malaysia only
G4-EU29	Average power outage duration					
	System Average Interruption Duration Index (SAIDI)	Minutes/ Customer/ Year	49.66	49.71	50.24	For Peninsular Malaysia only



In developing content for this report, we referenced the Global Reporting Initiative (GRI) G4 Sustainability Reporting Guidelines and were guided by the 'In accordance' – Core option. We additionally referred to the GRI G4 Sector Disclosures for Electric Utilities.

GENERAL STANDARD DISCLOSURE

General Standard Disclosures		Page/Location
STRATEGY AND ANALYSIS		
G4-1	Statement from the most senior decision-maker of the organisation	6, IAR FY17 (18, 22)
ORGANISATION PROFILE		
G4-3	Name of the organisation	3
G4-4	Primary brands, products and services	IAR FY17 (1)
G4-5	Location of the organisation's headquarters	IAR FY17 (54)
G4-6	Number of countries where the organisation operates and names of countries where either the organisation has significant operations or that are specifically relevant to the sustainability topics covered in the report	IAR FY17 (Cover page)
G4-7	Nature of ownership and legal form	IAR FY17 (54-56)
G4-8	Markets served	IAR FY17 (1, 32)
G4-9	Scale of the organisation	IAR FY17 (28, 30)
G4-10, G4-LA12	Employees profile	62
G4-12	Organisation's supply chain	26, 60
G4-13	Significant changes during the reporting period	IAR FY17 (22)
G4-14	Whether and how the precautionary approach or principle is addressed by the organisation	Precautionary principle, IAR FY17 (144-149)
G4-15	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organisation subscribes or which it endorses	7, 13, IAR FY17 (60-61)
G4-16	Memberships of associations	IAR FY17 (100-117)
IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES		
G4-17	List entities included in the organisation's consolidated financial statements or equivalent documents	IAR FY17 (194)
G4-18	Process for defining the report content and the aspect boundaries and how the organisation has implemented the reporting principles for defining report content	8-9
G4-19	List all the material aspects identified in the process for defining report content	9, 60, 68
G4-20	Aspect boundary within the organisation	60, 68

General Standard Disclosures		Page/Location
G4-22	Explanation effect of any restatements of information provided in previous reports, and the reasons for such restatements	No restatements for this report
G4-23	Significant changes from previous reporting periods in the scope and aspect boundaries	5, 6 – this is our inaugural sustainability report
STAKEHOLDER ENGAGEMENT		
G4-24	List of stakeholder groups engaged	8
G4-25	Basis for identification and selection of stakeholders with whom to engage	8
G4-26	Approach to stakeholder engagement	8
REPORT PROFILE		
G4-28	Reporting period for information provided	5
G4-29	Date of most recent previous report	5, 6
G4-30	Reporting cycle	5
G4-31	Contact point for questions regarding the report or its contents	IAR FY17 (54)
G4-32	Report on 'in accordance' option, GRI Content Index, reference to the external assurance	Reference to GRI-G4 with GRI Content Index on page 68-69
G4-33	Policy and current practice with regard to seeking external assurance for the report	Did not seek external assurance
GOVERNANCE		
G4-34	Governance structure of the organisation	IAR FY17 (55, 56, 97)
ETHICS AND INTEGRITY		
G4-56	Organisation's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	IAR FY17 (2, 120-122)
GENERATION		
G4-EU1	Installed capacity by energy source	IAR FY17 (28)
G4-EU2	Number of residential, industrial, institutional and commercial customer accounts	38, IAR FY17 (31, 67)

SPECIFIC STANDARD DISCLOSURE

GRI G4 REQUIREMENTS		GRI INFORMATION	
G4 DMA and Indicator	Indicator	Location or Page Number	Identified Omission(s)
CATEGORY: ECONOMIC			
MATERIAL ASPECT: ECONOMIC PERFORMANCE			
G4-DMA	Generic Disclosures on Management Approach (DMA)	18, IAR FY17 (18-20, 22-25)	
G4-EC1	Direct economic value generated and distributed	60, IAR FY17 (15-16, 19 29)	
MATERIAL ASPECT: INDIRECT ECONOMIC IMPACT			
G4-DMA	DMA	50-57, IAR FY17 (88-95)	
G4-EC7	Development and impact to communities (total contributions/ sponsorships)	60	
MATERIAL ASPECT: PROCUREMENT PRACTICES			
G4-DMA	DMA	26-27	
G4-EC9	Proportion of spending on local suppliers at significant locations of operation	26, 61	
MATERIAL ASPECT: DEMAND SIDE MANAGEMENT			
G4-DMA	DMA	41	
MATERIAL ASPECT: SYSTEM EFFICIENCY			
EU12	Transmission and distribution losses as a percentage of total energy	61, IAR FY17 (42)	

