

Better. Brighter.

SUSTAINABILITY REPORT 2022

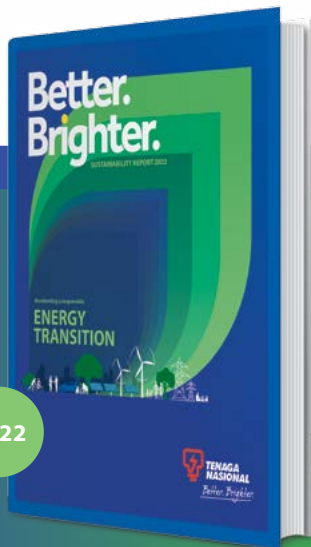
Accelerating a responsible

ENERGY TRANSITION



**TENAGA
NASIONAL**

Better. Brighter.



SR22

Highlight:



Accelerating Responsible Energy Transition



Decarbonisation Through Innovative Solutions: Carbon Capture



Enhancing the Well-Being of Orang Asli Communities

NAVIGATION ICON

The following icon is used in this Report to indicate where additional information can be found.



This icon tells you where you can find related information in this Report.

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About This Report

GRI 2-2 | 2-3 | 2-5 |

This Sustainability Report (“Report”) was developed to share our sustainability performance for the financial year ended 31 December 2022 (FY2022), strategies, and targets moving forward. We plan to drive the country’s energy transition into cleaner, greener electricity, as reflected in our Energy Transition Plan (ET Plan) launched this year. Through our various efforts, TNB aspires to be a leading energy provider of sustainable energy solutions supported by our sustainability pillars – Environmental, Social, and Governance.

Framework and Guidelines

Our report maintains its incorporation of Bursa Malaysia’s Main Market Listing Requirements (MMLR) alongside other Malaysian and global frameworks and benchmarks within our disclosure:



- ▶ **Bursa Malaysia Sustainability Reporting Guide (3rd Edition)**



- ▶ **Global Reporting Initiative (GRI) Standards**

- ▶ **GRI Electric Utilities Sector Disclosures**



- ▶ **Task Force on Climate-related Financial Disclosures (TCFD) framework**



- ▶ **United Nations Sustainable Development Goals (UN SDGs)**



This report has been prepared with reference to the GRI Standards. The report content has been defined by applying the Reporting Principles of GRI:



Stakeholder Inclusiveness

Using insights gained from key stakeholders to inform sustainability expectations and the review of material matters.



Materiality

Focusing on issues that reflect TNB’s sustainability impacts and are of utmost importance to our stakeholders in light of enhancing energy transitions, revolving market context and our corporate strategy - Reimagining TNB 2025.



Sustainability Context

Showcasing our performance in the wider context of sustainability, including the impact of energy transition on TNB.



Completeness

Including coverage of material topics and boundaries that have significant ESG impact to enable stakeholders assess to TNB’s performance in the current reporting period.



About This Report

Reporting Scope and Period

The scope and boundary of sustainability disclosures covers the activities of TNB and its subsidiaries ("TNB Group"). Where information is unavailable, we will cover our core and non-core business operations in Peninsular Malaysia under the purview of TNB divisions ("TNB Company"). Wherever possible, we have disclosed four (4) years of historical quantitative data for meaningful comparison purposes of the selected indicators.

Independent Assurance

This Sustainability Report has not been subjected to an assurance process. Nevertheless, we are preparing for internal assurance in FY2023 and will continue to obtain external assurance in due course.

Stakeholders Input

We value the feedback of our esteemed stakeholders to inform and to continuously enhance our reporting and sustainability practices. Feedback on this report and any aspect of our sustainability practices and performance is most welcome. Kindly address any comments or queries at sustainabilityhq@tnb.com.my.

Report Content

We have enhanced our Report to better illustrate our sustainability performance and initiatives in TNB against our commitments and targets. The key enhancements for each section in this Report are as follows:

Section in this Report	Key enhancements
Championing Sustainability at TNB	<ul style="list-style-type: none"> Introduce the Energy Transition (ET) strategic plans and its integration with other key sustainability principles and corporate strategies. Disclose eight (8) United Nations Sustainable Development Goals (UN SDGs) with targets and mapping to TNB's material matters. Highlight TNB's current collaboration and partnerships in pursuing Energy Transition (ET).
Responsible Governance and Strengthening Business Resilience	<ul style="list-style-type: none"> Introduce Sustainability and Energy Transition Council (SETC) in TNB sustainability governance. Highlight TNB's digital solution to enhance customer experience and satisfaction.
Climate Change and Environment	<ul style="list-style-type: none"> Enhance TNB's disclosure on climate risk & opportunities in line with TCFD recommendations. Provide details of the ET strategic plans and initiatives across value chain.
Engaging Our People and Cultivating Talent	<ul style="list-style-type: none"> Highlight TNB's commitment for safe and healthy working conditions by focusing on the occupational health and safety management system.
Creating Shared Values with Communities	<ul style="list-style-type: none"> Highlight TNB's corporate social responsibilities (CSR) initiatives in FY2022.



Sustainability Performance Highlights for FY2022

Environmental

Total renewable energy capacity

3,780 MW



Greenhouse Gas (GHG) Emission
(Scope 1 and 2)¹

38.90 MtCO₂e



GHG Emissions Intensity¹

0.55 tCO₂e/MWh



GHG Emission Intensity Reduction¹

2% reduction
against baseline in 2020



Avoided Emission

7,295,145 tCO₂e



Scheduled Waste Generation

74,150 tonnes



Social

Total contribution to community
development programmes

RM 12.20 million



Learning and Development Investment

RM 161 million



Employee Engagement Score (EES)

86.6%



Lost-Time Injury Frequency Rate (LTIFR)

0.82



Fatalities

2 TNB contractors



Governance

Total Revenue

RM 50.87 billion



Profit After Tax (PAT)

RM 3.56 billion



Women in senior management role

24.29%



Equivalent Availability Factor (EAF)¹

83.20%



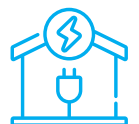
System Average Interruption
Duration Index (SAIDI)¹

45.06 minutes/
customer/year



System Availability¹

99.79%



Customer satisfaction index¹

87%



Percentage spent on local suppliers²

95.14%



¹ For TNB operations in Peninsular Malaysia.

² For TNB Corporate Divisions, Grid Division, DN Division, Retail Division, New Energy Division, Grid System Operator (GSO) Division and TNB Power Generation Sdn. Bhd. and its subsidiaries, excluding fuel spend, spend by other TNB subsidiaries to their suppliers and Non-Purchase Order payments.

CEO Statement

GRI 2-22

Dear Stakeholders,

We are pleased to present our latest Sustainability Report, which reflects our achievements and significant progress in creating value to all our stakeholders. The report details our Environmental, Social, and Governance (ESG) performance, and ongoing efforts to create sustainable value. It also demonstrates our unwavering commitment to transparency, accountability, and sustainability as we continue to look ahead into the future and work together with our stakeholders in driving the Energy Transition for a Better, Brighter Future for all.

DATO' INDERA Ir. BAHARIN BIN DIN

President/Chief Executive Officer



As Malaysia's national electricity provider, we play a significant role in the nation's progress, recognising our duty towards our stakeholders. We are honoured and grateful for the opportunity to impact the lives of millions on a daily basis through our comprehensive range of services and extensive network, while ensuring security of supply for the nation. With utmost dedication, we strive to drive positive outcomes through our sustainability initiatives, carefully attuned to the concerns and aspirations of our valued stakeholders.

We continue to strive towards embedding sustainability in our company's operation and policies. We have made significant progress and remain committed to continuous improvement since the first publication of our Sustainability Report in 2017. In this report, we communicate our sustainability performance and key achievements for the fiscal year 2022.

CHAMPIONING SUSTAINABILITY AT TNB

At TNB, sustainability is at the core of our business strategy and operations. We firmly believe that our success lies in our ability to balance economic growth, social progress, and environmental stewardship. Over the past year, TNB has made significant strides towards achieving our sustainability goals. We have continued to prioritise our efforts in reducing greenhouse gas emissions, promoting renewable energy sources, and enhancing energy efficiency across our operations. By investing in cleaner technologies and adopting innovative practices, we are actively contributing to mitigating the impacts of climate change and fostering a greener future.

We embrace the belief that sustainability is a collective endeavour that thrives on collaboration and partnerships which is crucial in driving meaningful change. We have actively engaged with various stakeholders, including customers, employees, government agencies, and communities at large to foster a shared vision of sustainability. By working together, we can create lasting solutions that address the challenges of today and pave the way for a sustainable tomorrow.

Our commitment to sustainability extends beyond environmental considerations. We are dedicated to creating positive social impact in the communities we serve. Through various corporate social responsibility initiatives, we have been actively supporting education, healthcare, and community development programmes. We understand the importance of empowering local communities and fostering inclusive growth, and we are proud to be making a difference in people's lives.

CEO Statement

Transparency and accountability are fundamental to our sustainability journey. We have strengthened our reporting mechanisms and implemented robust monitoring and evaluation processes to ensure that our sustainability goals are being effectively pursued. We believe in being transparent about our progress, successes, and areas for improvement, as it is through this transparency that we build trust with our stakeholders.

Numerous accolades and awards were conferred to TNB in the past year, as a testament of our achievements. These include winning the Smart Grid Award at PowerGen Awards by Enlit Asia 2022, Industry Excellence Award for Corporate Governance Disclosure at Minority Shareholders Watch Group (MSWG) ASEAN Corporate Governance Award 2021, and winner of HR ASIA Best Companies to Work For In Asia 2022. These awards mark TNB's continued ability to meet the highest standards in all aspects of its operations, both in terms of technical excellence as well as best practices in managing our people's welfare.

RESPONSIBLE GOVERNANCE AND STRENGTHENING BUSINESS RESILIENCE

Sustainability impacts every part of our operation, and hence it is key to ensure that the integration of ESG factors is undertaken through a gradual approach, starting with good governance to drive the changes. In tandem with TNB's agenda to lead the energy transition while building up the pathway in realising our net zero aspiration, the Sustainability and Energy Transition Committee (SETC) has been formed to deliberate on both sustainability and energy transition simultaneously under a common platform. While our primary focus is on ensuring that we stay on track with our energy transition journey, our key objective is to foster value for all our stakeholders. We recognise that upholding human rights plays a crucial role in our pursuit of sustainable success.

We believe that embracing sustainability will enable TNB to navigate the financial challenges arising from the nationwide inflation and the worldwide effects of the Russian-Ukraine war among others. In the face of this challenge, our revenue has remained resilient, which increased from RM48.12 billion in FY2021 to RM50.87 billion in FY2022 (5.2% year-on-year growth at Group level). However, persistently higher fuel costs, exacerbated by geopolitical tensions as well as the pressure to decarbonise, remain as a challenge that we continue to navigate.

Upholding our purpose and aspiration, TNB is fully committed in ensuring a reliable supply of energy to our customers, as well as put forth initiatives to decarbonise our operation through the application of green technologies and digitalisation. Expansion of our renewable energy portfolio, both domestic and globally, are part of our strategy in producing greener and cleaner electricity supply while unlocking the environmental benefits. As it stands now, thermal fuels provide us secure and affordable energy. However, we have conducted various research and development on the latest carbon

capture and utilisation (CCU) technologies, in hopes of managing carbon emissions from our current generation fleet. We will continue to seek opportunities and expand our collaborations through partnerships to reduce our carbon footprint.

CLIMATE CHANGE AND ENVIRONMENT

TNB is actively committed to playing a vital role in decarbonisation and addressing climate change through various strategies and actions. TNB's Energy Transition Plan (ET Plan) was developed as our guiding light in paving a clear transition pathway from a fossil-fuel based energy mix to low carbon energy sources. Expansion of our renewable energy assets and exploration of green technologies including CCU and hydrogen among others are our targeted initiatives. We anticipate the need for substantial investment in materialising these initiatives, but we believe that these investments are critical as cost of inaction potentially outweighs the value created from these efforts. These investment not only contribute to diversifying our energy mix but also demonstrate our dedication to sustainable practices and our role in combating climate change. Reducing our emission intensity by 35% by 2035 is our first milestone towards realising our net zero aspiration.

Furthermore, TNB is actively involved in promoting energy efficiency and conservation among our customers and stakeholders. Through educational campaigns, energy management programmes, and technical facilitation (i.e., providing services such as energy audit, energy performance contracts), we aim to raise awareness and encourage sustainable energy consumption practices. We take pride in empowering customers towards transitioning to cleaner and sustainable energy consumption by supporting various RE and Energy Efficiency (EE) programmes, such as Green Electricity Tariff (GET), Supply Agreement for Renewable Energy (SARE) and Net Energy Metering (NEM) Scheme. This includes adding more Electric Vehicle (EV) charging stations across the country through TNBX and the installation of solar panels on rooftops via GSPARX. By empowering individuals and businesses to make energy-efficient choices, we collectively contribute to reducing our carbon emissions and mitigating the impact of climate change.

We have been making progress in rolling out the adoption of a Smart Grid as part of our Grid of the Future (GoTF) initiatives. GoTF aims to improve the grid flexibility with two-pronged objectives - to allow for better services to our customers and enable higher growth of Variable Renewable Energy (VRE) and Distributed Energy Resources (DER). TNB has achieved a Smart Grid Index (SGI) score of 71.4% in FY2022, which demonstrates significant improvement of 19.4% from 2019. Moving forward, under our Smart Utility 2025 Masterplan, we target to achieve a score of 85% by 2025. Through the establishment of this ambitious target, we aim to facilitate the integration of clean energy into our electricity grid and enable efficient management and utilisation of resources. These endeavours will help drive the pace of our decarbonisation efforts and renewable energy initiatives to achieve our net zero aspiration.

CEO Statement

Additionally, TNB actively participates in national and international forums, partnerships, and collaborations focused on climate change mitigation and sustainability. By engaging with stakeholders, policymakers, and industry peers, we contribute our expertise and insights to advocate policies and practices that prioritise decarbonisation, resilience, and sustainable development.

ENGAGING OUR PEOPLE AND CULTIVATING TALENT

We acknowledge the importance our people play in ensuring smooth operations of the company. It is important to maintain a harmonious relationship through continuous engagement to sustain a high performing culture and enhance employee experience. These include providing employees with a safe working environment, facilitating capability building to drive the ET Plan and developing a compelling Employee Value Proposition (EVP), consisting of competitive remuneration and benefits packages. Part of the EVP includes childcare facilities and nurseries, accommodation for employees, counselling services, and career development opportunities.

In driving the nation's energy transition, consideration has been taken to grow our talents and future leaders. Under ILSAS, our established training centre, various upskilling and reskilling programmes have been conducted to help nurture and grow our people. These include introducing the latest tools and equipment, running simulation programmes, and developing online modules to equip our workforce with the right skills and capabilities necessary to deliver our climate commitment. We are dedicated to developing our workforce, equipping them for our energy transition journey, while prioritising their career growth and development.

CREATING SHARED VALUES WITH COMMUNITIES

TNB ensures Malaysians in rural and remote areas have access to electricity by conducting specific programmes that help to address this. Under the Rural Electrification (BELB) Programme, power is supplied to rural areas such as villages and Indigenous People settlements that are not within the operational area of local authorities. Another long-running programme, the Village Street Lighting (LJK) Programme, ensures public areas in remote villages are well lit at night by installing streetlights with higher efficiency.

We also contribute to the nation's capital development by supporting students from various backgrounds through scholarships and various other educational programmes. We have spent RM6.81 million to support a total of 1,361 recipients through Universiti Tenaga Nasional (UNITEN), and provided RM101 million in financial aid and scholarships to assist 5,753 recipients through Yayasan Tenaga Nasional (YTN).

We also strive to engage with underrepresented segments, such as the *Orang Asli* community, through various engagement sessions in their villages and providing scholarships to students through YTN's *Biasiswa Khas TNB* for *Orang Asli* children. The constant engagement conducted with *Orang Asli* communities living near TNB operating centres has helped us identify problems affecting the communities and rectify them swiftly. Through our bespoke initiatives tailored to each respective community, we have also been able to empower them effectively.

OUTLOOK

Moving forward, we are fully committed to enhancing our decarbonisation initiatives through our Energy Transition Plan. This involves expanding our renewable energy portfolio and adopting low-carbon technologies, such as hydrogen, Carbon Capture, Utilisation, and Storage (CCUS), and energy storage. We are also fully supporting the growth of the Electric Vehicle (EV) ecosystem in Malaysia. By pursuing these endeavours, we aim to contribute towards our nation's ambitious objective of attaining carbon neutrality by 2050. We recognise that achieving sustainable and decarbonised energy systems requires collaboration and cooperation from various sectors. We value the active involvement of stakeholders from government, public, and private entities in advocating policies, supporting renewable energy projects, promoting energy efficiency, and driving innovation in the energy sector. Along with decarbonisation initiatives, we will continue to reskill and upskill our people to specialise in new technologies and systems that will be introduced in the future. By fostering a skilled workforce, we aim to drive innovation and meet the challenges of a sustainable energy future.

Thank you.



DATO' INDERA Ir. BAHARIN BIN DIN
President/Chief Executive Officer

About TNB

GRI 2-1

As Malaysia's primary electricity utility company headquartered in Kuala Lumpur, we take pride in delivering affordable and reliable services to a diverse customer base across Peninsular Malaysia, Sabah, and Labuan. In recent years, we have successfully expanded our business operations and extended our brand's reach on the global stage. We have established ourselves as an international utilities sector player, with presence in the United Kingdom (UK), Kuwait, Turkey, Saudi Arabia, India, and Indonesia.

Our commitment lies in elevating our endeavours and further integrating sustainability into our business strategy. We aim to achieve not only economic success but also bring about positive societal and environmental outcomes.

» Our Core Values and Behaviours

Our Aspiration

To be a leading provider of sustainable energy solutions in Malaysia and internationally



Our Purpose

Together we brighten lives through innovative and sustainable solutions towards a better world



- We know who we are and we stand by our values.
- We are empathetic, respectful and compassionate to others and the environment.
- We protect the safety and promote the well-being of our people and the public.



- We are bold, challenge the status quo, and encourage agility and innovation.
- We commit to ensuring the sustainability of TNB in all aspects.
- We make informed decisions and learn from our mistakes.



- We seek to truly understand customers' needs and always stay a step ahead.
- We continue to build trust by delivering on our promises.
- We look for unexpected ways to delight our customers.



- We uphold the highest ethical standards and do what is right all the time.
- We are fair, honest and transparent - in everything we do.
- We always seek to achieve mutual benefit for the country, company and customers.



- We trust each other, believe in teamwork, and win together as one company.
- We proactively help each other, communicate clearly and provide constructive feedback.
- We embrace diversity and inclusivity, and we value outside-in perspectives.



- We take full ownership and accountability for our actions.
- We consistently demonstrate high performance and productivity.
- We are result-focused and carry out our duties with discipline.



TNB identity, comprising our Purpose, Aspiration, Culture and Behaviours aligns with the Reimagining TNB (RT) goal and aspiration to drive our business transformation.

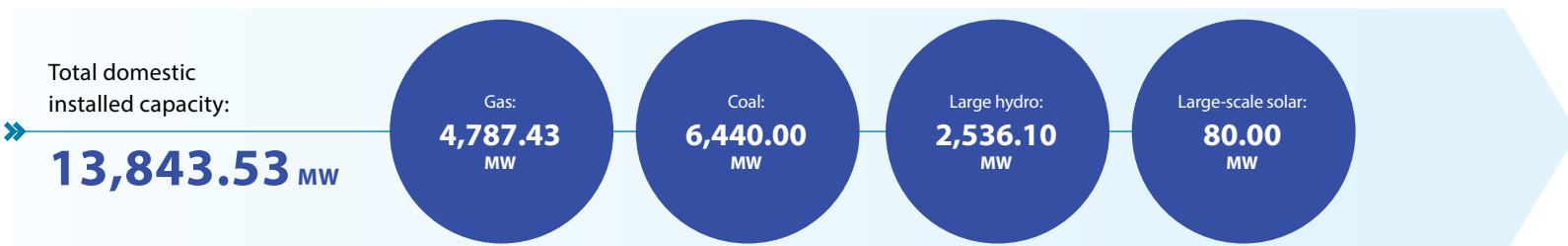
Our Value Chain

GRI 2-6 | EU1 | EU3 | EU4 |

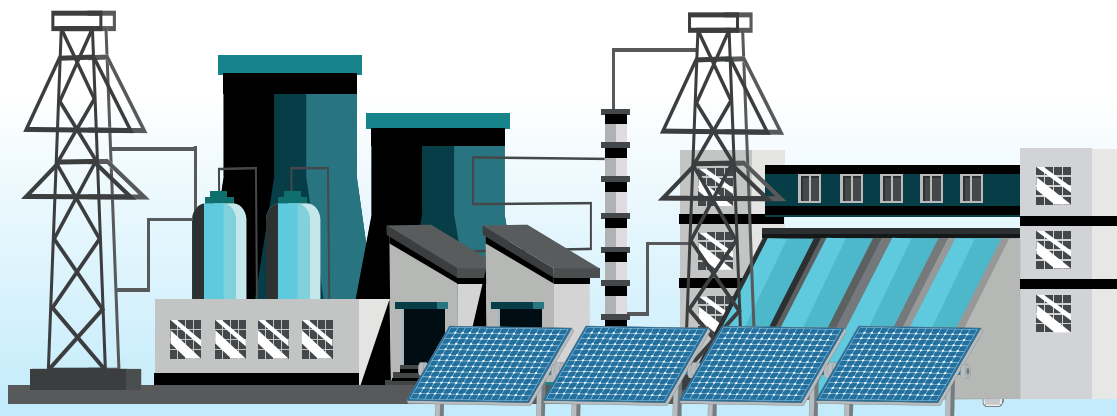
Our value chain represents our core business which comprises an end-to-end electricity supply chain including generation, grid, distribution, and retail. We place emphasis on reducing our environmental impact throughout our value chain and assets and continue to engage our key stakeholders.

Generation

TNB Power Generation Sdn. Bhd. (TPGSB) also known as TNB GenCo, operates and maintains TNB's portfolio of power generating assets, comprising thermal generation facilities and large hydro-generation schemes in Peninsular Malaysia.

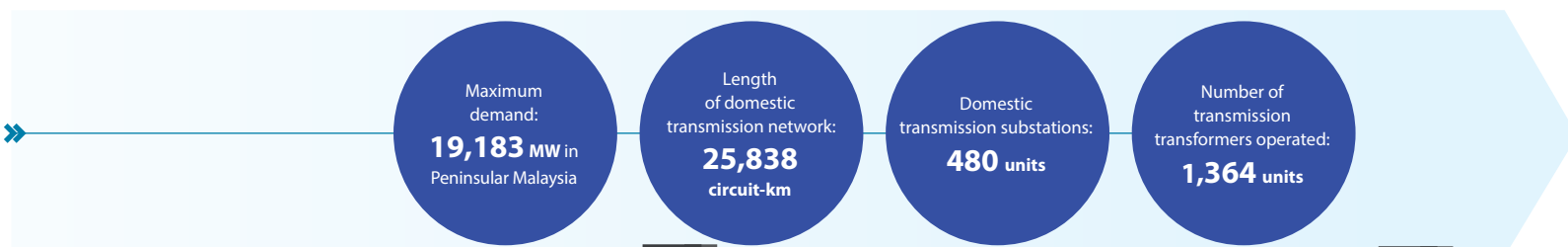


* For wholly-owned and majority owned (equity basis) generating assets in Peninsular Malaysia.