GRI G4 REQUIREMENTS		GRI INFORMATION	
G4 DMA and Indicator	Indicator	Location or Page Number	Identified Omission(s)
CATEGORY: ENVIRONMENT			
MATERIAL ASPECT: BIODIVERSITY			
G4-DMA	DMA	33-35, IAR FY17 (81-82)	
MATERIAL ASPECT: EMISSIONS			
G4-DMA	DMA	30-32, IAR FY17 (80-81)	
G4-EN15	Direct Greenhouse Gas (GHG) emissions (Scope 1)	31, 61, IAR FY17 (81)	
G4-EN16	Energy indirect GHG emissions (Scope 2)		
G4-EN18	GHG emissions intensity	31, 61, IAR FY17 (81)	
CATEGORY: SOCIAL			
SUB-CATEGORY: LABOUR PRACTICES AND DECENT WORK			
MATERIAL ASPECT: EMPLOYMENT			
G4-DMA	DMA	42-44	
G4-LA1	Total number and rates of new employee hires and employee turnover by age group and gender	42, 63-64	
MATERIAL ASPECT: OCCUPATIONAL HEALTH AND SAFETY			
G4-DMA	DMA	48-49, IAR FY17 (41)	
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	49, 65-66	



GRI G4 REQUIREMENTS		GRI INFORMATION	
G4 DMA and Indicator	Indicator	Location or Page Number	Identified Omission(s)
CATEGORY: SOCIAL <i>(continued)</i>			
MATERIAL ASPECT: TRAINING AND EDUCATION			
G4-DMA	DMA	43-46, IAR FY17 (41, 85-86)	
G4-LA9	Average hours of training per employee by gender, and by employee category	64	
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	45, 65	
G4-LA11	Percentage of employees receiving regular performance and career development reviews	65	
MATERIAL ASPECT: DIVERSITY AND EQUAL OPPORTUNITY			
G4-DMA	DMA	42-43, IAR FY17 (85)	
G4-LA12	Breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	62-64	
MATERIAL ASPECT: LABOUR PRACTICES GRIEVANCE MECHANISMS			
G4-DMA	DMA	46	
G4-LA16	Number of grievances about labour practices filed, addressed, and resolved through formal grievance mechanisms	65	

GRI G4 REQUIREMENTS		GRI INFORMATION	
G4 DMA and Indicator	Indicator	Location or Page Number	Identified Omission(s)
CATEGORY: SOCIAL <i>(continued)</i>			
SUB-CATEGORY: SOCIETY			
MATERIAL ASPECT: ANTI-CORRUPTION			
G4-DMA	DMA	12-13	
MATERIAL ASPECT: COMPLIANCE			
G4-DMA	DMA	12-13, 15, IAR FY17 (33, 72-73, 98)	
MATERIAL ASPECT: DISASTER / EMERGENCY PLANNING AND RESPONSE			
G4-DMA	DMA	14, 58	
SUB-CATEGORY: PRODUCT RESPONSIBILITY			
MATERIAL ASPECT: PRODUCT AND SERVICE LABELLING			
G4-DMA	DMA	38-40, IAR FY17 (35, 36)	
G4-PR5	Results of surveys measuring customer satisfaction	38, 67, IAR FY17 (35)	
MATERIAL ASPECT: ACCESS			
G4-DMA	DMA	18-19	
EU28	Power outage frequency	19, 67	
EU29	Average power outage duration	19, 67, IAR FY17 (37)	
MATERIAL ASPECT: PROVISION OF INFORMATION			
G4-DMA	Practices to address language, cultural, low literacy and disability related barriers to access and safely use electricity and customer support services	54, IAR FY17 (92)	



This Sustainability Report 2017
is printed on environmentally friendly paper.

>>> www.tnb.com.my

TENAGA NASIONAL BERHAD (200866-W)

No. 129, Jalan Bangsar, 59200 Kuala Lumpur
Tel: +603 2180 4582 Fax: +603 2180 4589 Email: cosec@tnb.com.my