Grid

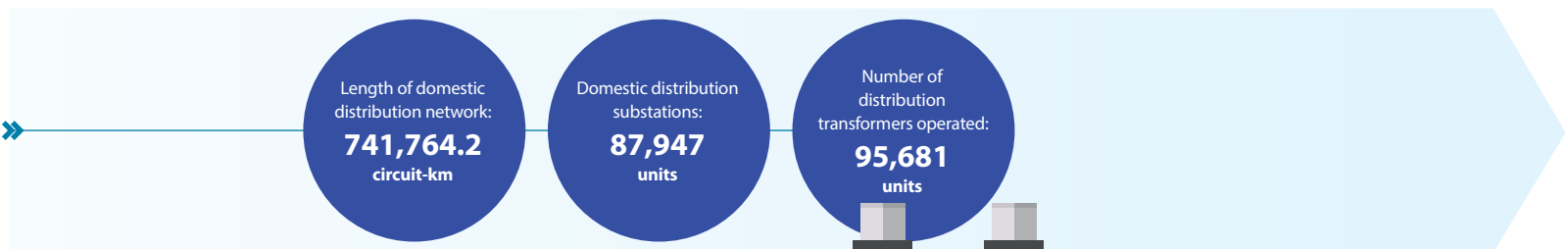
The Grid Division manages and operates the 132kV, 275kV and 500kV transmission network (National Grid) in Peninsular Malaysia.



Our Value Chain

Distribution Network

The Distribution Network Division is responsible for the asset lifecycle of the Nation's 33kV, 22kV, 11kV, 6.6kV, 0.415kV and 0.24kV distribution network to end users ensuring reliable electricity supply to businesses and homes.



* For wholly-owned distribution network in Peninsular Malaysia.



Retail

The Retail Division operates a network of state and area offices to provide products and services to customers. We strive to win our customers by building long-term and meaningful relationships through continuous ongoing customer-centric approaches.



Our International Footprint

01

UNITED KINGDOM

POWER PLANT

Total Capacity: **530.4 MW**

TENAGA WIND
VENTURES UK LTD

100% Equity

Capacity: **26.6 MW**

CLEAN ENERGY AND
INFRASTRUCTURE UK LIMITED

100% Equity

Capacity: **97.3 MW**

VANTAGE SOLAR
INVESTMENTS S.A.R.L.

55% Equity

Capacity: **365 MW**

BLYTH OFFSHORE
DEMONSTRATOR LIMITED

49% Equity

Capacity: **41.5 MW**

Energy Source:



Wind Solar

02

KUWAIT

POWER PLANT

Total Capacity: **170 MW**

SABIYA POWER GENERATION
& WATER DISTILLATION PLANT

Capacity: **252 MW**

DOHA WEST POWER GENERATION
AND WATER DISTILLATION PLANT

Capacity: **170 MW**

OPERATIONS & MANAGEMENT SERVICES

Total Capacity: **422 MW**

Maintenance Services
Agreement Mechanical Works

- DOHA WEST PLANT

Instrumentation & Control Systems

- SHUWAIKH POWER PLANT
- DOHA WEST PLANT

Energy Source:



Natural Gas Distillate

03

TÜRKİYE

POWER PLANT

Total Capacity: **1,134.1 MW**

GAMA ENERJİ A.Ş.

30% Equity

Capacity: **1,134.1 MW**

Energy Source:



Wind Hydro Natural Gas

04

INDIA

POWER PLANT

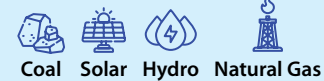
Total Capacity: **2,244.1 MW**

GMR ENERGY LTD

30% Equity

Capacity: **2,244.1 MW**

Energy Source:



Coal Solar Hydro Natural Gas

Our International Footprint



Championing Sustainability at TNB

TNB's Sustainability Journey

2016

Reimagining TNB.

- Introduction of Reimagining TNB, our corporate strategic plan.

2017

Sustainability at the core.

- Formalisation of Sustainability Development Committee (SDC) and published first standalone Sustainability Report.
- Commenced carbon footprint assessment.
- Establishment of the TNB Green Energy Development Fund to channel profit after tax towards Green Energy projects annually.

2018

Innovation.

- First rollout of smart meters as part of Advanced Metering Infrastructure.
- Incorporation of GSPARX Sdn. Bhd. to promote self-generation from solar energy by facilitating the Net Energy Metering (NEM) scheme and Supply Agreement for Renewable Energy (SARE).

2019

Alignment with international sustainability standards.

- Sustainability Report prepared in accordance with the GRI Standards: Core Option.
- Enhanced disclosure based on the TCFD framework.

2022

Moving forwards towards energy transition.

- Embarking on TNB's energy transition plan.
- Established Sustainability & Energy Transition Council (SETC).

2021

Positioning for the Future.

- Unveiled the TNB SP2050.

2020

Refreshed corporate strategy – Reimagining TNB 2025.

- Unveiled new aspiration "To be a leading provider of sustainable energy solutions in Malaysia and internationally".

2025

Emerging of renewable energy generation.

- Scaling renewable energy generation.
- Support the realisation of 8% national energy savings target.

2035

Accelerate decarbonisation efforts.

- 35% emission intensity reduction by 2035.
- Halve coal generation capacity by 2035.
- Upskilling and reskilling our people.

2050

Net Zero by 2050.

- Aspire to achieve net zero emissions and be coal-free.
- Grid Division targets to achieve zero pollution impact on nature and 30% reduction of deforestation in forest reserve.

Championing Sustainability at TNB

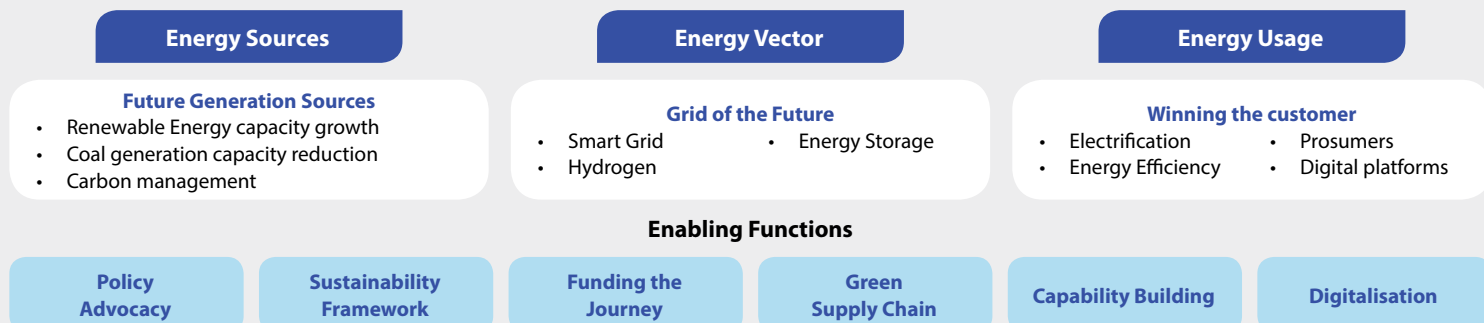
TNB's Sustainability Journey

Our integrated sustainability strategy connects sustainability pillars - Environmental, Social, and Governance (ESG) matters with our corporate strategy: Reimagining TNB 2025 (RT) to enable us contributing towards the United Nations Sustainable Development Goals (UN SDGs) and becoming a leading provider of sustainable energy solutions in Malaysia and internationally. We have prioritised eight (8) SDGs to deliver sustainable value, empowering both our people and the wider community. TNB Sustainability Pathway 2050 (SP2050) which was developed in 2021 has enabled the Group to advance its Energy Transition (ET) Plan in 2022.



For more information on TNB corporate strategy, please refer to Achieving Our Strategic Ambitions section of our IAR, pages 38-53.

TNB's ET plan provides three (3) strategic pillars with key enablers in shifting from fossil-based energy mix to greener energy sources. These initiatives cut across the electricity value chain, from transitioning power generation to cleaner sources; enhancing the GoTF to enable more green solutions; and facilitating consumer participation in the energy transition, including through digitalisation and electrification.



For more information on TNB Energy Transition Plan, please refer to Climate Strategy section, pages 54-60.

Championing Sustainability at TNB

GRI 2-9 | 2-11 | 2-12 | 2-13 | 2-14 | 2-15 | 2-16 | 2-17 | 2-19 | 2-20 | 2-23 | 2-24 | 205-2 |

Strong Leadership and Responsible Governance



Governance Structure

A strong sustainability governance and leadership structure are vital to spearhead our sustainability agenda and provide us with clear and definitive guidance to achieve our net zero aspirations. Our sustainability governance is an expansion of TNB's Governance Model that is aligned with the principles of the Malaysian Code on Corporate Governance (MCCG).

We believe that a robust sustainability governance framework underpinned by a supportive leadership structure are key components to ensure our sustainability agenda can be materialised through informative and comprehensive decision-making. Our sustainability governance is an essential part of the TNB Group Governance Platform, which is the framework of TNB management committees and subcommittees.

TNB's Board is dedicated to strategically integrating sustainability into TNB's operations and promoting sustainability efforts, including those focused on climate action. The Board will deliberate and approve the sustainability strategy while overseeing sustainability initiatives and performance.

The Board Risk Committee (BRC) supervises the establishment and implementation of a risk management framework that is ingrained in the Group's culture, processes, and structures, and responsive to changes in the business environment. Sustainability and climate risks are integrated into the enterprise risk management process.

Our sustainability governance framework was reformed in 2022 through the formation of the SETC, with the objective of deliberating on energy transition initiatives to coordinate and oversee TNB's Energy Transition Plan and providing a platform for discussion on the sustainability agenda, development and implementation. This includes the energy transition direction and climate-related matters. The SETC has combined the roles of the former Sustainability Development Council (SDC) and the former TNB Energy Transition Steering

Committee (TEXSC). The SETC and respective Management Committees are accountable for managing sustainability and climate risks and opportunities, as well as supervising TNB's related initiatives, with the Board providing oversight.

TNB's sustainability governance clearly defines roles and responsibilities for each level of leadership regarding sustainability and climate action.

SETC key roles include:

1. Determining sustainability visions, targets and commitments that align with and support TNB's overarching sustainability pillars as well as coordinating and integrating the organisation's sustainability commitments.
2. Proactively addressing sustainability challenges, including climate-related matters, faced by the organisation.
3. Influencing sustainability outcomes in the areas of ESG by creating a framework, disclosing information and implementing policies related to climate-related matters.
4. Communicating with internal and external parties, including the Board, investors, financiers, insurers, regulators and the government on sustainability matters.
5. Establishing Energy Transition related programmes and their goals and objectives and shaping energy transition outcomes that align with TNB's corporate strategy, fostering growth and creating value for the organisation.

The SETC meeting is conducted monthly, chaired by the President/CEO and composed of TNB's corporate senior management team. They then escalate the Group's strategic direction for sustainability to other committees and/or the Board of Directors for approval. The Board establishes the direction for incorporating sustainability into the strategy and, operational performance of the organisation with the goal of developing and preserving shareholders value.

Our Sustainability Governance Structure

TNB Board of Directors

TNB's Board deliberates on and approves TNB's sustainability strategy and pathway while overseeing its implementation and performance.

President/Chief Executive Officer (CEO)

Group Executive Management Committee (GEMC)

GEMC reviews and endorses the sustainability strategy prior to presentation to the Board.

Sustainability and Energy Transition Council (SETC)

The SETC is responsible for aligning sustainability visions, targets and commitments with TNB's overarching sustainability pillars, shaping energy transition outcomes that align with TNB's corporate strategy and fostering growth while creating value for the organisation.

Group Function and Business Units

- Implementation of sustainability strategy and initiatives.
- Manage sustainability related risks and opportunity.

Corporate Strategy & Sustainability Department

Ensures overall strategic planning, target setting and sustainability initiatives are tracked and reported through comprehensive performance reporting and are aligned with long-term sustainability roadmaps.

Championing Sustainability at TNB



Remuneration Policies

The Board, with the assistance of the Board Nomination and Remuneration Committee (BNRC), reviews the overall remuneration policy for Non-Executive Directors, Executive Directors and Top Management. The policy aims to attract, retain and motivate executives and Directors who will create sustainable value and generate returns for the Company. The remuneration package is structured to link rewards to corporate and individual performance, reflecting the contributions towards the Group's achievements for the year.

To ensure accountability from all management levels and to steer the Group's sustainability performance, performance objectives relating to sustainability, including ESG rating, health and safety measures, integrity health index and the growth of TNB's renewable energy capacity, are tied to the President/CEO and Top Management Key Performance Indicators (KPI). TNB aims to implement a phased approach linking remuneration to key ESG KPIs and climate-related disclosures in line with the TCFD recommendations.



FY2022 ESG KPIs for TNB Top Management

ESG Elements	TNB Top Management
1. Overall TNB ESG Rating	<ul style="list-style-type: none"> TNB President/CEO Managing Director, TNB Power Generation Sdn. Bhd. Chief Grid Officer Chief Distribution Network Officer Chief Retail Officer Chief New Energy Officer Chief Financial Officer Chief Strategy & Ventures Officer Chief Regulatory & Stakeholder Management Officer Chief People Officer Chief Procurement Officer Chief Information Officer Chief Global Business Solutions Officer Company Secretary Chief Risk Officer
2. Environment	<ul style="list-style-type: none"> TNB President/CEO Managing Director, TNB Power Generation Sdn. Bhd. Chief New Energy Officer Chief Grid Officer Chief Distribution Network Officer Chief Retail Officer
3. Social	<ul style="list-style-type: none"> Chief People Officer
4. Governance	<ul style="list-style-type: none"> TNB President/CEO Company Secretary Chief Integrity Development Officer Chief Procurement Officer Chief Internal Auditor



Our Remuneration Approach

The Board, through the BNRC, is to determine an appropriate remuneration policy that aligns remuneration with strategy to drive the long-term success of the Company and ensures that the Company may continue to attract, retain and motivate quality leaders.

The Directors' Remuneration Policy is shaped by the following underlying principles:



For more information on remuneration policies, please refer to Our Remuneration Approach sections of our IAR, page 179.



Corporate Policies and Guidelines

Group-wide policies and procedures have been approved by the Board and Management to ensure ethics and internal control principles and mechanisms are embedded in business operations. These policies and procedures are consistently reviewed for relevance and effectiveness.

Among others, the Group policies and procedures in place are:

- TNB Code of Ethics
- TNB Ethics & Integrity Policy
- TNB Confidentiality Policy
- TNB Asset Management Policy
- TNB Risk Management Policy
- TNB Personal Data Protection Policy
- TNB Diversity & Inclusion Policy
- TNB Environmental Policy
- TNB Security Policy
- TNB Investment Process Control: Updated Investment Process and Investment Risk Methodology
- TNB ICT Security Policy and ICT Codes of Practice
- TNB Limits of Authority
- TNB Safety & Health Policy
- TNB Disciplinary Procedures
- TNB Communication Policy
- TNB Group Human Resource circulars and guidelines
- TNB Procurement and Supply Chain Policy and Procedures
- TNB Group Financial Policies and Procedures

Championing Sustainability at TNB

Risk Management



TNB Risk Management Framework

The Board Risk Committee (BRC) had approved the TNB Risk Management Framework that provides a structured and consistent approach to risk management across the Group. Our Risk Management Framework, which is in line with ISO 31000:2018 Risk Management – Guidelines, is governed through the TNB risk governance documents. It serves as guidance documents for the business entities across the Group to implement and integrate risk management into its business operations for informed decision-making and to achieve objectives and targets. These risk governance documents are reviewed annually with the criteria for revision and levels of approving authority clearly stated to ensure the documents are robust, practical for implementation and reflective of the internal and external context.



Risk Governance

The TNB Risk Management Structure described in the TNB Risk Management Framework governs the risk management implementation in the Group. The oversight role is executed by the TNB Board of Directors and the BRC, whilst cross-functional risk management matters are deliberated at the Group Risk Management Working Committee (GRMWC) and Subsidiaries Risk Management Working Committee (SRMWC). Both working committees meet quarterly to ensure that the TNB Risk Management Framework is effectively implemented in business entities and sufficient resources are committed for continuous improvement and integration of risk management in business processes.

The BRC had approved the TNB 3-Year Cycle Risk Governance Plan for implementation from FY2022 to FY2024. This plan is implemented by Risk Management Department (RMD) to assist the BRC in ensuring that TNB business entities are effectively implementing the TNB Risk Management Framework and is embedded into the culture, processes and structures of the Group. The plan outlines three (3) risk governance activities, which are risk review, risk maturity assessment and desktop risk assessment. Over a span of three (3) years, the risk governance activities shall be completed for identified business entities in the Group. According to plan, RMD in collaboration with TNB business entities conducted 15 risk reviews, five (5) risk maturity assessments and eight (8) desktop risk assessments in FY2022. Recommendations for improvement were deliberated with the respective business entity to strengthen the implementation and integration of risk management in day-to-day operations and decision-making.



TNB Strategic Risks

The BRC had approved revisions to the TNB Strategic Risks in FY2022. These strategic risks are assessed in the context of the Reimagining TNB strategy and long-term objectives. The annual revision ensures that the strategic risk exposures of the Group are comprehensively assessed in view of changes in the external and internal environments and are mitigated accordingly. The TNB Strategic Risks cover risk areas related to the external context, sustainability, regulatory, market, customer, finance and capabilities.



Key Operating Risks

The BRC deliberated the key operating risks of nine (9) TNB business entities in FY2022. Based on an annual schedule, a TNB business entity tables its operational risk profile to the BRC, highlighting key risks and mitigations taken to address root causes, emerging risks related to its business and lessons learned from risk events that are communicated to employees to strengthen the risk management culture. Direction and advice from the BRC were duly noted for progressive improvements in embedding risk management principles in day-to-day operations and decision-making at the respective

business entity. Additionally, the BRC deliberated on reports of specific risk exposures in the areas of safety and security, floods, legal and compliance and data management.



TNB Risk Dashboard

The BRC deliberated the Key Risk Indicators (KRIs) that are reported in the TNB Risk Dashboard. These KRIs provide early warning of increasing risk exposures and potential risk events and are developed in alignment with the risk appetite of the BRC and Management. The BRC approved the annual revisions of the KRIs to ensure the KRIs are relevant to current business strategies and risk exposures of the Group. The status of the KRIs is reported quarterly in the TNB Risk Dashboard and reflects the risk exposures of the Group according to five (5) impact areas, which are operations, financial standing, reputation, regulatory and international investment. The quarterly reporting and monitoring of KRIs ensures that actions are taken in a timely manner when risks are outside tolerable ranges.

BOARD RISK COMMITTEE (BRC) REPORT

The BRC is assisted by the Chief Risk Officer and the RMD. It is responsible for overseeing the effectiveness and adequacy of the Group's risk management framework and ensuring that it forms part of the Group's corporate culture.



Reporting

The BRC jointly reviewed and endorsed the Statement of Risk Management and Internal Control with the Board Audit Committee, which was thereafter approved by the Board for reporting in the TNB Integrated Annual Report. The statement reports the risk management practices and internal controls implemented in the Group as well as assurances from the President/CEO and Chief Financial Officer to the Board that the Group's risk management and internal control system is operating adequately and effectively, in all material aspects. Business entities across the Group submitted two half-year risk reports to the RMD according to the TNB Risk Report Guide. Each business entity reported its risk profile, key mitigations, key risk indicators (KRIs), lessons learned from risk events and emerging risks unique to its business and RMD thereafter collated and reported the TNB Half-Year Risk Reports to Management for a holistic perspective of the Group's strategic, operational and emerging risks.



Capability Building

The BRC mandated for risk practitioners in the Group to be adequately trained and certified by recognised local or international professional bodies to ensure quality risk management practices are effectively implemented at all levels. Risk management trainings at fundamental and intermediate levels are conducted by RMD and administered by TNB Integrated Learning Solutions Sdn. Bhd. (ILSAS) to increase the risk competency of employees across the Group. In FY2022, 55 executives completed the fundamental module with 70 executives at the intermediate level. Additionally, in a collaborative effort between RMD and the business entities, six (6) risk management webinars were conducted that engaged 458 employees in total. These webinars aim to strengthen employees' risk-thinking mindset through practical applications of the TNB Risk Management and TNB Business Continuity Management frameworks.

The Risk Manager Circle, of which the RMD is secretariat, is a community of risk practitioners from across the Group with the aim of promoting capability enhancement among peers. The Circle collaborates quarterly to spearhead risk initiatives and share knowledge and feedback on effective practices and lessons learnt, drawing from their experiences in implementing risk management at respective business entities.

Championing Sustainability at TNB



Communication

The BRC continually communicates its tone from the top, emphasising the importance of effective risk management and a strong risk management culture. Before the COVID-19 outbreak, an annual risk forum was conducted in-person for that purpose. However, in FY2022, a video of BRC members was produced for the same purpose and communicated to Management and employees at relevant platforms such as management meetings and risk conferences. In 2023, BRC will continue to communicate its tone from the top through the annual risk forum. The tone from the top on risk management and its benefits was further cascaded by Management to employees via videos of each member of Management that were produced and uploaded into TNB intranet for easy viewing, downloading and sharing. In addition, five (5) risk conferences were organised by the RMD in FY2022 with total participation from approximately 466 executives and non-executives. These events were organised once restrictions were relaxed post-pandemic and the face-to-face interactions were well-received by the participants and achieved the objective driving the message on the importance of integrating risk management in daily operations and decision-making.



Business Continuity Management

The BRC deliberated the TNB Business Continuity Management (BCM) Framework and its implementation in the Group. The framework provides a structured approach in managing business continuity that enables prompt, coordinated and effective response to a crisis and maintains continuity of essential activities as well as protecting human life, assets, reputation and the environment. The framework is the focal point of reference for business entities to formulate and implement relevant business continuity strategies tailored to respective business objectives and critical functions. The BRC emphasised the importance of enhancing preparedness through drills of various scenarios and close collaboration with external stakeholders to ensure prompt and adequate response when crisis occurs. The RMD, as the Corporate BCM Secretariat, under the leadership of the TNB Corporate BCM Steering Committee, carried out three (3) drills in FY2022 with involvement from Management and support from BCM practitioners across the Group. In addition, drills to test readiness of business entities in crisis scenarios such as floods and dam safety were carried out according to plan and improvements identified from post-mortems were implemented to close gaps.

The BRC continues to diligently exercise its risk oversight responsibilities by ensuring that risk management is an integral part of strategic planning and decision-making for the achievement of the Group's strategic outcomes and long-term objectives. This statement was made in accordance with the resolution of the Board of Directors dated 20 March 2023.



For more information on Risk Management, please refer to Board Risk Committee Report section of our IAR, pages 186-188.



Upholding a Strong Sense of Integrity

In 2017, TNB was one of the first listed corporations to embark on the ISO 37001:2016 Anti-Bribery Management System (ABMS) certification. Towards achieving the certification, TNB launched the TNB Corporate Integrity Management System (TCIMS) to drive an integrity-based culture and a high level of compliance with local and international anti-bribery standards. Additionally, all employees are required to complete the three (3) Integrity Annual Mandatory Requirements:

1. Sign TNB's Integrity Pledge
2. Declare any conflicts of interest
3. Complete the Integrity E-Learning Module on an annual basis

On 15 November 2018, TNB was awarded the ISO 31001:2016 ABMS Certification from SIRIM and to further reinforce this culture, launched the TCIMS Handbook. TNB has a well thought out set of Shared Values made publicly available and communicated to the workforce. First among the TNB Shared Values is Integrity. The three (3) behaviours of Integrity are:



In 2022, TNB reviewed the four (4) main policies to reflect the current policies, circulars and practices. The reviewed policies are as follows:

- (i) Anti-Bribery Policy.
- (ii) Gifts, Hospitality and Related Benefits Policy.
- (iii) Conflict of Interest Policy.
- (iv) Whistleblowing Policy.

During the Financial Year under review, a surveillance audit by SIRIM was conducted involving the Procurement & Supply Chain Division, the Retail Division and two (2) wholly-owned subsidiaries of TNB, namely Tenaga Cable Industries Sdn. Bhd. (TCI) and TNB Repair and Maintenance Sdn. Bhd. (TNB REMACO) where all the entities successfully retained the ISO 37001:2016 Anti-Bribery Management System certification by SIRIM Recertification Audit for ISO 37001:2016 ABMS was conducted for TNB Fuel Sdn. Bhd (TNBF) and Malaysia Transformer Manufacturing Sdn. Bhd. (MTM). As part of the certification, we conducted 10 Fraud and bribery risk workshops and three (3) sessions of Internal Auditors Training.

One of TNB subsidiaries, TNB Integrated Learning Solution Sdn. Bhd. (ILSAS) was also certified with ISO 37001 Anti-Bribery Management System by SIRIM. In 2022, TNB signed a Memorandum of Understanding (MoU) with the Malaysian Anti-Corruption Commission (MACC) and signed the Corruption Free Pledge (*Ikrar Bebas Rasuah*) at our headquarters, which was followed by similar ceremonies in seven (7) other states. This pledge emphasises the commitment made by the leadership of TNB and its staff including contractors voluntarily in their capacity as an organisation to ensure that each of us will be more responsible in carrying out our duties and curb corruption. We also collaborated with MACC in 2022 to conduct six (6) sessions of Anti-Corruption Programmes and activities.

TNB also conducted the Integrity Health Survey (IHI) in 2022 through UNITEN Research & Development Sdn. Bhd. In the survey, TNB received a 79.36% score. Based on this score, TNB was categorised as world class best practices according to the Global Ethics & Integrity Benchmarks 2020 by Joan Elise Dubinsky and Alan Richter. TNB has also established a systematic approach through the Annual Training and Communication Plan TCP for the areas of improvement identified through the Integrity Health Survey conducted in 2021. As part of our efforts to combat corruption, TNB established a comprehensive TCP that includes 18 activities.

Championing Sustainability at TNB

TNB conducts annual ethical standard training for all their employees, contractors and vendors based on the TCP. The progress is reported to the Board Integrity Committee (BIC) a quarterly basis. The TCP is designed to inculcate high sense of integrity among employees by carrying out integrity related training. This includes having an Integrity e-learning module for vendors.

The TCP was also developed to close the gaps resulting from the IHI survey conducted by Integrity Department. This includes areas related to ethics and anti-corruption. Additionally, 12 Board of Directors and 14,238 employees have received training on ethics and anti-corruption, including 546 from Senior Management. A total of 3,548 active vendors that have been awarded with TNB contracts also completed the Integrity e-learning module.



Code of Ethics

The Board of Directors is guided by a high standard of ethical conduct in accordance with the Code of Ethics for Company Directors as established by the Companies Commission of Malaysia. Each Non-Executive Director is supplied with the Non-Executive Directors' Handbook as reference for their professional responsibilities, as well as the terms and conditions of their service. The Non-Executive Directors' Handbook is updated when needed to reflect any changes to the applicable rules and regulations as well as in the policies/procedures that govern the conduct of the Directors.

TNB has a Code of Ethics to govern the conduct of its employees. The provisions set out in the Code of Ethics ensure compliance with laws and regulations, sound employment practices, confidentiality and privacy. It also includes provisions on conflicts of interest, giving and accepting business courtesies and the protection and proper use of TNB's assets and resources. TNB's Code of Ethics also defines how TNB relates to its shareholders, employees, customers, suppliers and the communities in which it operates. It includes TNB's general principles on business integrity. All employees are expected to conduct business in accordance with the applicable laws, rules and regulations and in a manner that enhances and protects the reputation of TNB.

The Procurement & Supply Chain Policy and Procedures provides a set of general policy and procedures as guidance in executing procurement within TNB. The Policy and Procedures enables TNB to obtain the best value in procurement, adopt leading business practices, advance TNB's business priorities, add value to customers and uphold good corporate governance. TNB's Code of Ethics and Procurement Code of Conduct are available in their respective sections of the Company's website at www.tnb.com.my.



Conflicts of Interest

To foster ethical and independent decision-making, the Company requires Directors with any direct or indirect interest in a proposal or transaction being considered by the Board or its Committees to declare that interest and recuse himself/herself from the deliberations. The affected Director will take no part in the decision-making. As initiated by the Procurement & Supply Chain Division in collaboration with the Integrity Department to further strengthen our integrity and transparency in dealing with the Company's procurement activities, at each Board meeting, each Director shall sign an Integrity Pact, declaring his/her interest involving procurement/matters to be discussed at the meeting, to prevent corruption, conflict of interest and to maintain confidentiality of information.



Whistleblowing Policy

The whistleblowing policy embodies TNB's commitment to maintaining an open working environment in which employees, contractors and members of the public are able to report instances of unethical, unlawful or inappropriate conduct on a confidential basis without any fear of intimidation or reprisal. The procedure to report suspicious and unethical conduct is outlined in the policy. An independent investigation team investigates all reported concerns and, where applicable, provides feedback regarding the investigation's outcome. The objectives of the whistleblowing policy are as follows:

- To detect and address unacceptable conduct
- To provide employees and contractors with a supportive working environment in which they feel able to raise issues of legitimate concern to them and to TNB
- To protect people who report unacceptable conduct in good faith

Reporting channels:

- Online Whistleblowing Information System (WBIS): <https://wbis.tnb.com.my>
- Whistleblowing toll free number: 1-800-888-862
- Email to one (1) of the designated officers by using the Whistleblowing Complaint Form, available in Malay & English:

Name	Email Address
Ong Ai Lin Senior Independent Non-Executive Director	ongailin.integrity@tnb.com.my
Kalivann Palanivelu Chief Integrity Development Officer	kalivann.integrity@tnb.com.my
Hasbah binti Hasbullah Senior Manager, Integrity Department	hasbahh.integrity@tnb.com.my



Anti-Bribery Policy

TNB aims to state its position on bribery and related matters and to establish key pillars in its structure to protect the Company against any form of bribery. The zero-tolerance rule towards bribery and corruption continues to be implemented. Bribery in all its forms related to TNB's activities is prohibited. It is the responsibility of personnel at all levels to act with integrity. TNB holds a 'No Gifts' policy, although certain exceptions are allowed. Integrity Pledges must be signed by personnel on a regular basis, as well as a conflict-of-interest declaration. Business associates acting on behalf of the Company are managed carefully to properly reflect TNB's values. Reporting of misconduct by personnel or third parties is expected, with protection provided for all disclosers acting in good faith. TNB is committed to enforcing its position, with the Integrity Department taking on this role. The TCIMS will be assessed and updated on a regular basis to ensure its effectiveness is maintained.

Moving forward, we intend to introduce our Code of Business Ethics (CoBE) and Organisational Anti-Corruption Plan (OACP). To further reinforce the institutionalisation of integrity in TNB, our Management has incorporated the Integrity Health Index (IHI) as part of its Key Performance Indicator in FY2022. In the internal survey conducted to evaluate TNB's integrity practices through IHI, which saw a high level of participation from 19,989 staff. The results of the survey were impressive, with TNB achieving a score of 79.36%, indicating that the organisation is committed to maintaining the highest ethical standards in its operations. The score reflects the effectiveness of TNB's policies and practices in promoting ethical behaviour and ensuring compliance with regulations and standards.

Championing Sustainability at TNB

Delivering Sustainable Value

GRI 2-29

Engaging our Stakeholders

We build meaningful relationships with our stakeholders and appreciate that each of them plays a vital role in charting our long-term sustainability direction and success. Our interactions seek to obtain feedback and understand emerging interest and concerns of our stakeholders which translates into an action plan for TNB, thus making them an integral part of our business model.

Our Stakeholder Engagement Approach:

Strategic alignment with Government agenda and future-proof policies and regulations

Develop the capability of our people and communities to inculcate a high performing culture and increase the level of energy literacy

Create excellent engagement experiences and addressing stakeholder interest or concerns

Frequency of engagement:

A

Annually

AT

All the time

Q

Quarterly

AN

As needed

OG

Ongoing

BA

Bi-annually

D

Daily

We are dedicated to building strong relationships with key stakeholder groups. Through meaningful interactions with our stakeholders, we can leverage their insights and address any pressing emerging interests or concerns, keeping us focused on key material matters. Ultimately, this will translate into the strategic management of sustainability in delivering long-term value for our stakeholders.

CUSTOMERS:

Our customers comprise residential and non-residential segments. The non-residential or business customers come from the commercial, industrial customer segments, including Government, Large Businesses, MSMEs (Micro, Small and Medium Enterprises).

Engagement Platform	Engagement Frequency
Customer service outlets.	AT
Call centre.	AT
myTNB mobile application and online portal.	AT
Customer surveys.	AT
Social media.	AT
Roadshows.	AN
Campaigns.	AN

Areas of Interest or Concern

1. New technologies (e.g. implementation of the smart meter and its offerings, smart solutions, solar solutions and platform solutions).
2. Customer experience and service delivery.
3. Accessible, affordable and reliable supply of electricity.
4. Regulated & non-regulated innovative solutions.
5. Customer education on energy literacy.
6. Increasing customer take-up rates on green/sustainable solutions.

Our Response

- Sustainable Infrastructure and Ecosystems, pages 37-40.
- Customer Centricity, pages 43-46.
- Contributing to Community Development, pages 98-109.

GOVERNMENT AND REGULATORS:

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

Engagement Platform	Engagement Frequency
Meetings and briefings.	OG
Site visits.	AN
Roundtable sessions.	AN
One-to-one engagements.	OG
Outreach programmes.	OG
Summits/conferences.	A
Feedback Session.	AN A

Areas of Interest or Concern

1. Regulatory and operational compliance.
2. Changes in the regulatory framework and electricity supply industry.
3. National Disaster Management (Flood, Dam Safety Management) and cybersecurity management.
4. Nation-building initiatives, including community and capability development.
5. Energy Trilemma (Energy Security, Energy Affordability, Energy Sustainability).
6. ESG initiatives.
7. *Rakyat* well-being, targeted subsidies, stimulate economic growth through green energy and create job opportunities.
8. TNB's role as a Government Linked Company (GLC) in making Malaysia a developed nation.
9. Local Bumiputera Vendor Development Programme.
10. Implementation of *Projek Internet Luar Bandar*.

Our Response

- Strong Leadership and Responsible Governance, pages 14-18.
- Sustainable Infrastructure and Ecosystems, pages 37-40.
- Minimising Environmental Impacts, pages 70-77.
- Contributing to Community Development, pages 98-109.

Championing Sustainability at TNB

Frequency of engagement:

A

Annually

AT

All the time

Q

Quarterly

AN

As needed

OG

Ongoing

BA

Bi-annually

D

Daily

INVESTORS:

Institutional and retail investors, analysts and potential investors with interest.

Engagement Platform	Engagement Frequency
Quarterly and Full Year Financial Results Announcements.	Q
Engagement sessions with the investment community through one-on-one/group meetings.	OG
Investor conferences and Non-Deal Roadshows.	A
Annual General Meeting.	A
TNB corporate website's Investor Relations section.	AN
Bursa filings and Press Releases.	AN
Annual Integrated and Sustainability Reports.	A
Email updates to investment community.	AN

Areas of Interest or Concern

1. Business strategy and performance.
2. Regulatory risk due to high fuel cost environment.
3. Environmental, Social, and Governance (ESG) and Energy Transition (ET) Plan.
4. Financial sustainability and returns.
5. Growth catalyst.

Our Response

- Sustainable Infrastructure and Ecosystems, pages 37-40.
- Customer Centricity, pages 43-46.
- Minimising Environmental Impacts, pages 70-77.
- Our response to Climate Change, pages 49-67.
- Employment Management and Growth, pages 79-89.
- Emphasis on Health, Safety and Well-being, pages 90-95.

EMPLOYEES:

Our 34,699 full-time employees throughout TNB Group. Only full-time employees, excluding contractors.

Engagement Platform	Engagement Frequency
Townhalls.	OG
<i>Turun padang</i> , brown-bag sessions and other outreach programmes.	OG
Online portal (intranet), newsletters, emails and TV.	OG
TNB Employee surveys.	A
One-to-one engagements (online-based).	OG
Social media.	AN
Corporate Social Responsibility (CSR) events.	AN
Webinars.	AT

Areas of Interest or Concern

1. Performance, rewards, and benefits.
2. Health and safety of employees.
3. Employee well-being and workplace culture.
4. Talent and skills development.
5. Employee satisfaction.
6. TNB's strategies and initiatives.

Our Response

- Employment Management and Growth, pages 79-89.
- Emphasis on Health, Safety and Well-being, pages 90-95.
- Contributing to Community Development, pages 98-109.

TRADE UNIONS/ASSOCIATIONS:

Three (3) registered unions and two (2) workers associations that cover all categories of employees.

Engagement Platform	Engagement Frequency
Joint Consultative Council (JCC).	AN
Negotiations for Collective Agreements (CA).	AN
Syndication & engagements.	AN

Areas of Interest or Concern

1. Mitigation & Resolution of issues.
2. Employee well-being.
3. Employee engagement regarding strategies and initiatives.
4. Impact of new policies or policy revision to employees.

Our Response

- Employment Management and Growth, pages 79-89.
- Emphasis on Health, Safety and Well-being, pages 90-95.

Championing Sustainability at TNB

Frequency of engagement:

A

Annually

AT

All the time

Q

Quarterly

AN

As needed

OG

Ongoing

BA

Bi-annually

D

Daily

VENDORS:

3,299 active contractors and suppliers.

Engagement Platform	Engagement Frequency
Engagement Sessions with Suppliers and Contractors.	AN
Road Tour Dialogues.	AN
Vendor Training & Awareness.	AN
Joint Operation Centre.	AN

Areas of Interest or Concern

1. Industry support for business growth through technology and solutions.
2. Training and capability development.
3. Potential health and safety impacts.
4. Procurement processes.
5. Fraud and bribery awareness.
6. New business opportunities and future developments.

Our Response

- Sustainable Infrastructure and Ecosystems, pages 37-40.
- Emphasis on Health, Safety and Well-being, pages 90-95.

COMMUNITIES:

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

Engagement Platform	Engagement Frequency
Outreach programmes.	A AN
CSR events.	AN
Townhalls.	AN
Dialogue sessions.	AN
Sporting events.	AN

Areas of Interest or Concern

1. Potential public facilities and basic infrastructure.
2. Full compliance with the legal and regulatory requirements.
3. Coordination of drill, ERP, crisis.
4. Energy literacy.
5. Accessible and reliable supply of electricity.
6. Efficiency of services.

Our Response

- Customer Centricity, pages 43-46.
- Minimising Environmental Impacts, pages 70-77.
- Contributing to Community Development, pages 98-109.

NON-GOVERNMENTAL ORGANISATIONS (NGOs) AND ASSOCIATIONS:

Consumer associations, think tank groups, environmental groups, chambers of commerce and international associations, for example the Heads of ASEAN Power Utilities/Authorities (HAPUA) and Association of the Electricity Supply Industry of East Asia and Western Pacific (AESIEAP).

Engagement Platform	Engagement Frequency
One-to-one engagements.	AN
Outreach programmes.	AN
Seminars.	AN
Collaboration sessions.	AN
Social media.	AN
Meetings and knowledge sharing sessions.	BA
One-to-one engagement.	AN A

Areas of Interest or Concern

1. Affordable tariffs.
2. Innovation in technology and RE.
3. Quality of service.
4. Supply reliability.
5. Current and planned ESG efforts.
6. Energy literacy.
7. Environment & Occupational safety/health.
8. Full compliance with the legal and regulatory requirements.

Our Response

- Sustainable Infrastructure and Ecosystems, pages 37-40.
- Minimising Environmental Impacts, pages 70-77.

Championing Sustainability at TNB

What Matters To Our Stakeholders

GRI 3-1 | 3-2 |

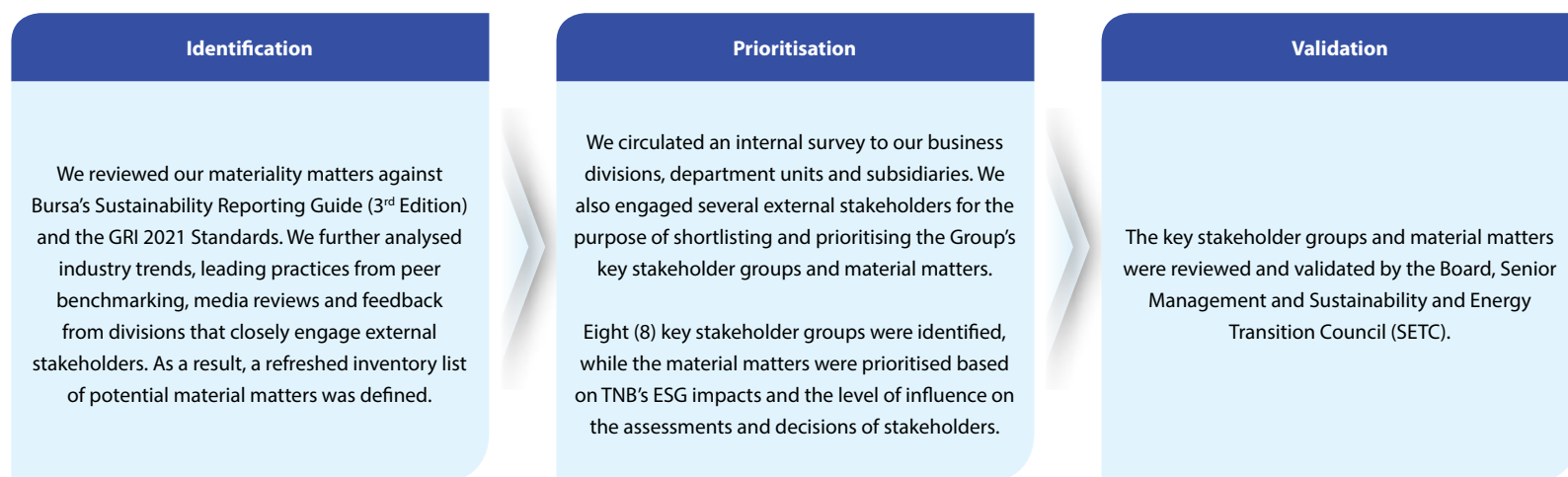
Our sustainability agenda focuses on matters outlined in our materiality matrix that have been integrated into our strategy for value creation and growth. We envisage that the alignment of our strategic priorities will enable us to expand the value we create for our stakeholders and the nation. Every two (2) years, we conduct a comprehensive analysis to review the sustainability issues and groups of stakeholders relevant to the Group to ensure that any significant changes in the internal and external context are taken into consideration. This enables us to stay ahead of emerging trends, changing customer demands and other operational challenges.

A critical component of this process is stakeholder engagement, which enables us to gain a better understanding of the issues that matter most to us and which can impact our ability to create value over the short, medium or long-term. Stakeholder engagement also helps us to not only determine our material matters, but also to prioritise them based on their significance.

By engaging with stakeholders on an ongoing basis, we can monitor changes in stakeholder expectations and adapt our strategies and practices accordingly. Finally, by involving stakeholders in the decision-making process, we also build trust and credibility and ensure that our actions are aligned with their needs and expectations.

TNB's materiality matters reflect the key environmental, social, and governance (ESG) topics. This year, we conducted our materiality assessment survey by involving key internal and external stakeholders. The materiality process adopted was aligned with the GRI 2021 Standard and Bursa Sustainability Reporting Guide (3rd Edition) and additionally, the material matters were benchmarked against industry peers.

Our approach for materiality assessment process as follows:



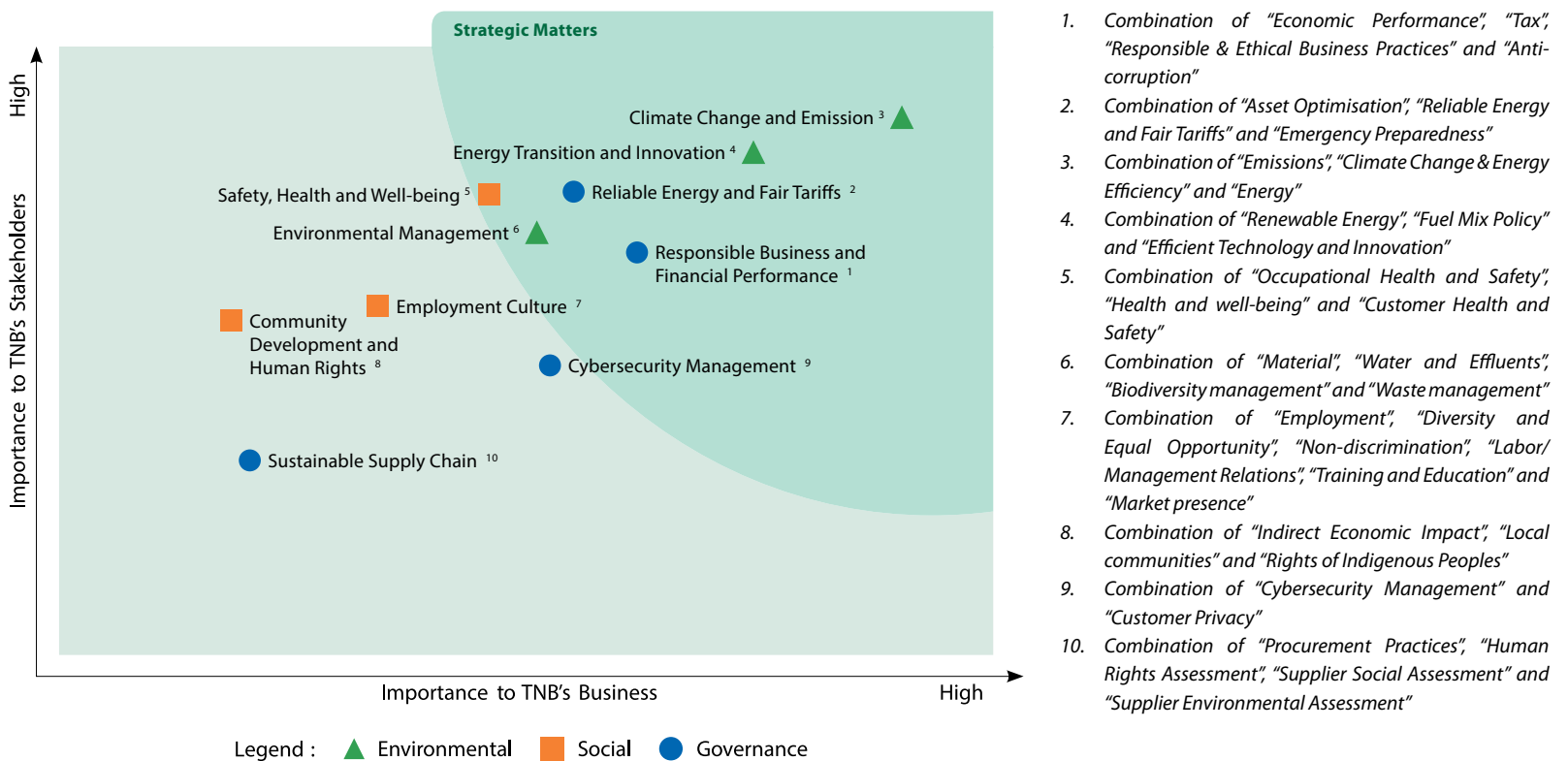
For FY2022, we integrated our material matters based on their relativity. This effectively reduced the number of material matters from eighteen (18) in FY2021 to ten (10) in 2022, with the objective to provide better focus and scoping for the matters. Summary of the key updates are:

- This year we have made a distinction between material matters that are fundamental for us, but shared across multiple business sectors, and strategic matters that have consequences for the Group's transformation and its business model.
- Climate Change and Emission material topic was shifted to the highest priority because its importance to stakeholders has increased.
- Environmental-related matters remain as a key strategic focus for TNB.



Championing Sustainability at TNB

TNB FY2022 Material Matters Matrix is presented below:



We have linked 10 prioritised material matters for FY2022 to our corporate strategy and SDGs. The table below demonstrates how our business strategy and initiatives contribute to the SDG target which is mapped to our material topics.

Legend:

10 Strategic Risks (SR)

- | | | | | |
|--|--|--|---|--|
| SR1 Catastrophic disruptions from external factors | SR2 Inability to keep pace with ESG developments and transitions globally | SR3 Unfavourable energy transition and climate change policies and regulations | SR4 Unfavourable ESI regulatory implementation and outcome | SR5 Unable to be competitive in non-regulated business (international & domestic) |
| SR6 Inability to remain the electricity provider of choice by customers | SR7 Ineffective capital allocation to maximise value creation | SR8 Gaps in workforce capabilities to deliver RT strategy and sustainability aspiration | SR9 Failure to ingrain TNB culture in employees' behaviour in supporting RT strategy and sustainability aspiration | SR10 Regulatory uncertainty |

RT Pillar (RTP)

- | | | | |
|---------------------------|--------------------|----------------------|-------------------------|
| Future Generation Sources | Grid of the Future | Winning the Customer | Future Proof Regulation |
|---------------------------|--------------------|----------------------|-------------------------|

RT Enabler (RTE)

- | | | | |
|---------------------------------------|--------------------------------------|----------------------------|--|
| Capital Allocation and Value Creation | Corporate and Organisation Structure | Digital and Data Analytics | Culture, Capabilities and Performance Management |
|---------------------------------------|--------------------------------------|----------------------------|--|

Championing Sustainability at TNB

Environmental:

Climate Change and Environment.

- Support transition to a low-carbon economy.
- Minimise environmental impact.

Material Matter

Energy Transition and Innovation

Contributing to the national RE target and driving innovation to anticipate changing trends and build business resilience.



Environmental Management

Responsible consumption and effective management of environmental impacts.



Climate Change and Emission

Efforts to address climate change impacts and manage greenhouse gas (GHG) emissions.



Social:

Engaging Our People and Cultivating Talent.

- Foster a favourable working environment that boosts employee morale and development.
- Protect the safety, health and well-being of our employees.

Creating Shared Values with Communities.

- Enrich the lives of communities by driving socioeconomic upliftment.

Material Matter

Safety, Health and Well-being

Promoting a working culture that upholds high standards of occupational health and safety, and protects employee welfare.



Employment Culture

Creating a diverse and inclusive culture while closely engaging with our employees.



Community Development and Human Rights

Channelling investments to the community and educational programmes to advance positive socio economic impacts.



Governance:

Responsible Governance and Strengthening Business Resilience.

- Provide reliable and efficient energy for customers.
- Supply electricity domestically and internationally.
- Reinforce ethical and safe business culture.

Material Matter

Responsible Business and Financial Performance

Ensuring robust corporate governance in TNB to achieve business and financial growth.



Reliable Energy and Fair Tariffs

Ensuring the availability, affordability and reliability of electricity in the short, medium and long-term, including in the event of emergencies and crises.



Cybersecurity Management

Safeguarding digital systems and customer privacy from cybersecurity risks, threats and attacks by ensuring data security.



Sustainable Supply Chain

Engaging in sustainable supply chain practices and strengthening the local energy ecosystem.



Championing Sustainability at TNB

Linking Performance to the Global Agenda

TNB prioritises SDGs and provides performance goals contributions through investments, solutions and business practices. Eight (8) of the 17 goals guide our sustainability agenda: SDG 3, “Good Health and Well-being”; SDG 4, “Quality Education”; SDG 7, “Affordable and Clean Energy”; SDG 8, “Decent Work and Economic Growth”; SDG 9, “Industry, Innovation and Infrastructure”; SDG 10, “Reduced Inequalities”; SDG 13, “Climate Action”; SDG 17, “Partnerships for the Goals”.

 <p>We ensure the safety and long-term well-being of our workforce. Pursuing this goal allows us to focus our efforts on preventing the loss of lives and ensure that our people are well taken care of whilst working at TNB. During the unprecedented global pandemic this past year, we have taken steps to reduce the spread of infection at our operations while ‘keeping the lights on’.</p>	 <p>We believe that quality education is the key to socioeconomic upliftment, and it should be equitable to all. Thus, our educational development programmes focus on providing opportunities to underprivileged communities in hope of transforming lives.</p>	 <p>Achieving this goal will contribute to economic, environmental, social development and well-being. We are focused on this goal by prioritising energy efficiency, clean energy technology and related infrastructure.</p>	 <p>We promote sustainable business performance and create employment opportunities. This goes well beyond legal compliance or upholding our reputation, as we also strongly believe that this is the backbone of positive business performances across our value chain.</p>
 <p>We recognise the importance of having in place a strong, robust infrastructure that is flexible enough to transition into the new energy landscape while fostering innovation. As part of our commitment to achieving this, we are ramping up our R&D efforts, investing in renewable energy and green technologies, and accelerating digitalisation to mitigate climate change and adapt to new market directions.</p>	 <p>We strongly believe in an equal society and aim to provide support to disadvantaged and impoverished communities through our corporate social responsibility programmes as well as expanding our grid infrastructure to allow equitable access to electricity. We also strive to provide equal opportunity in recruitment and career development for all our employees.</p>	 <p>We support Malaysia’s commitment to becoming a carbon-neutral nation by as early as 2050, recognising the increasing importance of mitigating and adapting to climate change. In this regard, we seek to reduce our Greenhouse Gas (GHG) emission intensity and the environmental impact resulting from our operations.</p>	 <p>We will continue to forge partnerships with key stakeholders including government agencies, industry experts, businesses and NGOs, both within and outside the energy sector. This is to meet future electricity demands in a sustainable manner, as well as to give back to the community.</p>

We align our metrics, targets and key initiatives for each material matter with the global agenda. The table below showcases our performance thus far and defines our future focus areas for our long-term sustainability commitment.

● Environment ● Social ● Governance

Legend:

 Responsible Business and Financial Performance	 Reliable Energy and Fair Tariffs	 Climate Change and Emission	 Energy Transition and Innovation	 Safety, Health and Well-being
 Employment Culture	 Community Development and Human Rights	 Cybersecurity Management	 Environmental Management	 Sustainable Supply Chain

Championing Sustainability at TNB

3

GOOD HEALTH
AND WELL-BEING

Good Health and Well-being

We promote healthy living and well-being of our people.

- **Target 3.6:** Reduce road injuries and deaths.
- **Target 3.8:** Improve health coverage.

TNB Material Matters



TNB's Metrics and Targets

- Zero fatalities.

FY2022 Performance

- Motor vehicle fatalities : 0 fatalities.
- Motor vehicle incident reduction : -40% compared to FY2021.

Focus beyond FY2023

- Continue to enhance our HSE standards and procedure to reduce fatalities and injuries.
- Continue to create safe working environment.

4

QUALITY
EDUCATION

Quality Education

We provide quality education and financial support to the community.

- **Target 4.3:** Equal access to affordable technical, vocational and higher education.
- **Target 4.4:** Enhance youth and adult capabilities to increase employment.

TNB Material Matters



TNB's Metrics and Targets

- Number of students and trainees in TNB education and learning centres.
- Expenditure on scholarships and convertible loans.

FY2022 Performance

- Number of students enrolled in UNITEN: 6,179 students.
- Number of scholarship and convertible loans recipients: 7,192 students.
- Expenditure on scholarships and convertible loans: RM107.81 mil.
- Number of trainees trained in TNB education and learning centres by ILSAS: 50,912 students.

Focus beyond FY2023

- Continue to provide financial and non-financial support to develop future talent.
- Enhance our education facilities through digitalisation.

7

AFFORDABLE AND
CLEAN ENERGY

Affordable and Clean Energy

We prioritise energy efficiency, clean energy technology and related infrastructure.

- **Target 7.1:** Access to modern energy.
- **Target 7.2:** Increase share of renewable energy in energy mix.
- **Target 7.3:** Improvement in energy efficiency.

TNB Material Matters



TNB's Metrics and Targets

- Increase RE capacity to 7,000 MW by 2030.
- Maintain System Average Interruption Duration Index (SAIDI) under 50 minutes/customer/year through SAIDI 50 initiative.
- Achieve 85% on the Smart Grid Index by 2025.

FY2022 Performance

- Total renewable energy generation capacity: 3,780 MW.
- SAIDI in Peninsular Malaysia: 45.06 minutes/customer/year.
- Smart Grid Index: 71.4%.

Focus beyond FY2023

- Participate actively in the development of IBR's Regulatory Period 4 (RP4) to address the energy trilemma effectively.
- Aspire to grow TNB's domestic and international RE assets.
- Enhance and modernise our asset and infrastructure to support energy transition.
- Adopt and promote energy efficiency throughout our value chain.

Championing Sustainability at TNB



Decent Work and Economic Growth

We promote sustainable business performance and create employment opportunities.

- **Target 8.3:** Promote policies to support job creation and growing enterprises.
- **Target 8.5:** Full employment and decent work with equal pay.
- **Target 8.6:** Promote youth employment, education and training.
- **Target 8.8:** Protect labour rights and promote safe working environments.

TNB Material Matters



TNB's Metrics and Targets

- Zero fatalities.
- LTIFR <1.0.
- Tax and *zakat* contributions.
- TNB Reskilling Malaysia Programme.
- PROTÉGÉ training.

FY2022 Performance

- Fatalities: 0 (TNB employees), 2 (TNB contractors).
- LTIFR: 0.82.
- Group Tax and *zakat* contribution (excluding deferred taxation): RM1,469 million.
- 5,827 TNB Reskilling Malaysia trainees successfully matched with jobs.
- PROTÉGÉ trainees: 547 trainees.

Focus beyond FY2023

- Sustain strong revenue growth that subsequently leads to high tax and *zakat* contributions.
- Prioritise training and capabilities building to elevate skill development.
- Continuing both financial and non-financial support in enhancing the quality of education for all.



Industry, Innovation and Infrastructure

We build infrastructure, and develop innovation to accommodate socioeconomic growth and low-carbon transition of the nation.

- **Target 9.1:** Develop sustainable, resilient and inclusive infrastructures.
- **Target 9.5:** Enhance research and upgrade industrial technologies.

TNB Material Matters



TNB's Metrics and Targets

- Install 9 million smart meters across Peninsular Malaysia in phases under Advanced Metering Infrastructure (AMI) initiative by 2029.
- Allocate 3.5% of our PAT for our research and development (R&D) activities.

FY2022 Performance

- Smart meters installed in FY2022: 838,830 meters.
- Percentage of PAT for R&D investment: 1%.

Focus beyond FY2023

- Continue to fund R&D into new emerging technologies that support our current business and future business areas including decarbonisation, RE, energy storage, electric mobility, smart cities and digitalisation.
- TNB exploring new business models for energy storage solutions.
- Provide investment to uplift the EV development and ecosystem in Malaysia.



Reduced Inequalities

We combat inequality regardless of gender, race, religious beliefs or economic status within our organisation.

- **Target 10.2:** Promote universal social, economic and political inclusion.

TNB Material Matters



TNB's Metrics and Targets

- Increase the percentage of women in senior management roles.

FY2022 Performance

- Women in senior management roles: 24.3% (Increased from FY2021: 23.1%).

Focus beyond FY2023

- Continues to empower women's employability and presence management level through talent and training programmes.



Championing Sustainability at TNB

13

Climate Action

We support Malaysia's commitment to the Paris Agreement and seek to mitigate our GHG emissions and environmental impacts, as well as adapt to climate risks.

- **Target 13.2:** Integrate climate change measures into national policies, strategies and planning.
- **Target 13.3:** Build knowledge and capacity to reduce climate change impact.

TNB Material Matters



TNB's Metrics and Targets

- 35% emissions intensity reduction by 2035, from base year FY2020.
- Halve coal generation capacity by 2035.
- Net zero emissions & coal-free by 2050.
- Reskill and upskill TNB's employees to support TNB's sustainability plan and energy transition.

FY2022 Performance

- GHG emissions intensity reduction: Achieved 2% reduction from baseline in 2020.
- GHG emissions intensity: 0.55 million tCO₂e/MWh.
- Participants in academies of business entities: 69 participants in GenCo Academy, 25 participants in Grid Academy, 32 participants in Distribution Network (DN) Academy, 3,214 participants in Retail Academy and 30 participants in HR Academy.

Focus beyond FY2023

- Implement ET plan and monitor performance.
- Reskill and upskill TNB employees to support energy transition plan that contribute to climate change mitigation and adaptation.
- Account for Scope 3 GHG emissions.

17

Partnerships for the Goals

We continue to form partnerships with key stakeholders with the objectives to meet future industry demands and contribute positively to the environment and the community.

- **Target 17.17:** Encourage effective partnerships.

TNB Material Matters



TNB's Metrics and Targets

- Commit 1% of our PAT to community programmes.
- Increase expenditure on community development programmes.
- Establish a wide range of partnerships to promote accessible and clean energy as well as uplift the communities.

FY2022 Performance

- Percentage of PAT spent on community programmes: 0.34% of PAT.
- Total contribution to community development programmes: RM12.20 million.
- Established several partnerships in FY2022.

Please refer to pages 29-30 for TNB's list of partnerships and collaborations.

Focus beyond FY2023

- Explore innovative and new technologies through strategic partnerships with public and private entities to accelerate energy transition.
- Strengthening collaborations for community development and environmental management.



Championing Sustainability at TNB

Feature Story 1

Strengthening and Promoting Strategic Partnerships

Partnerships unlock growth opportunities in high-value market segments which are beyond the traditional electric utility value chain. In driving innovative solutions towards decarbonisation and energy transition in Malaysia, TNB has established strategic partnerships and collaboration with both public and private entities, especially with key players in the energy sector industry.

TNB Fuel Services Sdn. Bhd. (TNBF) established a strategic partnership by signing a three-year memorandum of understanding (MoU) with three (3) local companies, MNA Fuel Services Sdn. Bhd., Itochu (M) Sdn. Bhd. and Cement Industries of Malaysia Bhd. This entails a study on the development of biomass pellets produced from bamboo plants for use in power generation activities, research of ammonia supply chain as a new source of fuel and collaboration in various development areas including the supply of fuel, alternative raw materials, research and technical skills sharing, with the partners respectively.



FY2022 Highlight



TNB is stepping up its responsible energy transition agenda through collaborative partnerships to promote the development of innovative solutions. The table below outlines TNB's partnership and collaboration in 2022. Moving forward, we will continue to explore opportunities for strategic partnerships with potential in creating growth and value for our stakeholders.

Championing Sustainability at TNB

Strategic partnership and collaboration	Description
TNB and PETRONAS partnership for green hydrogen and Carbon Capture and Storage (CCS)	TNB and PETRONAS have signed a MoU to explore the development of new green technologies including green hydrogen ecosystem and CCS.
TNB and Ipoh City Council (MBI) in MoU to Help Realise Ipoh as A Low Carbon Smart City and “Bestari Sejahtera” by 2030	<p>TNB is committed to helping Ipoh to achieve its aspiration of becoming a smart, livable, resilient and sustainable city by 2030. In February 2022, TNB established a strategic partnership with the MBI to supply energy efficiency products and services as well as a Supply Agreement for Renewable Energy (SARE) with TNB's wholly-owned subsidiary, GSPARX Sdn. Bhd. (GSPARX) for RE solutions to promote sustainable and green living.</p> <p>This partnership will drive the installation of photovoltaic solar systems, smart LED street lighting, energy performance and monitoring system, electric vehicle charging ecosystem and smart meters, which are key initiatives in establishing Ipoh as a Smart City.</p>
TNB and Gamuda Land partners in the delivery of Malaysia's first solar powered electron stations	TNB entered into a strategic partnership with Gamuda Land in October 2022 to build two (2) TNB Electron Stations for electric vehicle charging at Gamuda Land's property development projects in Selangor. This will be the first TNB Electron stations with multiple chargers in one site and will be situated in Gamuda Cove in Southern Klang Valley and Gamuda Gardens in Northern Klang Valley. The stations are targeted to serve local communities as well as patrons to the theme parks and recreational areas within Gamuda Land developments.
TNB partners with S P Setia Bhd (S P Setia) to provide smart energy and renewable energy solutions	TNB is partnering with S P Setia to provide smart energy and renewable energy (RE) solutions for future property developments. The MoU was signed to enable the installation of rooftop solar PV system as well as ensuring properties are future-ready to support the installation of EV chargers and battery solutions in S P Setia's upcoming residential and commercial development projects.
TNB Power Generation Company Sdn. Bhd. (TNB GenCo), IHI Corporation and PETRONAS collaborate in Co-Firing Technology for Carbon-Free Ammonia	TNB GenCo, IHI and PETRONAS are collaborating on Co-Firing Technology for Carbon-Free Ammonia. The MoU includes a feasibility study on ammonia co-combustion in coal-fired power generation systems as part of initiatives to decarbonise the country's power sector. The scope of the study covers exploring the technology of co-firing ammonia at coal power plants in Malaysia and evaluating the technology and economics across the entire ammonia supply chain which includes green ammonia production from renewable energy sources and blue ammonia from natural gas.
TNB GenCo, Malaysia Solar Resources and Sungrow signed MoU for floating solar feasibility study	Conduct a feasibility study on the floating solar potential at hydro dams and opportunity to collaborate as a local floaters manufacturer.
TNB GenCo collaborated with Malaysian Space Agency (MYSA) to develop remote sensing-based application using a spatial database	This MoU aims to strengthen the use of remote sensing technology in the management of TNB's hydroelectric catchment areas in Malaysia. Through this strategic partnership, MYSA has developed and operated the TNB Hydro Dam Catchment Area Monitoring System (THyCAS) since 2020. The THyCAS system uses space technology (GPS) and other related technologies (GIS and ICT) which has been deployed in Perak, Kelantan, Pahang and Terengganu. With this system in place, the planning, management and monitoring of TNB's hydro dam catchment activities can be implemented more efficiently, effectively and systematically.
GSPARX Sdn. Bhd. collaborates with AEON CO. (M) BHD. to install building integrated photovoltaic (BIPV) carpark	AEON CO. (M) BHD. has experienced a successful reduction of up to RM185,000 monthly in electricity bills since January 2022, thanks to the implementation of Solar PV by GSPARX which is a wholly-owned subsidiary of TNB. GSPARX offers expert services of consultation, installation, maintenance and monitoring which guarantees optimal functioning of the solar PV system. This solution enables businesses to save 40-50% on their electricity bills without any upfront costs.
TNB collaborates with NUR Power Sdn. Bhd.	TNB signed MoU with NUR Power Sdn. Bhd. for collaboration in solar energy investment that aims to increase RE supply, and work on ESG compliance.
TNB to provide power for LRT3 Shah Alam	TNB and PRASARANA signed a Memorandum of Agreement (MoA) to supply electricity for the Light Rail Transit 3 (LRT3) Shah Alam Project. The project is slated for operation in 2025.

Championing Sustainability at TNB

Membership and Association

GRI 2-28

We believe that the future lies in green and efficient energy. Hence, we advocate for the nation's energy transition through participation in associations as well as collaboration with local and international leaders in the industry.

Heads of ASEAN Power Utilities/Authorities (HAPUA)

HAPUA is an international electricity organisation in Southeast Asia that promotes cooperation among its members to strengthen regional energy security and enhance the quality and reliability of the electricity supply system. Malaysia is an ASEAN member country and TNB as the main utility company is a member of HAPUA and has participated in several programmes, including ASEAN Power Grid initiatives, research and development to enhance the ASEAN electricity supply system.

The Association of the Electricity Supply Industry of East Asia and the Western Pacific (AESIEAP)

AESIEAP is an association that focuses on the exchange of expertise and technology between organisations in the electricity supply industry, including generation, transmission and distribution providers, to develop solutions and advance the power industry. TNB hosted a prestigious event, namely the Conference of the Electricity Power Supply Industry (CEPSI), back in 2018.

International Council on Large Electric Systems (CIGRE)

CIGRE's global community is made up of thousands of power system professionals collaboratively sharing their knowledge and experience for the greater good of the power and electrical industry. As a member, TNB has participated in the presentation of technical papers covering new technology, best practices, lessons learnt and asset management in the power and electrical industry.

International Conference on Electricity Distribution (CIRED)

CIRED is a global electricity distribution community where developments and best practices in technology and the management of electricity distribution are presented and reported. CIRED Malaysia has been operating since 1998 and was established by TNB Distribution leaders with the participation of other industries related to electricity distribution.

CEO Action Network (CAN), Malaysia

The CEO Action Network, also known as CAN is governed and driven by private sector leaders for policy influence and action to accelerate sustainable development and sustainable business in Malaysia and beyond. TNB has participated in a series of engagement sessions and has collaborated with leading corporations and agencies to send a strong signal to the market of CAN members' traction and commitment to sustainability.

Malaysian Industry-Government Group for High Technology (MIGHT)

MIGHT offers a platform for collaboration between the public and private sectors in driving the nation's high technology industry, which members can capitalise on through synergistic partnerships. TNB has participated in programmes and projects by contributing inputs to formulate national strategic plans for high technology industry sectors.

Malaysia National Committee on Large Dams (MYCOLD)

MYCOLD is a professional body under the auspices of the International Commission on Large Dams (ICOLD) which represents Malaysia in areas related to the management and safety of dams. TNB is a primary supporter, providing technical input in the formulation and review of Malaysia's Dam Safety Guidelines.

30% Club Malaysia Chapter

The 30% Club Malaysia Chapter advocates for at least 30% representation of women on the Board of Directors and in senior management.

Malaysian Photovoltaic Industry Association (MPIA)

MPIA is a non-profit organisation representing the Malaysian solar industry to promote solar energy from the local solar supply chain. Through MPIA, TNBX and GSPARX promote solar solutions such as SARE and outright purchase to the members of MPIA.

Zero Emission Vehicle Association (ZEVA)

ZEVA provides a coalition platform among the industrial EV players to promote the proliferation of Battery Electric Vehicles (BEVs) adoption in the country. The association also correspondingly provides advocacy to relevant stakeholders in contributing to the development of applicable laws, policies, and/or standards on BEV.

Malaysia Association of Energy Service Companies (MAESCO)

MAESCO is a Malaysian association of Energy Services Companies that focuses on providing services and expertise in energy efficiency to end users from all sectors in order to strengthen the energy services industry. TNB provides assistance and support for the development of energy services.

Championing Sustainability at TNB

ESG Ratings

ESG ratings have become increasingly important in recent years as investors, customers and other stakeholders have become more focused on sustainability, social responsibility and ethical business practice. Rating tools are becoming increasingly important in the business world and can provide opportunities for companies to enhance their reputation, attract new customers and investors and improve their operational efficiencies and risk management. TNB is constantly committed to managing and reporting ESG matters, considering the assessments of the rating agencies as an important opportunity to improve our sustainability performance in terms of sustainability and devising specific action plans with the involvement of the various divisions and business units.



The Morgan Stanley Capital International (MSCI) ESG Rating is designed to measure a company's resilience to long-term industry material ESG risks, as well as how well it manages those risks relative to peers.

**TNB's MSCI ESG Rating Score for FY2022 =
BBB**



FTSE4Good

This rating allows investors to assess a company's exposure to and management of ESG issues in multiple dimensions.

**TNB's FTSE Russell ESG Rating Score for FY2022 =
3.0**



Carbon Disclosure Project (CDP) runs a global disclosure system to support companies, cities, states and regions to measure and manage their risks and opportunities on climate change, water security and deforestation.

**TNB's CDP Climate Change Score for FY2022 =
D**



SUSTAINALYTICS

Sustainalytics' ESG Risk Ratings aim to help companies and investors identify ESG issues that pose potential financial risks. They measure the degree to which ESG issues are putting a company's entire value at risk.

**TNB's Sustainalytics ESG Rating Score for FY2022 =
38.1 - High Risk (Rank for electric utilities: 164/299)**

Awards & Recognition

TNB received awards and recognition over the years for its aspiration of becoming the best supplier of sustainable energy solutions in Malaysia and Internationally. This initiative was recognised through the following award in FY2022:

2022 Top Bond Issuer Overall for TNB GenCo

The Bond Pricing Agency Malaysia Sdn. Bhd. (BPAM) released its latest BPAM ESG Bond League Tables report for the second half of 2022 and awarded TNB GenCo as the Top Bond Issuer Overall. This is a prestigious award as BPAM is the only registered bond pricing agency accredited by the Securities Commission of Malaysia.

2022 Best Socially Responsible Investing (SRI) Sukuk & Best Local Currency Sukuk of The Year (Malaysia)

TNB GenCo's Sukuk Wakalah Programme was also awarded as the Best Socially Responsible Investing (SRI) Sukuk & Best Local Currency Sukuk of The Year (Malaysia) 2022 at the Borrower Issuer Awards 2022 Alpha Southeast Asia. In addition, the Sukuk Wakalah Programme was assigned a final AAA_{is} rating with a stable outlook by the Malaysian Rating Corporation Berhad.

Championing Sustainability at TNB

Enlit Asia Power & Energy Awards 2022

TNB's Advanced Metering infrastructure (AMI) Project was awarded Energy Advocate of the Year Award under the Smart Grid category. Recognition is given to the projects throughout the region regardless of scale, with outstanding approaches that showcases the implementation or highlights the specific advantages of new data-rich technologies for utilities and customers.

Shared Services & Outsourcing Network (SSON) Asia Impact Awards

- Won the highest recognition of a Gold Award for Best Shared Services Team at the prestigious Shared Services & Outsourcing Network (SSON) Asia Impact Awards through its subsidiary TNB Global Solutions (TGBS).
- Named among the Top 20 Most Admired Shared Services Organisations (SSOs) & Global Business Services (GBS) 2022 in the world.

2022 Asian Telecom Awards

TNB wholly-owned subsidiary, Allo Technology Sdn. Bhd. (Allo) which provides high-speed broadband service that supports the National Digital Network (JENDELA) initiative, has been recognised as Malaysia's Broadband Telecom Company of the Year.

2022 National Integrity, Governance and Anti-Corruption Awards (AIGA)

TNB has continuously taken initiatives to strengthen Integrity practices and have gained recognition by being awarded as one of the Top Five Gold winners of the 2022 National Integrity, Governance and Anti-Corruption Award (AIGA).

Industry Excellence Award

Industry Excellence Award for Corporate Governance Disclosure, MSWG ASEAN Corporate Governance Award 2021.

2021 ASEAN Corporate Governance Scorecard Award

ASEAN Asset Class PLCs, 2021 ASEAN Corporate Governance Scorecard Award.

Our dedication towards empowering our people and contribution to society has been recognised through the following awards:

ISGAN Awards of Excellence for Smart Grid Workforce Development for an Inclusive Energy Transition under TNB Integrated Learning Solution Sdn. Bhd. (ILSAS).

Winner of Best HR Strategy In Line With Business at the Asia's Best Employer Brand Awards 2022.

Asia's Top Most HR Leader awarded to Feldatun Sharif, Head of People Strategy and Organisational Effectiveness.

Winner of Asia's Best Employer Brand Awards 2022 from HRD Congress.

Winner of Malaysia Best Employer Brand Awards 2022 from HRD Congress.

Gold for Excellence in Digital Transformation at the HR Excellence Awards 2022.

Silver for Best Work-Life Harmony Strategy at the Employee Experience Awards 2022.

Silver for Excellence in Learning and Development at the HR Excellence Awards 2022.

Bronze for Excellence in Business Transformation at the HR Excellence Awards 2022.

2nd Runner Up for the Graduates' Choice Awards.

Winner of HR ASIA Best Companies To Work For In Asia 2022.

Responsible Governance
and Strengthening

BUSINESS RESILIENCE

Related Material Matters

Responsible Business and
Financial Performance



Reliable Energy and
Fair Tariffs



Cybersecurity Management



Sustainable Supply Chain



Responsible Governance and Strengthening Business Resilience





Feature Story 2

Accelerating Responsible Energy Transition

The need for a just transition towards sustainable and decarbonised energy systems has become increasingly urgent. The energy supply industry plays a crucial role in this transition. To achieve a successful energy transition, it is essential to understand the challenges and opportunities that lie ahead.

With the presence of diverse socioeconomic challenges and anticipated uncertainties in the present business environment, TNB acknowledges the need for substantial investment, innovation, as well as cross-sector and cross-border collaborations to facilitate a just transition. TNB is taking the lead to spearhead the nation's decarbonisation agenda through its Energy Transition Plan towards a more sustainable and resilient energy future. Showcasing our commitment to execute this strategy, TNB has allocated RM14 billion of the Group's total budgeted Capital Expenditure (CAPEX) for 2025 towards its energy transition initiatives.

To lead the Energy Transition and to drive the Green Economy, we have outlined the following priorities:

Accelerating Decarbonisation	<p>TNB is dedicated to achieving decarbonisation and a just energy transition through the implementation of initiatives aimed at reducing emissions and driving business growth. These strategies encompass the early retirement of coal plants, upgrading of existing plants with cleaner technology and collaborating with strategic partners to diversify its power generation portfolio towards cleaner and renewable sources. TNB will also prioritise the adoption of clean energy technologies such as hydro power, Carbon Capture, Utilisation and Storage (CCUS), hydrogen fuel and Small Modular Reactors. Furthermore, these initiatives are anticipated to expedite the economic feasibility of green technology adoption across the nation and beyond.</p> <p> For more information on CCUS, please refer to Feature Story 3: Decarbonisation through Innovative Solutions: Carbon Capture section, pages 64-65.</p>
Expanding Renewable Energy Portfolio	<p>TNB is expanding its portfolio of renewable energy (RE) through solar and wind energy assets (onshore and offshore), both domestically and internationally, as well as investing in energy storage. We aspire to achieve 7,000 MW of RE installed capacity by 2030 and to capture over 14,000 MW of RE installed capacity by 2050.</p> <p> For more information, please refer to Sustainable Business Expansion section, pages 41-42.</p>
Modernisation of Grid of the Future	<p>As the custodian of Malaysia's power infrastructure, TNB is committed to developing and investing in enhancing the grid and network infrastructure in Peninsular Malaysia. Our investments in grid modernisation and digitalisation efforts will lead to improved grid flexibility and regional interconnections, making it easier to integrate Variable Renewable Energy (VRE) and Distributed Energy Resources (DER). We are also committed to minimising our impact on the environment by carefully managing land use, preserving forests, and utilising cleaner and greener technologies in modernising the grid.</p> <p> For more information, please refer to Smart Grid section, pages 37-40.</p>
Empowering Customers in the Energy Transition	<p>At TNB, we recognise the significant role that our customers can play in the energy transition journey. TNB encourages customers to take on an active role in monitoring their electricity consumption through smart meters and generating their own renewable electricity as prosumers. We aim to increase the adoption of electric vehicles by developing the EV ecosystem and digital interaction platforms.</p> <p> For more information, please refer to Electrification section, pages 58-60.</p>

Responsible Governance and Strengthening Business Resilience

In order to remain competitive and meet the expectations of our stakeholders, it is crucial for TNB to develop a comprehensive plan that prioritises sustainability and builds resilience towards climate-related risks. In pursuit of these objectives, TNB has identified six (6) key enablers that can support the execution of the Energy Transition Plan:

Enabling Functions

Policy Advocacy



TNB seeks to contribute to shaping the nation's key climate policies through its efforts in policy advocacy and in influencing the wider ecosystem of stakeholders for accelerated climate action. Areas of advocacy prioritised are incentivisation of emissions reductions through energy efficiency, renewable energy incentives and regulatory measures, amongst others.

Sustainability Framework



To enhance sustainability management throughout the TNB's integrated value chain, it is essential to establish a comprehensive sustainability framework that provides a directional reference for the Group. This includes collaborating to develop a sustainability framework and structure to support business entities' (BEs) decarbonisation efforts and shape sustainability growth.

Funding the Journey



We aim to secure sustainable financing options for TNB's decarbonisation initiatives. Our investments in green technologies and infrastructure as well as renewable energy expansions will leverage on structuring innovative ways to utilise sustainable financing.

Green Supply Chain



In order for TNB to be a sustainability leader, we have to drive sustainability within our supply chain. We advocate sustainability practices to our suppliers to develop a green and resilient supply chain. As a start, TNB will engage with our strategic suppliers and set gradual expectations aligned to our sustainability goals in respecting human rights, reducing carbon emissions and environmental footprint, amongst others. This will improve transparency in emissions accounting and enable reductions within our Scope 3 emissions. Recognising the struggles faced by our small and medium-sized enterprise vendors, a Vendor Management Programme will be launched to educate and develop vendor capabilities in relation to emissions reduction. Suppliers will be assessed against a set of sustainability criteria aligned to our sustainability goals during pre-qualification stage and audits during project delivery.

Capability Building



We aim to invest in building the skills and knowledge of our employees to enable them to contribute to the Energy Transition Plan. By providing training on sustainability, promoting cross-functional collaboration and fostering a culture of sustainability throughout the organisation, we can empower our employees to drive the energy transition initiatives. We will continuously assess capability gaps and resource capacity requirements throughout our journey towards Net Zero 2050 aspiration.

Digitalisation



Digitalisation at TNB spans three (3) dimensions: enabling a digital enterprise, adoption of digital solutions and promoting digital interactions. Digital solutions allow the modernisation of the grid system and scaling up renewable energy capacity penetration while empowering our customers through digital platforms. In FY2022, we upgraded the myTNB platform by adding the Energy Budget feature to enhance customer experience and established an EV digital platform as part of our aspiration of becoming a key EV player in Malaysia. TNB will continue to develop digital capabilities and infrastructure to support the decarbonisation efforts across our business entities.

Responsible Governance and Strengthening Business Resilience

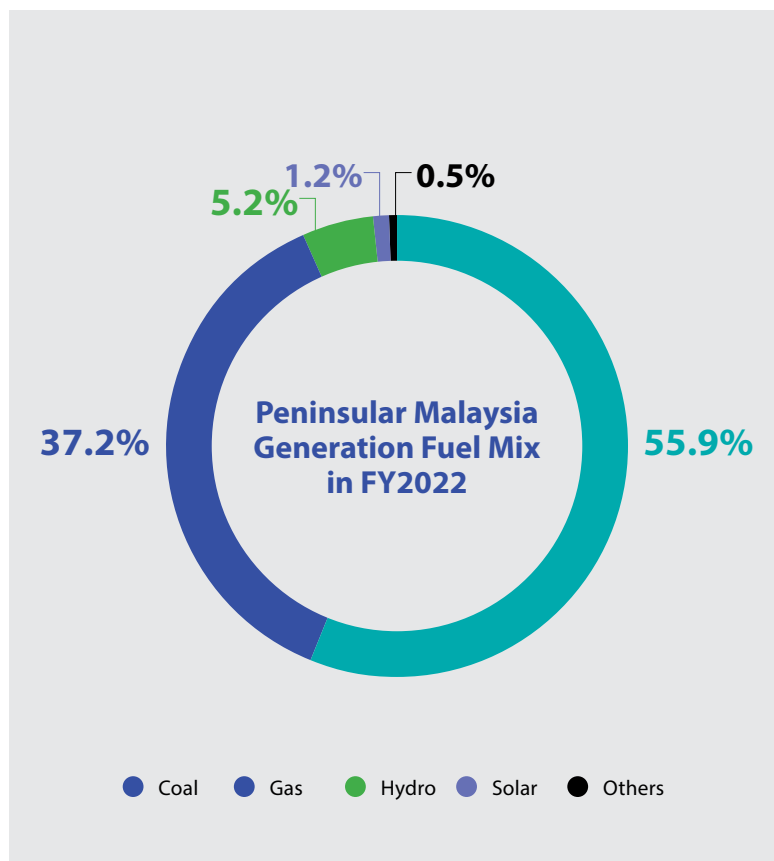
Sustainable Infrastructure and Ecosystem

GRI 3-3 | 203-2 | EU28 | EU29 | EU30 |

TNB's key focus is to accelerate the energy transition and address climate change by digitalising the utilities industry, utilising efficient technology, and exploring greener energy sources for enhanced power security.

Generation Fuel Mix

As part of its 12th Malaysia Plan, the Malaysian Government has pledged to become a carbon-neutral country by 2050, ahead of COP26. To achieve this goal, the Government has committed to no new coal-fired power plant. As a result, it is expected that the proportion of electricity generated from coal will decrease gradually in the coming years. In balancing the energy trilemma, the Generation Development Plan will be based on a guiding principle of optimum fuel mix to achieve a *Herfindahl-Hirschman index* (HHI) ≤ 0.5 . This would ensure optimum power security by providing adequate diversification of fuel and resources. TNB's generation fuel mix depends on the Peninsular Malaysia's Generation Development Plan as approved by the Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET), which is chaired by the Ministry of Natural Resources, Environment and Climate Change (NRECC). This plan is developed based on the underlying principle of balancing the security of electricity supply, affordability, and environmental sustainability. TNB's target on renewable energy growth aligns with the nation's goal of increasing renewable energy capacity and reducing the greenhouse gas emission intensity of GDP by 45% by 2030. Our two-prong strategy in greening our generation mix emphasises reducing our coal capacity in a gradual manner while increasing our renewables energy portfolio.



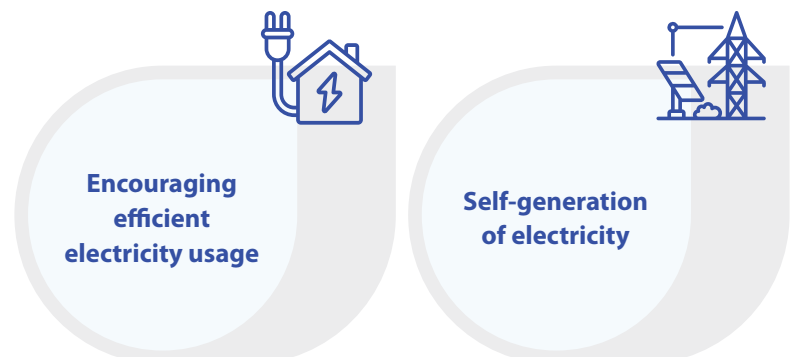
Smart Grid

The GoTF strategy, which is a part of TNB's Energy Transition Plan, aims to modernise and digitalise our transmission and distribution grid infrastructures to support increased integration of distributed generations and renewables. This will lead to enhanced reliability and efficiency of our distribution network and system in delivering services to our customers. This is achieved by better management of distributed generation and possible interconnections with other countries. Additionally, digitalisation opens up possibilities to offer new products and services to meet our customers' needs and expectations.

TNB plans to invest a total of RM21 billion in Capital Expenditure (CAPEX) over a period of three (3) years from 2022 until 2024 to strengthen the grid and ensure the reliability of energy supply. TNB has already spent RM6.72 billion for FY2022.

We strive to meet the increasing demand for cleaner electricity contributed by electrification and population growth by accelerating the integration of clean energy within the grid infrastructure. In tandem with this, we are expanding grid accessibility to connect new loads and data centres from potential customers and smart cities in new development areas that will also spur national economic growth.

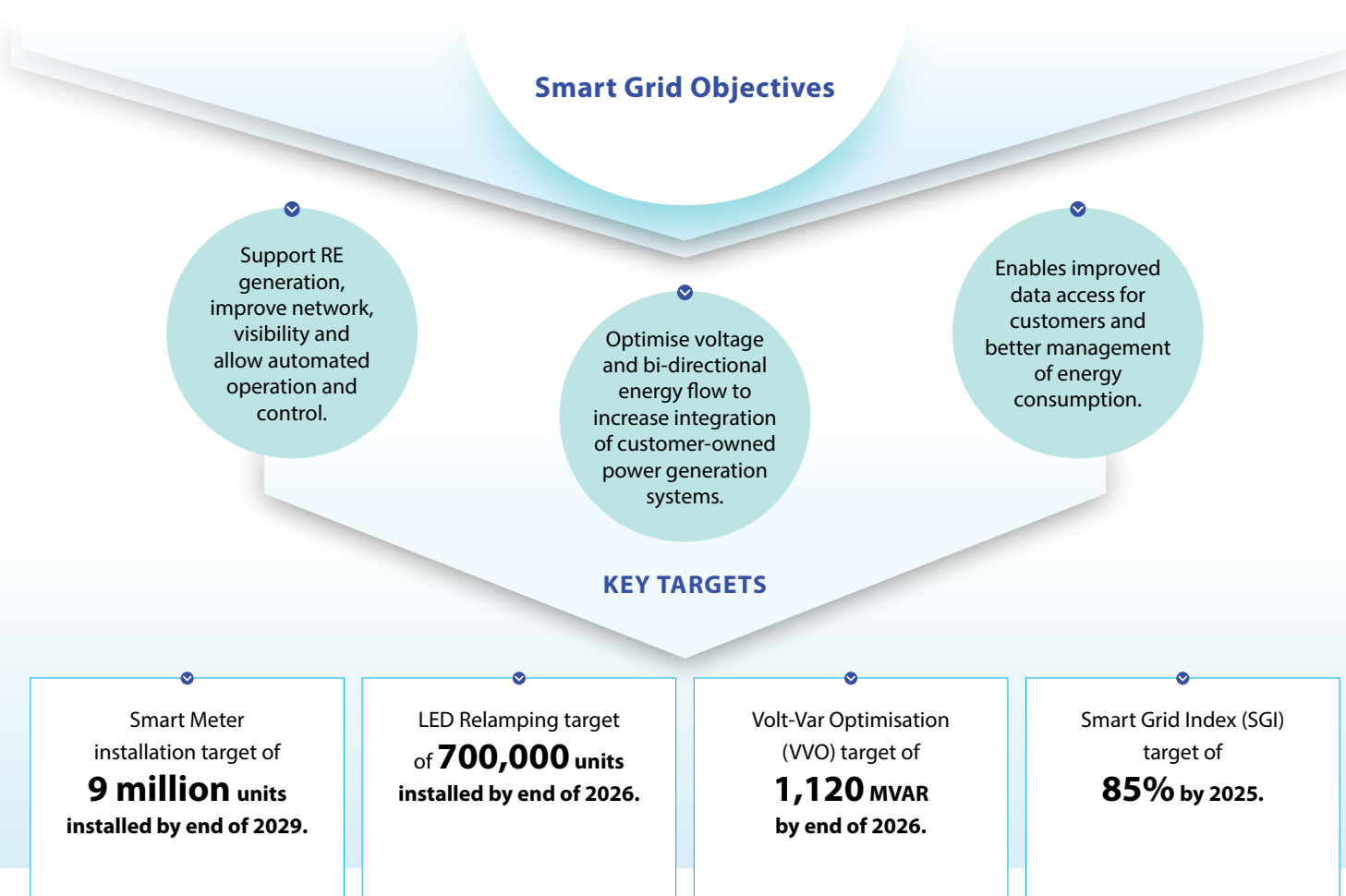
We facilitate customer participation from two (2) dimensions:



We enable customers to optimise their energy consumption using near real-time electricity consumption data collected from Smart Meters and fed into the myTNB app. The installation of rooftop solar panels at customer's premises via initiatives such as Supply Agreement for Renewable Energy (SARE) offered by GSPARX to self-generate electricity will encourage the growth of prosumers among TNB's customers.

TNB has made progress in integrating renewable energy into the grid by partnering with commercial customers to provide green energy solutions to reduce load on the grid, as well as conducting research and studies to identify suitable renewable energy solutions to increase RE capacity.

Responsible Governance and Strengthening Business Resilience



As part of the GoTF, over 2.6 million smart meters have been installed to date. The result of the massive efforts and investments by TNB is manifested through an improvement of the Smart Grid Index (SGI) to 71.4% this year as compared to 67.9% in the preceding year. We aim to achieve a SGI of 85% by 2025, and with our ongoing initiatives and strategies in place, we are confident of achieving this target.

Smart Grid Key Initiatives

Key Activities	Description	Key Contribution	FY2022 Highlights
Smart Glass	Smart glass facilitates remote support from Grid Solution Expert specialists, TNB Research Maintenance Engineers, and Original Equipment Manufacturer (OEM) for tasks that require expert assistance. This initiative is transforming maintenance work through efficient virtual collaboration, faster troubleshooting, and assisted repairs.	Improves productivity, reduces business travel, and improves safety.	A successful pilot project was concluded, where each maintenance zone was provided with one unit of smart glasses, complemented by comprehensive training.
Asset Investment Planning Management (AIPM)	AIPM is an intelligent system that analyses and evaluates options and viability for investment in new assets to increase system capability, reliability, and availability. Additionally, this solution is expected to enable TNB to identify and optimise investments under the GoTF initiatives, serving as a future-proof investment case and aligning with best practices of asset management.	Aids accuracy of CAPEX investment decision-making.	Since its launch in 2022, the AIPM platform has been operating successfully, enabling the assessment of approximately 240 projects.

Responsible Governance and Strengthening Business Resilience

Key Activities	Description	Key Contribution	FY2022 Highlights
Volt-Var Optimisation (VVO)	VVO enables voltage and reactive power management of the distribution network.	Enables control of voltage at the distribution network within the distribution code limits to provide network losses savings, improve voltage and minimise impact of renewable energy integration to the network.	Successfully installed and commissioned a total of 140MVar in FY2022. The total cumulative MVar from 2018 to 2022 is at 630MVar and a total of 12.98GWh of energy losses savings have been achieved in 2022.
Tree Hyperspectral Identification System (THySIS)	The THySIS System is part of TNB's initiative to develop an automated detection system to ensure the selection of proposed transmission line routes will avoid sensitive and/or endangered species during planning to minimise project delays, in compliance to the Malaysian Forestry Department's agreed blueprint.	To ensure a sustainable ecosystem is maintained through forest preservation.	In FY2022, the procurement process for the project was completed.
Substation Repair & Maintenance (RM) Process Optimisation	Optimisation of manpower and inspection speed in Substation RM works via drone inspection.	Improves team productivity and efficiency.	Exploring analytic tools and nested drone.
Advance Automatic Fault Analysis System (AFA)	AFA is TNB's internally developed system that provides automatic detection and detailed fault analysis to improve decision-making by operation and maintenance teams during unplanned outage and restoration process.	Improvements in response time during unplanned outages and restoration processes. Additionally, there have been efficiency improvements with less patrolling time during the Overhead Line (OHL) fault locating process, as well as a reduction in multiple site visits during preliminary investigations upon tripping. Furthermore, the increased availability of OHL corridors and a reduction in capital expenditure (CAPEX) through the implementation of an optimum disturbance recording modular installation.	In FY2022, we implemented the Change Management Programme, which involved training and awareness programmes, as well as the establishment of an AFA User Group. We plan to proceed with Phase 2, which will concentrate on enhancing the system for greater stability and maturity, allowing for higher RE penetration and more extensive functionalities.
Substation Digital Intelligent Infrastructure (SDII)	Development of an Open Data Platform to provide ready access to quality real-time data, through leveraging of TNB's internal Real-Time Application Platform (RTAP) and Intelligent Electronic Devices (IED) within Grid substations.	Provides real-time data to all applications and users within TNB, enabling data exploration and insight findings.	In FY2022, several new applications were developed using SDII, including the CVT Monitoring Module, Substation DC Supply and Earth Fault Monitoring, Transformers Utilisation Dashboard, Transformers DGA Monitoring Module, and Dynamics Lines Rating.
Defence Plan Infrastructure (Previously reported as Wide Area Monitoring System (WAMS) is now incorporated as part of the Defence Plan Infrastructure)	Defence Plan Infrastructure is TNB's centralised platform to support custom protection and control systems to sustain transmission network stability and availability during disturbances and other power system contingencies. Previously reported Wide Area Monitoring System (WAMS) has now been incorporated as part of the Defence Plan Infrastructure.	Projects and initiatives are expected to provide technical performance and Grid security enhancements, to enable quick and safe restoration of the network.	In FY2022, this initiative was a component of the Wide Area Protection strategy to prevent widespread blackouts and the deployment of the Special Protection Scheme (SPS), which assists in managing the grid in the most reliable and cost-effective manner.
Advanced Asset Analytics at PPU (AAA)	AAA facilitates real-time, accurate and predictive analysis on the condition of primary assets (e.g., transformers, circuit breakers and underground cables) to provide better insights into asset performance metrics, such as asset health index and asset risk index.	Reduces operational and maintenance cost through smart asset maintenance driven by analytics, triggers and notifications. It also reduces supply interruption by having lesser planned and unplanned outages. Then, improves network performance through real-time monitoring of equipment condition that enables prompt rectification works to minimise asset breakdowns and prolong asset life.	Three (3) Internet of things (IoT) sensors were installed around Kuala Lumpur, namely <i>PPU Kompleks Sukan</i> , <i>SSU Matrade</i> , and <i>PPU Tasik Tambahan</i> .

Responsible Governance and Strengthening Business Resilience

Key Activities	Description	Key Contribution	FY2022 Highlights
Geographic Information System (GIS)	The GIS project in DN mapped electrical distribution assets and customer meters with network connectivity. GIS serves as foundation system where it can be integrated to other DN systems by providing geospatial data in a geographical format.	Allows for better customer experience through updated notification of supply interruption (status) and shutdown notice to affected customers based on accurate asset mapping.	In 2022, data for medium voltage substation and connectivity was gathered. This will be expanded to low voltage substation in future.
Distribution Automation (DA)	DA enables remote monitoring & control of network assets to improve CAIDI and SAIDI.	Allows for fast and efficient supply restoration in Central Business Districts and Industrial zones in major cities.	As of FY2022, 3,541 DA facilities were successfully installed.
Pulau Tenaga Hijau (PTH)	Both <i>Pulau Perhentian</i> and <i>Pulau Redang</i> have been approved by <i>Kementerian Tenaga & Sumber Asli</i> (KETSA) as <i>Pulau Tenaga Hijau</i> (Smart Green Island) which will offer 100% supply availability through a cleaner source of energy with smart grid adoption by 2028. We expected to achieve Net Zero emissions for both islands by 2040.	Offers the use of 100% clean energy and use of smart utility technology to supply the electricity in both islands which will reduce potential CO ₂ emissions by 5,286 tonnes at <i>Pulau Perhentian</i> and 4,235 tonnes at <i>Pulau Redang</i> .	100% completion of LED streetlighting at both islands including multiple engagements with all key stakeholders (at National, State & local level) and the residents on the project implementation plan.

Our Performance for FY2022



Responsible Governance and Strengthening Business Resilience

Sustainable Business Expansion

Our aspiration to become a leading provider of sustainable energy solutions aligns with our Energy Transition Plan, which we believe will create value for our stakeholders, spur growth in the energy industry and enhance our customer experience through diversified products and services. To ensure successful delivery of these strategic outcomes, we empower and provide support to relevant business entities to enable them to effectively execute plans and initiatives.

TNB is fully committed to reduce 35% of its carbon emission intensity by the year 2035 via adoption of new emerging technologies such as ammonia, biomass, hydrogen co-firing and Carbon Capture, Utilisation and Storage (CCUS). These initiatives were intensified across TNB's business unit, divisions and subsidiaries.

We aim to deliver our net zero aspiration initiatives through a multi-faceted approach. The areas of focus for our energy transition strategy are as follows:

- 1) Reduce Coal Capacity
- 2) Expand TNB's Low Carbon Generation Portfolio
- 3) Increase Adoption of Cleaner Fuel and Green Technology
- 4) Accelerate Green Technologies via Strategic Partnership
- 5) Increase operational efficiency

With regards to our energy transition strategy, our primary goal is to maintain the highest level of reliability excellence in our generation capabilities. This will enable us to uphold the availability and reliability of our critical assets while transitioning towards more sustainable energy sources. Additionally, we strive to align our efforts with the objectives of achieving net zero emissions. In an effort to reduce emission, the TNB Carbon Management Plan outlines three (3) key components: reduce, capture and offset emissions.



For more information, please refer to Carbon Management section, page 56.

TNB's multi-faceted approach towards energy transition:

1) Reduce Coal Capacity

Retiring selected coal plants, earlier than the expiration of their Power Purchase Agreements (PPA), subject to shareholders' agreements and approvals from the relevant authorities and regulators. Feasibility study of coal plants co-firing with ammonia, biomass and coal are ongoing for Jimah East Power (JEP) – 2,000 MW, Kapar Energy Ventures (KEV) – 2,200 MW and Janamanjung – 4,080 MW.

2) Expand TNB's Low Carbon Generation Portfolio

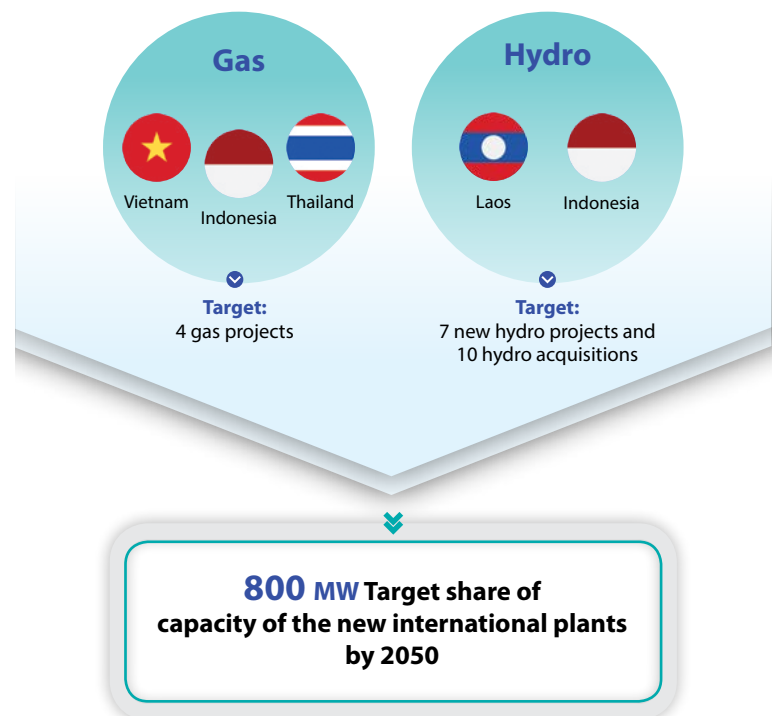
On the domestic front, development of Nenggiri hydro plant is expected to commence commercial operations in 2027. The hydro plant is expected to mitigate 0.3 million tonnes CO₂ yearly. Furthermore, the Energy Commission (EC) has approved TNB's Hydro Life Extension Programme for six (6) stations in the Sungai Perak Power Stations (SSJ Sungai Perak), with an investment of RM5.8 billion. Overall, these domestic and international RE developments reflect our commitment to expanding its renewable energy portfolio and contributing to a more sustainable future.

On the international front, our New Energy Division (NED) was formed to venture and explore international opportunities. NED plans to expand renewable energy assets through strategic collaborations, mergers and

acquisitions and asset development with leading renewable energy companies. We aim to realise our energy transition aspiration and provide better access to new technologies and markets while at the same time leveraging on opportunities to enhance capabilities and knowledge.

In FY2022, NED made significant progress in expanding its renewable energy portfolio. Through its subsidiary, NED has acquired CEI UK Ltd. and added 97.3 MW onshore wind portfolio in the UK, increasing Vantage's installed capacity by 22% to 530 MW. In addition, GMR Energy Trading Limited, another shareholding company that operates in India, has successfully commissioned the 180 MW Bajoli Holi hydro power plant in June 2022. As a result, we have increased renewable installed capacity to 3,780 MW representing a growth of 8% compared to FY2021. TNB also leveraged on secondment opportunities available in our overseas assets to help enhance our people's capabilities and experiences.

As the ASEAN Power Grid strengthens the ties among ASEAN nations, TNB is simultaneously increasing its renewable energy presence in the ASEAN markets through gas and hydropower projects with a target of 360 MW share by 2030 and 800 MW capacity by 2050.



3) Increase Adoption of Cleaner Fuel and Green Technology

TNB will construct gas-fired combined cycle gas turbine (CCGT) including hydrogen-ready technology plants, which are expected to be commissioned from 2030 and beyond.

4) Accelerate Green Technologies via Strategic Partnership

TNB plans to collaborate with strategic partners in leveraging technology, expertise and capital to drive the energy transition. TNB GenCo is currently collaborating with Original Equipment Manufacturers (OEMs) of existing power plants in exploring future opportunities. Strategic partnerships play a vital role in expediting TNB's venture into new green technology development and deployment in the power generation sector as well as provide better access to new technologies and markets.

Responsible Governance and Strengthening Business Resilience

5) Increase operational efficiency

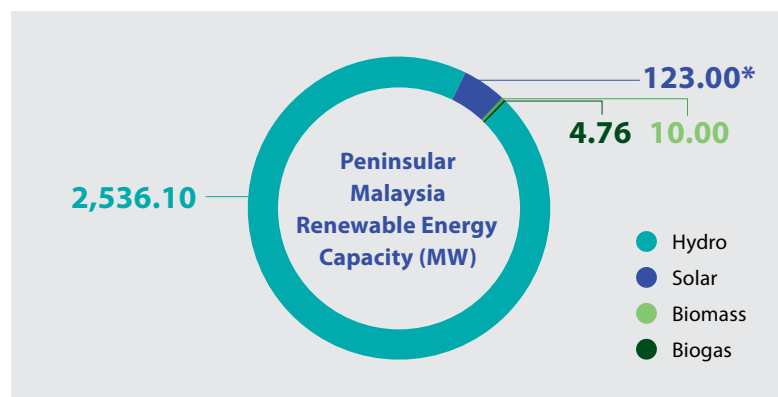
TNB aspires to become one of the top power generation solutions providers that sustainably delivers value to all stakeholders by focusing on key strategic initiatives: Turnaround Excellence, Productivity Uplift and Asset & Service Expansion while sustaining business-as-usual performance within Power Purchase Agreement (PPA) levels. This allows us to utilise our current assets for value uplifts while reducing environmental footprint of older and inefficient assets.

Our strategic imperatives under the ET Plan will enable us to deliver on our interim emission intensity target reduction of 35% by 2035 and put us on track to achieve our Net Zero aspiration by 2050.

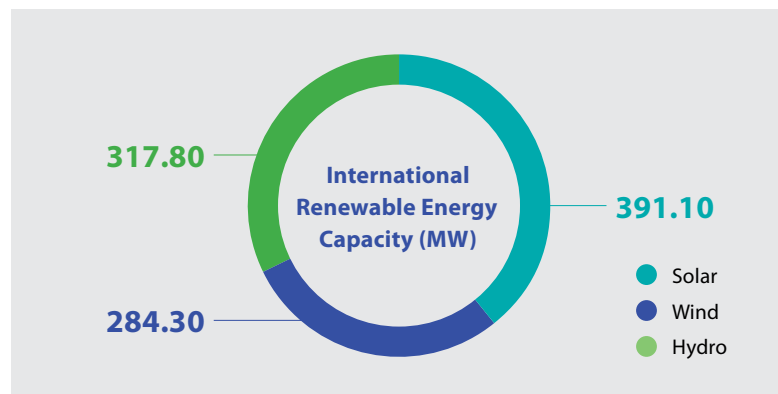
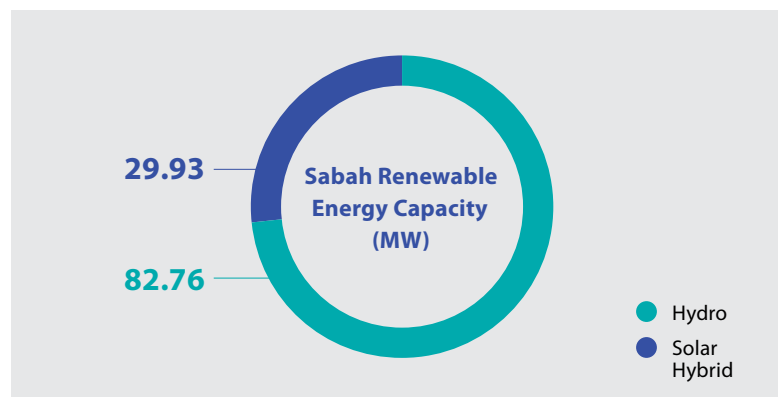


For more information on Renewable Energy Growth Strategy, please refer to Energy Transition Pillar 1: Future Generation Sources section, pages 54-56.

Our Performance for FY2022



* Exclude rooftop solar owned by GSPARX.



To ensure consistent business growth and support of our Energy Transition Plan, we have assembled a pipeline of cleaner and renewable energy projects in both the domestic and international markets.

Key Activities	Description
New Combined Cycle Power Plant	A proposal for development of a greenfield project that is marked for a combined cycle gas-fired plant for a lower emission generation.
Solar Greenfield Development, UK	TNB has plans to develop Solar PV greenfield projects and co-located battery energy storage systems, which includes the acquisition of a Ready-to-Build (RTB) stage 102 MW solar, and 65 MW co-located battery storage portfolio developed by JBM Solar in the UK. These plans present opportunities for environmental initiatives that align with TNB's wider biodiversity agenda.
LSS4 Solar Farm development	TNB through its wholly-owned Special Purpose Vehicle company, TNB Bukit Selambau Solar Dua Sdn. Bhd. (TBSS2) has secured financing of up to RM185 million for its third Large Scale Solar (LSS) project in Bukit Selambau, Kuala Muda, Kedah under the Government's Large-Scale Solar 4 (LSS4) programme.

Expanding Energy Services

Our wholly-owned subsidiary, TNB Energy Services Sdn. Bhd. (TNBES) offers solutions for grid and distribution as well as energy services such as energy audits, efficiency and performance contracting. TNBES aims to secure projects worth up to RM 1.9 billion by 2027 from TNB Distribution Network (TNB DN), TNB Grid and electricity customer markets. To reach this goal, TNBES will focus on developing new capabilities, implementing new technology, increasing visibility and fostering innovation. Digitalisation will also play a crucial role in enhancing operational efficiencies and reducing costs. Key projects undertaken by TNBES include:

Key Activities	Description
Advance Metering Infrastructure (AMI)	TNB is currently expanding the deployment of installation for Advance Metering Infrastructure (AMI) project where TNBES provides smart meter installation services.
Distribution Network Infrastructure	Upgrading services of TNB Distribution Network (TNB DN) infrastructure in providing the basic necessity of access to energy through rural electrification.
RE and Off Grid Power Plants	Operation and maintenance for solar hybrid stations, mini hydro stations and biogas plants throughout Malaysia owned by TNB/TNB DN.
Street Lighting	Upgrade and install LED street lighting in ensuring safer community through brighter surroundings.

Responsible Governance and Strengthening Business Resilience

Key Activities	Description
Integrated Facilities Management (IFM)	Manage the IFM at Platinum Campus, which is certified with Green Building Index (GBI) platinum rating.
Supervisory Control and Data Acquisition (SCADA)	Provide solution for automated system of fast service restoration in the event of 11kV system breakdown. This improves customer experience and business continuity.
Reliability	Provide solution for visual inspection and thermal imaging of the Grid Infrastructure to ensure reliability.

Key Activities	Description
Engineering, Procurement, Construction and Commissioning (EPCC)	Design, build and implement RE Plants and Interconnection Infrastructure.
Operation & Maintenance (O&M)	Operate and maintain RE Plants including TNB Grid and TNB DN infrastructure.
Energy Services	Reduce energy consumption and optimise energy usage for commercial and industrial clients through power quality and power system study.

Customer Centricity

GRI 3-3 | G4-DMA (former EU23) |

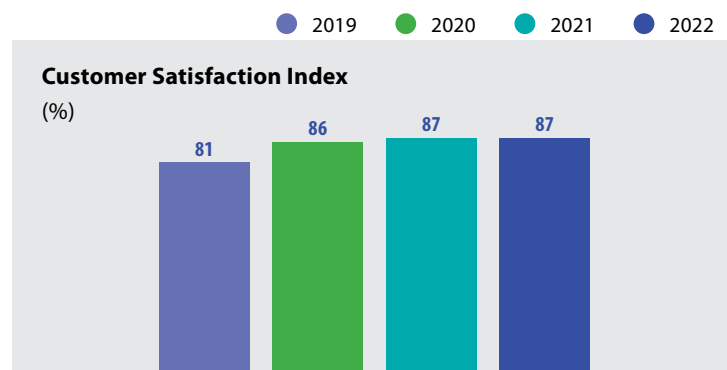
Our business purpose centres on our customers. We are dedicated to providing our customers with reliable, affordable and long-term services and solutions. We accomplish this by consistently engaging with our customers effectively, all the while preserving their trust in the quality of our products and services.

Customer Engagement and Satisfaction

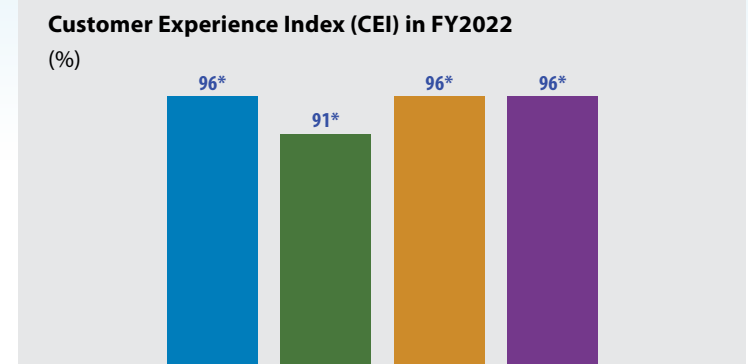
While we have four (4) main interaction channels: Click, Call, Come Over and Go Over, we have experienced a significant growth in our Click channel over the years, with the myTNB platform garnering 6.3 million subscribers, representing 63% of our customer base. In FY2022, we achieved a customer interaction index of 90.76%, compared to 89.90% in 2021. The majority of respondents who were satisfied with our customer interactions were digital users, reinforcing our engagement strategy with digital platform users. For customers who prefer in-person transactions, we made it possible to also book appointments for *Kedai Tenaga* visits through the myTNB web portal.

TNB has maintained 87% satisfaction in the Customer Satisfaction Index (CSI) for FY2022. We have successfully achieved the CSI target for FY2022 which was at 86%. The CSI methodology is based on customer segments such as Small Medium Enterprise (SME), Residential, Government and Large Business segment.

Our Performance for FY2022

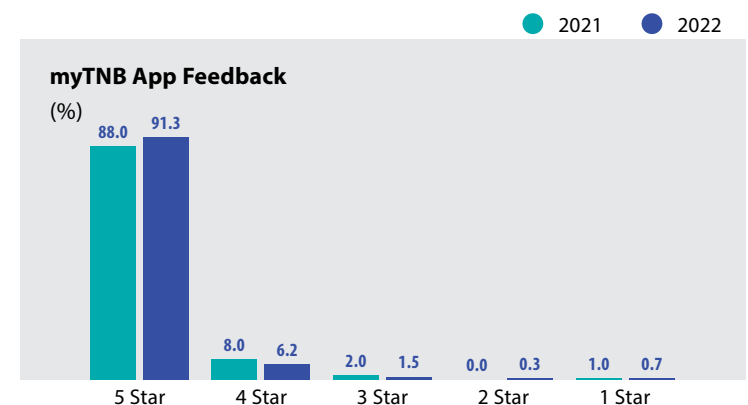


myTNB app myTNB portal TNB CareLine Kedai Tenaga



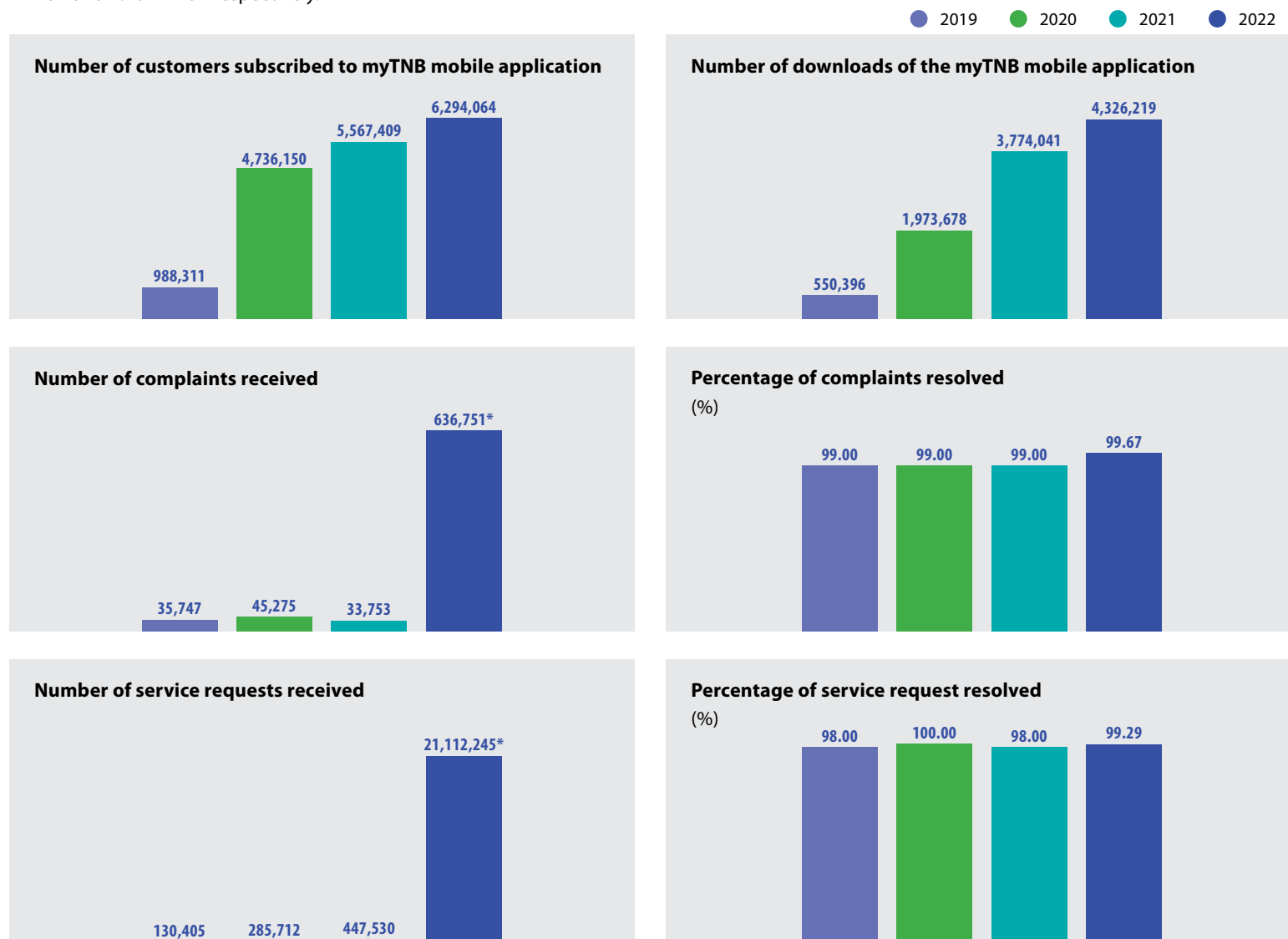
* Restated 2022 CEI data from TNB Integrated Annual Report (IAR) 2022 due to updated December 2022 data and verification assessment.

The TNB Customer Experience Index (CEI) data reveals the level of customer satisfaction and experience with different TNB customer service platforms. In the 2022 various TNB platforms and services received high CEI score ratings. The TNB CareLine, myTNB app and *Kedai Tenaga* scored 96% demonstrating its effectiveness in meeting customer needs and providing a positive user experience. The myTNB portal received a score of 91%, demonstrating positive customer feedback and a satisfactory user experience. Overall, TNB achieved an impressive CEI score of 95%, reflecting the company's commitment to delivering excellent customer experiences across its platforms and services.



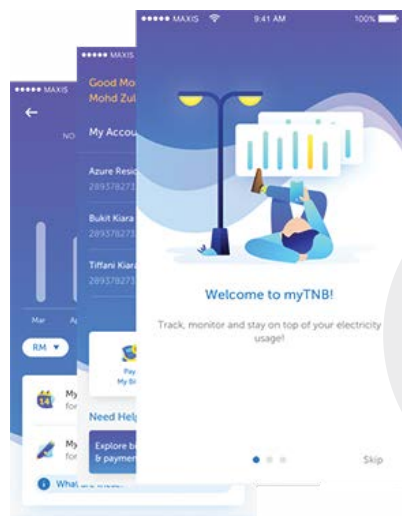
Responsible Governance and Strengthening Business Resilience

Feedback on our myTNB app has also achieved an impressive 91.29% of 5-Star ratings received in FY2022 as compared to 88.2% in FY2021. The number of customers registered on the web and app has also increased in FY2022 to 2.69 million and 5.44 million respectively as compared to FY2021 being 2.36 million and 4.70 million respectively.



* The significance increase in FY2022 is due to new definition of Enquiries and Complaints Framework that was established in 2022.

Note: Service Request was replaced with enquiries based on new definition of Enquiries and Complaints.



Digitalising Customer Services

To support our digitalisation efforts, we are continuously upgrading our digital customer platforms to offer more services that meet the needs and expectations of our customers. Our digitalisation initiatives for customers in FY2022 included:

Enabled myTNB smart meter customers to effectively manage their energy usage according to their consumption habits. This feature allows customers to manage their electricity consumption by setting threshold alerts. It proactively engages customers with automated push notifications through myTNB when they reach certain threshold levels (75% and 100%) of their overall budget. Around 178,000 customers had subscribed to the Energy Budget of which 95% of them have managed to reduce a total of 5.38 GWh which is equivalent to around 1,255 tonnes of CO₂ emission avoidance.

myTNB Energy Budget

Enhanced customer satisfaction and engagement by introducing a user-friendly digital billing layout and enabling customers to make informed choices by opting-in for digital billing and thus becoming more environmentally friendly. Around 43,000 customers had successfully opted into digital billing.

Digital Billing and Bill Redesign

Responsible Governance and Strengthening Business Resilience

Elevating Customer Experience Through Customer Empowerment

TNB is vested in enabling greater customer participation in the energy transition journey, facilitated by the Advanced Metering Infrastructure (AMI). The AMI is a smart and integrated system which provides customers with greater control and transparency over their energy consumption. With near real-time access to energy usage data through myTNB web portal and myTNB apps, customers can make informed decisions about their energy usage and adjust their consumption behaviour accordingly. Prudent consumption patterns potentially result in cost savings and a more sustainable lifestyle.

Besides elevating customer experience by providing customers with the ability to monitor their electricity usage, smart meters are also able to monitor bi-directional energy from Distributed Energy Resources (DER) such as rooftop solar and electric vehicles. Through AMI, TNB would be able identify issues within the grid in relation to power quality to consumers and understand consumer habits, consequently enabling TNB to further improve its services. In 2022, smart meters installations exceeded the 2022 target of 600,000 units by installations of a total of 838,830 units, with a budget utilisation of RM511.82 million. The AMI deployment in Malaysia has been recognised internationally, as TNB recently won the "Energy Advocate of the Year" award in the smart grid category at Enlit Asia.

Actual and Timely Electricity Bills

With the use of a smart meter, actual readings are taken every 30 minutes, eliminating the need for on-site meter readings. As a result, timely electricity bills are accessible through the myTNB app and portal.

Manage Electricity Consumption using Daily Profile

Customers with smart meters can track their daily energy usage on the myTNB app, allowing them to manage consumption and lower their electricity bills.

Energy Budget

With the Energy Budget feature, customers can set threshold alerts for energy usage and receive notifications, allowing them to manage their consumption and lower their electricity bills.

Customer Privacy

As we improve our customers' experience through digitalisation, we are committed to safeguarding their data privacy from cybersecurity risks and threats. We continuously implement various cybersecurity measures to safeguard our customers' data and remain vigilant in our efforts to protect our customers' data from unauthorised access and use. The measures include robust initiatives identified in our cybersecurity operating model as well as compliance with the regulations such as Personal Data Protection Act (PDPA) and industry standards such as Payment Card Industry Data Security Standard (PCIDSS). We remain vigilant in our efforts to protect our customers' data from unauthorised access and use.

Empowering Customers Towards Energy Transition

We believe that our customers can play a role in supporting the energy transition by making smart choices and participating in the various Renewable Energy (RE) and Energy Efficiency (EE) programmes that we have planned. Our key initiatives for FY2022 include:

Key Activities	Description	Key Contribution
Feed-in Tariff (FIT) Programme	A mechanism granted to selected customers to export all solar energy produced to the TNB grid at a fixed price.	9,482 FIT projects have been commissioned with an installed capacity of 558.09 MW.
Net Energy Metering (NEM) Scheme	Allows customers in Peninsular Malaysia to export excess energy produced from their solar PV systems back to the grid.	14,015 NEM participants making up a total capacity of 698.64 MW.
Green Electricity Tariff (GET)	<p>GET is a government initiative to provide any electricity customer an option to obtain renewable energy supply to reduce their carbon footprint.</p> <p>All consumers are eligible for the GET Programme which are available in 100 kWh blocks for residential consumers and 1,000 kWh blocks for non-residential consumers at a rate of 3.7 sen/kWh.</p> <p>Consumers enrolled in the GET Programme will receive internationally recognised Renewable Energy Certificate (REC) at the end of the calendar year.</p>	In FY2022, GET was fully subscribed from the annual quota of over 4,000,000 MWh.
Supply Agreement for Renewable Energy (SARE)	TNB offers SARE, a beyond-the-meter scheme which consists of Power Purchase Agreement (PPA) and Metering, Billing & Collection Agreement in one comprehensive document.	In FY2022, 723 contracts were secured by commercial and industrial customers through SARE. This resulted in a total SARE contracted capacity of 252.34 MWp.

Responsible Governance and Strengthening Business Resilience

Key Activities	Description	Key Contribution
Rooftop Solar PV (GSPARX)	GSPARX is committed to generating new revenue stream for TNB as a preferred choice for one-stop rooftop solar solutions in Malaysia. The potential for rooftop solar projects in Peninsular Malaysia is immense, as it can generate up to 32,000 MW of electricity. Through GSPARX, we empower customers to transition to prosumers through self-generation of electricity. GSPARX allows customers (residential, commercial and industrial) to install Solar PV at zero upfront cost and enjoy savings via self-consumption.	In FY2022, GSPARX obtained 248 MWp of rooftop solar PV projects that includes government buildings, universities, commercial and industrial segments. One of the main projects was the installation of Solar PV systems at Universiti Putra Malaysia (UPM), which was completed in July 2022 and delivers 16.18 MWp with estimated savings of RM114 million. GSPARX has installed solar PV systems at 16 sites within the UPM Serdang campus, comprising various buildings including a mosque, rooftop carpark and a floating solar system, making the project the largest solar installation amongst public institutions of learning in Malaysia.
Pelan Jalinan Digital Negara (JENDELA)	Allo Technology Sdn. Bhd. (Allo) aims to extend TNB's fibre coverage throughout Peninsular Malaysia and support the JENDELA programme to build a robust digital infrastructure and bridge the digital divide between the rural and urban communities.	In FY2022, Allo completed 178,514 home passes under the JENDELA programme across Melaka, Perak, Kedah, Penang, Selangor, Kuala Lumpur and Johor. Allo aims to expand our network coverage to over 600,000 premises by 2027.

We have also taken steps to increase energy efficiency awareness among our customers through key initiatives:

Key Activities	Description
Sustainability Achieved Via Energy Efficiency (SAVE) 3.0	We supported the Government through the promotion of the SAVE 3.0 programme which offers a RM400 e-rebate for households that purchase energy that has undergone a performance test for energy efficient appliances that received a 4 or 5-star energy efficiency labels from the Energy Commission (ST).
Energy Efficiency (EE) Awareness Programmes	In collaboration with <i>Persatuan Pengguna Islam Malaysia</i> (PPIM), we conducted <i>Kempen Kesedaran dan Didikan Pengguna Bijak Tenaga</i> via seven (7) videos posted on PPIM social media platforms to raise awareness related to electricity and saving energy. Additionally, we organised <i>Kuasa Di Tangan Anda</i> seminars from May to October 2022, in collaboration with <i>Jabatan Pendidikan Politeknik dan Kolej Komuniti</i> (JPPKK) under Ministry of Higher Education (MOHE), which involved conducting 10 seminars at eight (8) Polytechnics and two (2) Community Colleges. These seminars reached 1,362 students participants and helped them gain a better understanding about energy efficiency, electrical regulations, and safety practices.

Sustainable Supply Chain

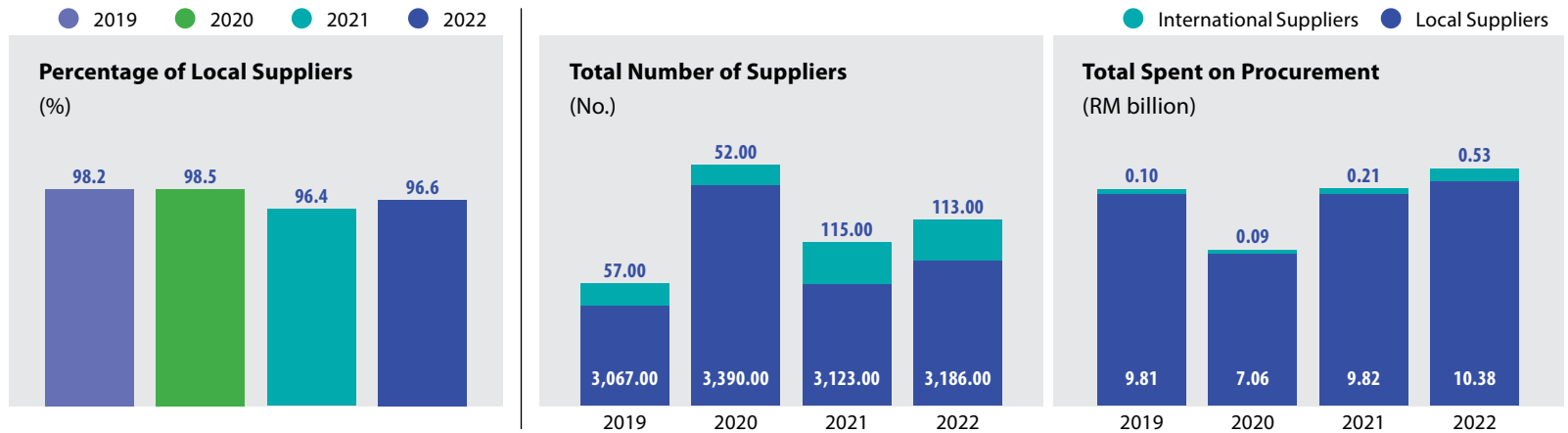
GRI 3-3 | 204-1 |

TNB aims to establish a sustainable supply chain ecosystem that upholds high standards of ethics, integrity and transparency. By integrating digitalisation into the procurement process and digitally transforming business processes, we hope to reduce the time spent on manual procurement systems. We support local Malaysian suppliers and understand the importance of our role in strengthening the local value chain ecosystem.

One of the initiatives conducted to digitalise procurement systems included the introduction of P&SC Management Dashboard that automates Service Level Agreement performance, OPEX and CAPEX budget reporting. Previously, reporting and monitoring of these items were conducted manually. As such, the system was developed to increase accuracy, timeliness and transparency of reporting through automated data integration with existing TNB platforms such as Enterprise Risk Management System (ERMS) and Procurement Cycle Digitalisation (PCD). Additionally, critical analysis can be performed to effectively strategise on initiatives to improve business performance.

Responsible Governance and Strengthening Business Resilience

Our Performance for FY2022

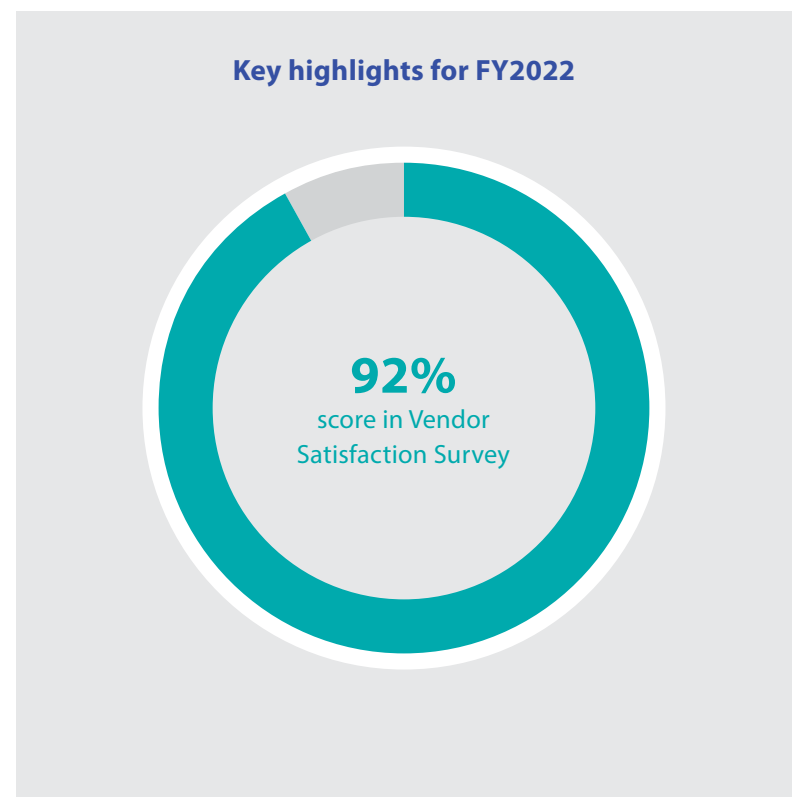
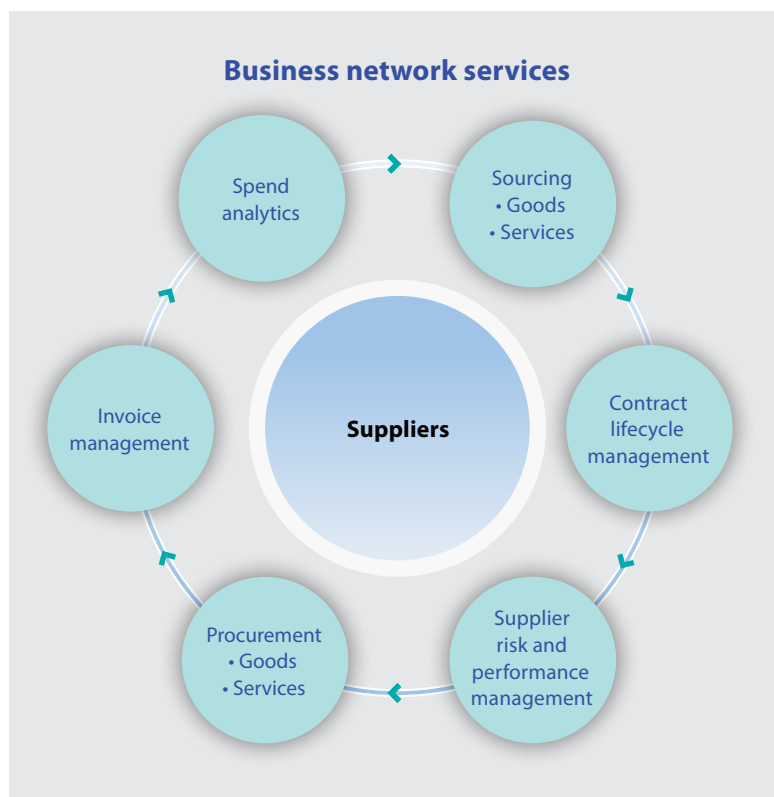


Procurement & Supply Chain (P&SC) 2.0

TNB has enhanced its P&SC organisational structure and operational model to support future-proofing initiatives and digital capability advancement. In FY2022, P&SC has successfully completed and launched the Procurement Cycle Digitalisation (PCD) 2.0, a digital management platform that facilitates the End-to-End workflow in procurement and supply chain in TNB. To advance further, P&SC will upgrade the Procurement Backbone system that will position P&SC as a strategic business partner for procurement, aiding TNB in achieving its sustainability goals.

The new Procurement Backbone will improve the performance of P&SC's three functional pillars: Category Excellence (CATEX), Key Account and Service Excellence (KASE) and Supplier Excellence & Ecosystem Development (SEED). Additionally, it will increase P&SC efficiency through more accurate and holistic analysis, category management and cost/market intelligence. The Procurement Backbone will have advanced capabilities and functionalities supported by automation, analytic capabilities, Artificial Intelligence (AI) and Machine Learning (ML) which will ensure seamless operation and excellent customer experience.

Key areas of the Procurement Backbone:



CLIMATE CHANGE AND ENVIRONMENT

Related Material Matters

Climate Change
and Emission



Energy Transition and
Innovation



Environmental
Management



Climate Change and Environment

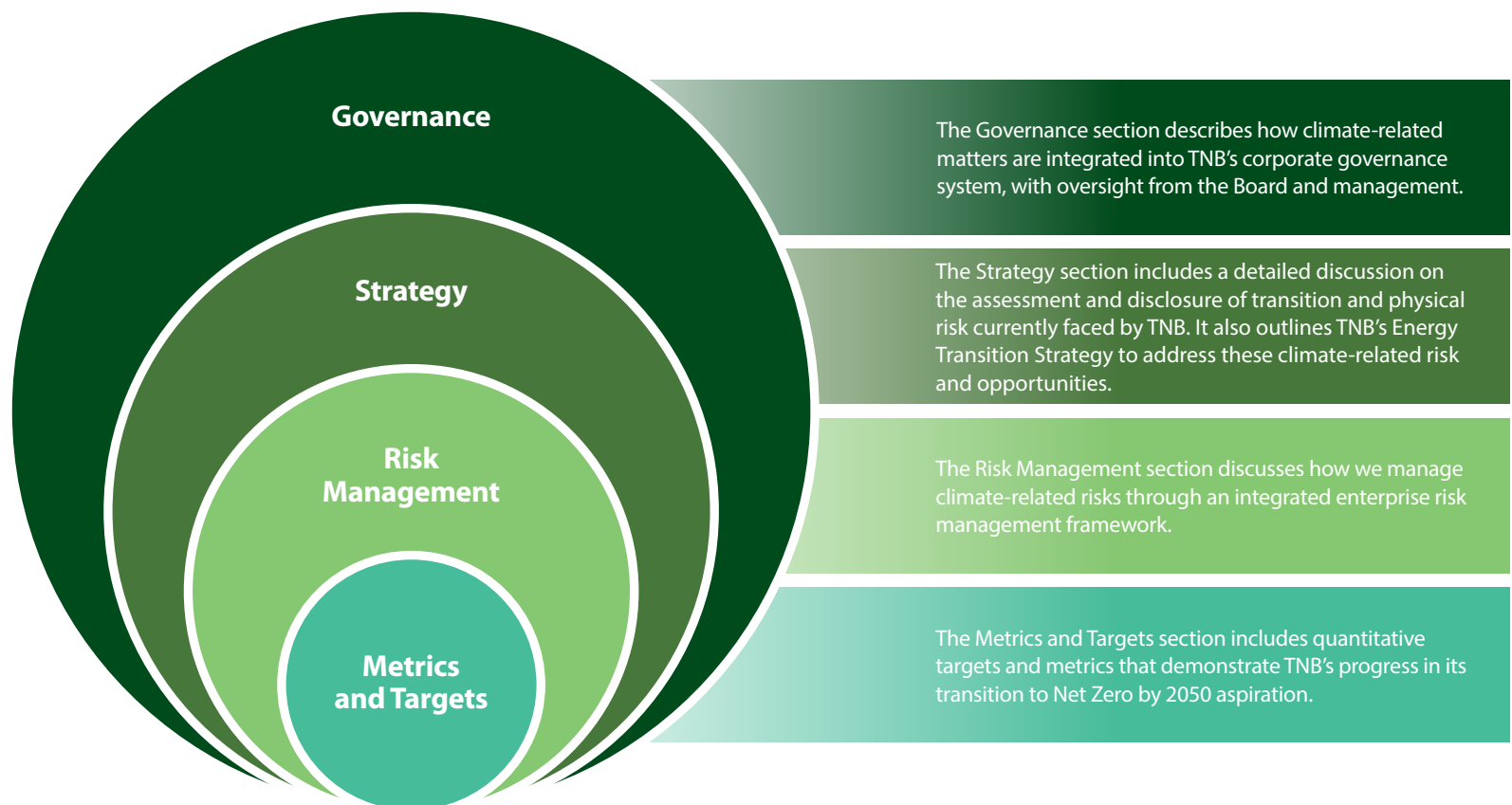
Our Response to Climate Change

GRI 3-3 | 201-2 | 305-1 | 305-2 | 305-4 | 305-5 | 305-7 |

As an energy utility company, we recognise the impact on climate change that we contribute to, as well as the threats of climate change to our existing infrastructure as well as our business sustainability. To ensure continuous and reliable supply of electricity to the nation, we are actively transforming and decarbonising our operations.

Since 2019, TNB has voluntarily adopted the Task Force on Climate-related Financial Disclosures (TCFD) framework to address potential climate-related physical and transition risks and opportunities on our business strategy, as well as the resulting financial impact.

Core Elements of Recommended Climate-Related Financial Disclosures



Climate Governance

The Board is committed to strategically integrating sustainability across TNB's business and advancing our sustainability efforts, including climate-related matters. It will deliberate and approve the sustainability strategy and pathway while overseeing TNB's implementation and performance on sustainability – these include the materiality assessment and Energy Transition Plans.

TNB's Sustainability Governance outlines clear roles and responsibilities in relation to sustainability and climate change for each level of leadership. The establishment of the Sustainability and Energy Transition Council (SETC), chaired by the CEO and composed of TNB's corporate senior management team is tasked to oversee the progress of sustainability and energy transition development and implementation. Business entities are responsible for managing sustainability and climate risks and opportunities as well as

monitoring performance of related initiatives rolled out by TNB in their respective units. They are required to report their sustainability performance to SETC on a regular basis.

The Corporate Strategy and Sustainability Department is assigned as the SETC secretariat and administers council meetings and ensures that decisions are clearly communicated to respective parties.

Principles to guide climate action, particularly on GHG emissions, are covered under our Environmental Policy, Environmental Management System, and Sustainability Energy Management (SEM) Framework based on the ISO 50001:2011 Energy Management System, ASEAN Energy Management System (AEMAS) and Grid's Green Code of Conduct.







For more information on sustainability governance, please refer to Strong Leadership and Responsible Governance section, pages 14-18.

Climate Change and Environment

Climate Scenario















Since 2021, we have conducted a climate scenario analysis with reference to the The Intergovernmental Panel on Climate Change (IPCC)'s Representative Concentrating Pathways (RCP) scenarios and Network of Central Banks and Supervisors for Greening the Financial System (NGFS) scenarios. TNB's climate change scenario analysis considers the following pathways:

Types of scenarios	Scenario Description	Temp increase by 2100	Transition Consequence
Business-as-usual IPCC's RCP 8.5/4°C (high emission scenario).	The 'Business as usual' scenario suggests a likely outcome if society does not make concerted efforts to cut greenhouse gas emissions.	>4°C	 High
Limited Mitigation IPCC's RCP6.0/3°C (moderate emission scenario).	The scenario suggests a future in which greenhouse gas emissions continue to rise at a moderate rate but stabilised at 2070.	2.6°C	 Moderate
Strong Mitigation NGFS' Nationally Determined Contributions (NDCs) scenario.	The NDC scenario includes all pledged policies even if not yet implemented, based on the trajectory associated with global NDC commitments to limit the impact of climate change.	2°C to 3°C	 Moderate
Aggressive Mitigation NGFS' Net Zero 2050 scenario.	An ambitious scenario that limits global warming to 1.5°C through stringent climate policies and innovation, reaching net zero CO ₂ emissions around 2050.	1.5°C to 2°C	 Low




























With reference to the scenario pathways above, we have identified both climate-related transition and physical risks and opportunities and the potential impact on our business across our operations over short-term, medium-term and long-term horizon. Overall, TNB will have high exposure to most transition risks identified by 2050 and this will be addressed via TNB's Strategic Pillars to ensure TNB maintains its competitive edge and remains resilient.

TRANSITION RISKS AND OPPORTUNITIES

Transition risk refers to risks related to the transition to a low-carbon economy. Given Malaysia's commitment to carbon neutrality by 2050, policy and regulatory changes are expected to be key drivers of decarbonisation. Given the nature of long asset life of our utilities, TNB is exposed to the key transition risks outlined below.

Transition Risk	Impact	Division impacted	Net Zero ¹		NDC ²		Management Approach
			2030	2050	2030	2050	
POLICY AND LEGAL							
Carbon price Introduction of carbon pricing mechanisms on carbon emissions.	Increase in operational expenditure Decrease in revenue	Group	 High	 High	 High	 High	TNB is minimising exposure to risks through responsible decarbonisation based on our Energy Transition strategy.  For more info, please refer to Energy Transition Pillar 1: Future Generation Sources pages 54-56.
Emissions reporting obligations Increased expectations from regulatory bodies for companies to track and publicly report on emission.	Increase in operational expenditure	GenCo NED	 Significant	 High	 Low	 Significant	TNB is reskilling our talent with skills required across our Energy Transition strategy.
Exposure to litigation Fines and judgments driven by environmental and climate activism.	Increase in operational expenditure	Group	 Significant	 Low	 Significant	 Low	TNB is minimising exposure to risks through responsible decarbonisation based on our Energy Transition strategy.  For more info, please refer to Feature Story 6: Prioritising People : Safeguarding Safety and Well-Being, pages 90-91.

Climate Change and Environment

Transition Risk	Impact	Division impacted	Net Zero ¹		NDC ²		Management Approach
			2030	2050	2030	2050	
TECHNOLOGY							
Low carbon technology Deployment of low emissions technology to meet decarbonisation commitments.	Increase in capital expenditure (CAPEX)	GenCo NED	 High	 Significant	 High	 Significant	TNB is maximising opportunities by increasing renewable energy, hydrogen-related technology and energy storage.  For more info, please refer to Energy Transition Pillar 1 : Future Generation Sources, pages 54-56.
Talent The requirement to upskill and reskill talent to navigate new and emerging technologies.	Increase in operational expenditure	GenCo	 Significant	 High	 Medium	 High	TNB is reskilling our talent with skills required across our Energy Transition strategy.
MARKET							
Reduction in market share Changes in market demand or consumer sentiment from specific market (e.g. wholesale) which has a higher margin.	Decrease in revenue	GenCo	 Medium	 High	 Low	 Significant	TNB is minimising exposure to risks through responsible decarbonisation based on our Energy Transition strategy. TNB is also expanding the business beyond the meter involving the customers as prosumers in our Energy Transition journey.  For more info, please refer to Energy Transition Pillar 3 : Winning the Customer, pages 58-60.
Shift in customer behaviour Changing customer behaviour and preference for low carbon options.	Decrease in revenue	Retail	 Medium	 High	 Low	 Significant	
Stranded assets Assets that have suffered from unanticipated or premature write-downs or devaluation.	Decrease in revenue	GenCo	 High	 Medium	 Medium	 Significant	TNB is minimising exposure to risks through responsible decarbonisation based on our Energy Transition strategy.
Divestment Increased investor scrutiny over uncertain future sustainable earnings and their commitments to responsible financing leading to investment sell-off.	Increase in cost of capital	GenCo	 Significant	 High	 Medium	 Significant	 For more info, please refer to Energy Transition Pillar 1 : Future Generation Sources, pages 54-56.

Legend:

¹ Net Zero Scenario is aligned to commitments countries are making, going beyond NDCs to achieve Net Zero Emissions by 2050 and restrict warming to well below 2°C (i.e. Paris Accord).






















² Nationally Determined Contributions (NDCs) is based on the trajectory associated with global commitments that are aligned to current Nationally Determined Contributions (NDCs) to limit the impact of climate.




 **Low:** Risk exposure is low
  **Medium:** Risk exposure is moderate
  **Significant:** Risk exposure is significant
  **High:** Risk exposure is high



Climate Change and Environment





Climate change is a key risk driver for the electric utility sector. It does, however, present opportunities in the transition to a low-carbon economy.

Transition Opportunities	Impact	Division impacted	Net Zero ¹		NDC ²		Management Approach
			2030	2050	2030	2050	
PRODUCTS AND SERVICES							
Electrification Introduction of EV policy aimed at increasing electric vehicle uptake.	Increased revenue from growth opportunities for e-Mobility services (EV charging infrastructure)	Retail	 Medium	 High	 Medium	 High	TNB is maximising opportunities by our Energy Transition strategy.  For more info, please refer to the 3 pillars of our Energy Transition strategy – Future Generation Sources, Grid of the Future and Winning the Customer, pages 58-60.
Renewable energy growth Acceleration of renewables expansion in regional and international markets, leading to increased revenue.	Increased revenue	GenCo, NED, Retail	 High	 High	 High	 High	
Low carbon options Opportunities for beyond the kWh solutions (EE, rooftop solar, storage) due to a shift in customer behaviour (prosumers) leading to creation of new revenue streams.	Creation of new revenue streams	Retail, Transmission and Distribution	 Medium	 High	 Low	 High	
Diversification of business activities Diversifying business activities through the use of distributed generation, hydrogen, O&M as green technologies emerge (e.g. hydrogen, storage, CCU) through partnerships.	Creation of new revenue streams	Group	 Low	 High	 Low	 Medium	
ENERGY SOURCE							
Shift towards decentralisation Increasing system efficiencies through the reduction of peak load to reduce transmission losses and allow for the extension of generational assets.	Reduced operational expenditure and increased profit margins	GenCo, NED, Transmission and Distribution	 High	 High	 Low	 High	

 **Low:** Opportunities exposure is low
  **Medium:** Opportunities exposure is moderate
  **High:** Opportunities exposure is high

Physical Risks

Physical risks refer to risk related to the physical impact of climate change. Physical climate scenario modelling was carried out for three (3) power plants (Manjung, Southern Power Generation (SPG) and Sultan Mahmud (SM)) and a selection of 100 substations in 2021. The scenario modelling analysed climate-related failure and damage risks at each grid point of the asset sites selected to identify the spatial distribution of the eight (8) climate risks across each site. The summary of the outcome of the scenario modelling for TNB's assets are as follows:

 100 substation: Riverine flooding is the dominant hazard.	 Manjung: Coastal inundation is the clear dominant hazard.	 SPG: Coastal inundation is the dominant hazard. Surface water flooding is the next most significant hazard.	 SM: Riverine flooding is the dominant hazard.
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For more information on the above physical risk assessment and outcome, please refer to TNB Sustainability Report 2021, page 59.

Based on the physical risk assessment conducted in 2021, risks related to flood, heat, dry spells, and coastal inundation presents the highest risk to TNB's plants. Floods at dam catchments increase water storage in the hydropower dams and can subsequently lead to dam overflow and structure failure. On the other hand, a prolonged dry spell will reduce the water storage of dams, leading to insufficient water for operating hydropower plants. Meanwhile, both floods and dry spells also affect the operation of thermal power plants. Dry spells will disrupt the cooling process of the plants, while floods will affect the infrastructure at the plants.

Climate Change and Environment

In FY2022, we delved deeper into the assessment of 21 thermal power plants and 12 hydropower plants in Peninsular Malaysia against these risks based on the RCP 6.0 rainfall projection and RCP 8.5 coastal inundation projection to comprehend the exposure of our power plants and substations to the effects of climate change.

Type of asset	Region	RCP 6.0/3°C		RCP 8.5/4°C			Potential impact
		No. of plants exposed to floods by 2100	No. of plants exposed to dryspell by 2100	No. of plants exposed to coastal inundation and floods in 2022	No. of plants exposed to coastal inundation and floods in 2050	No. of plants affected by coastal inundation and floods in 2100	
Hydropower Plants	Perak	4	4	-	-	-	<ul style="list-style-type: none"> Reduced revenue from decreased production capacity. Increased operating costs. Increased insurance premiums and potential for reduced availability of insurance on assets in “high-risk” locations. Increased capital costs (e.g., damage to facilities).
	Kelantan	1	-	-	-	-	
	Pahang	4	4	-	-	-	
	Coastal	3	-	-	-	-	
Thermal power plant	Kelang	1	1	1	1	1	
	Coastal	9	5	2	5	7	
Substations		-	-	4,137	4,991	8,003	

With the high exposure of our plants to floods, coastal inundation and dry spells, we are guided by our current adaptation measures to minimise the impact of these risks. With the possibility of increased exposure and impact severity, we are committed to improve our adaptation plans.

Floods

Dry Spells

MANAGEMENT APPROACH

Our current adaptation measures include:

- An integrated catchment management policy, procedures, and guidelines to regulate power supply among the catchments during floods;
- Flood drills to improve the standard operating procedures, better manage critical situations and safely restore the electricity supply;
- Integrated Community-Based Disaster Management (ICBDM) programme;
- Prompt shutdown of affected substations through early warning systems to avoid/prevent damages;
- Installation of protective measures around the substations such as flood walls, flood gates, flap gates and pumping systems to reduce the water level inside the substation area; and
- Raised heights of transmission towers.

Our current adaptation measures include:

- Temporary storage tanks or/and alternative water sources (groundwater, treated saline water, and recycled brackish groundwater and municipal wastewater) as an addition to the existing water sources and increasing storage volumes to ensure ample water supply to thermal power plants at all times.

FUTURE ADAPTATION PLANS

TNB will consider potential adaptation measures for hydropower plants including:

- Incorporate climate change factors into new site assessments and adopting new design standards taking into account projected increasing flood risks;
- Incorporate flood protection measures into plant design for protecting the key infrastructures such as intake structure, power house, etc.;
- Increase dam height and existing spillway discharge capacity wherever permitted structurally;
- Further enhance flood management plans with precision real-time monitoring and early warning systems;
- Continue development of integrated reservoir inflow and flood forecasting for the downstream area;
- Enhance satellite-based monitoring for hydro and thermal power plants;
- Continue basin-wide management strategies that take into account the full range of downstream environmental and human water uses may prove necessary;
- Restore and better managing and use at upstream catchments such as afforestation to reduce sedimentation; and
- Implement Risk Informed Decision Making (RIDM) approach to ensure Sustainable Hydropower Dam Safety Management.

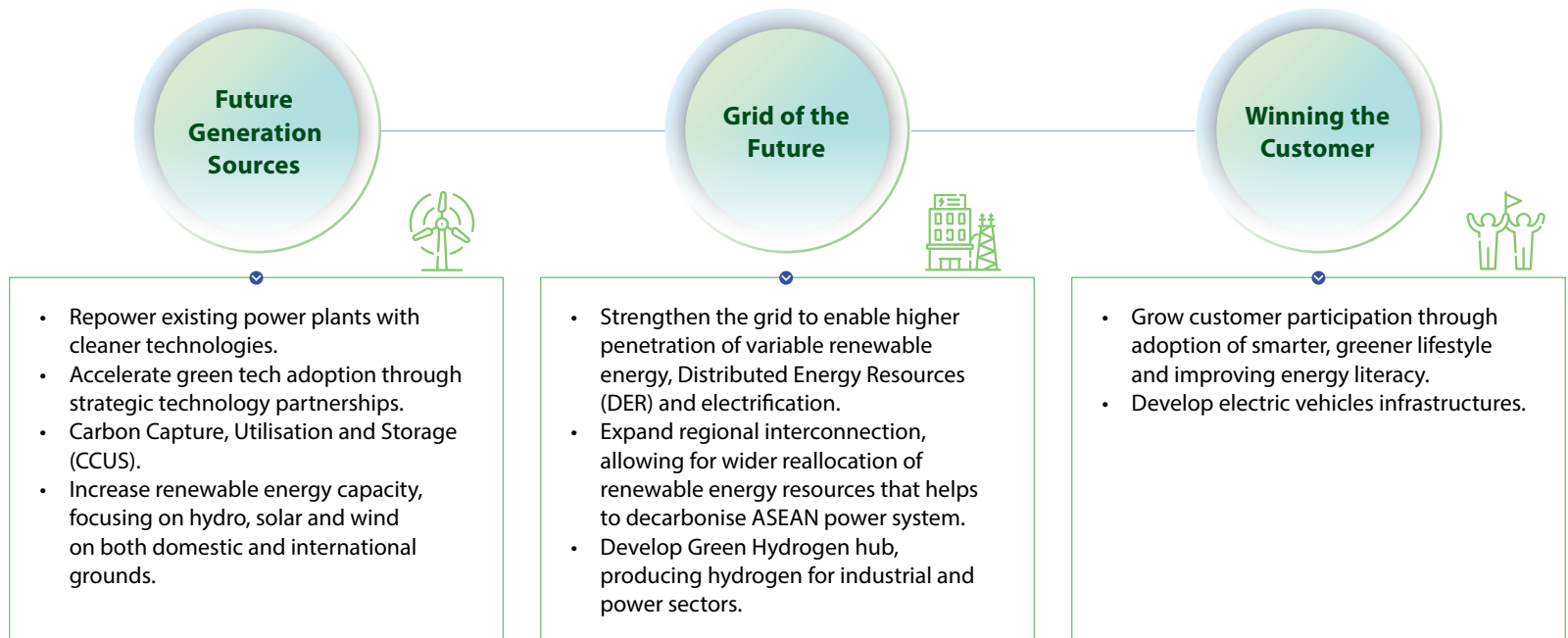
TNB will consider potential adaptation measures for thermal power plants including:

- Install monitoring systems on source water supplies and develop standard operating procedures for low water conditions;
- Ensure proper design of cooling water intake and discharge systems;
- Enlarge or retrofit cooling systems such as water-saving cooling technology to overcome water stress issues;
- Diversify energy sources and/or the inclusion of supplemental technologies that are less dependent on water for cooling purposes;
- Incorporate climate change factors into site assessments to avoid siting new plants in water-stressed areas; and
- Promote demand management and end-use energy efficiency measures.

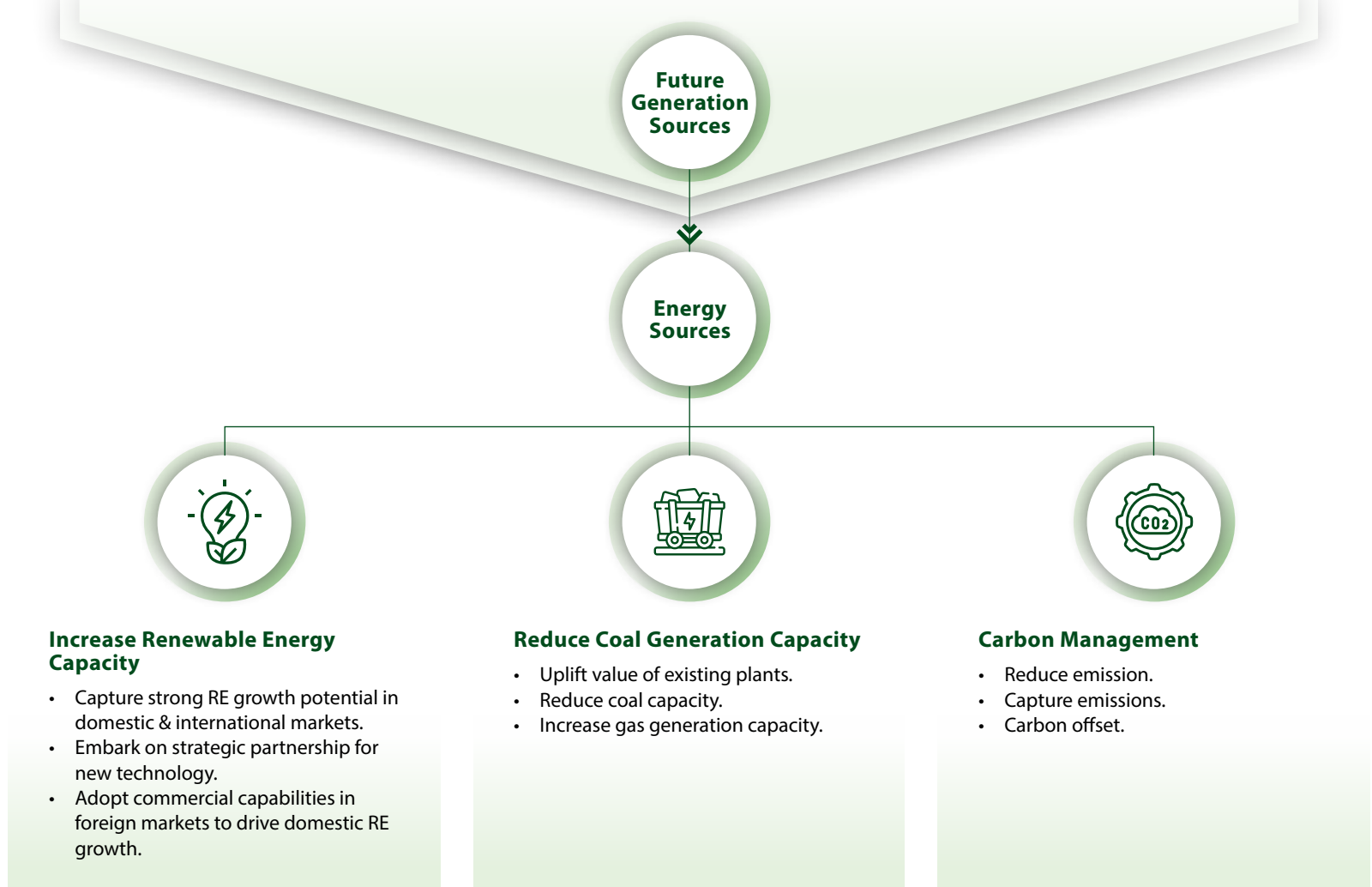
Climate Change and Environment

Climate Strategy

TNB through its TNB ET Plan is supported by three (3) RT2025 key pillars outlined below.



Energy Transition Pillar 1: Future Generation Sources



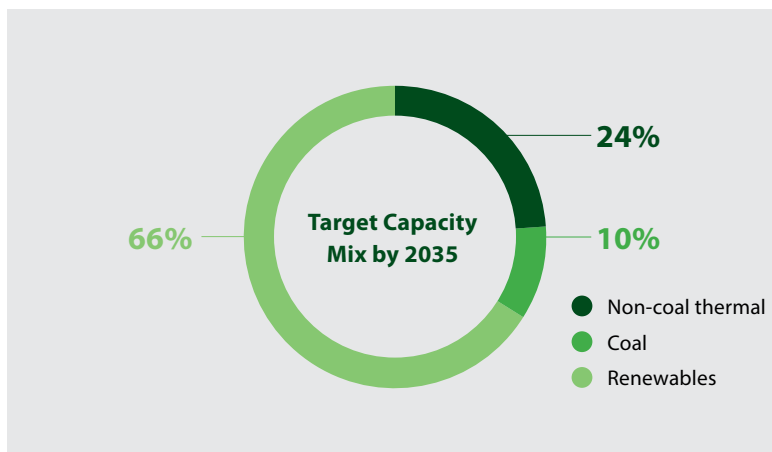
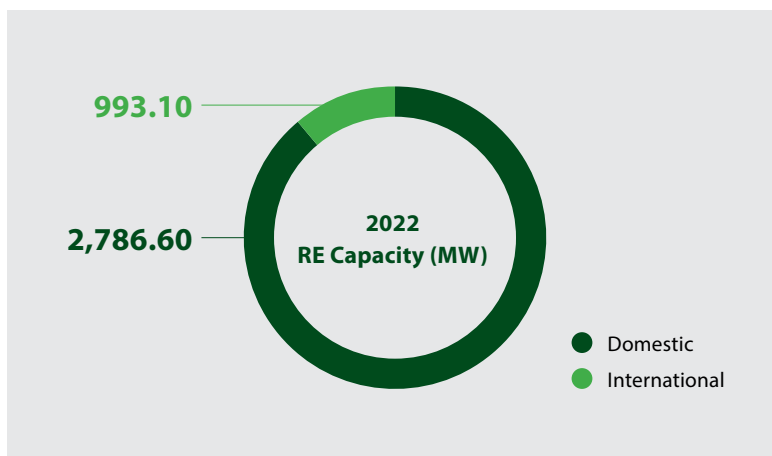
Climate Change and Environment

Clean Coal Technology

TNB has been actively pursuing the implementation of clean coal technology as part of its commitment to reducing environmental impact while concurrently exploring low-carbon generation options. Recognising the importance of transitioning to cleaner and more sustainable energy sources, TNB has invested in advanced coal-fired power plants equipped with state-of-the-art pollution control technologies. By adopting these technologies, TNB aims to minimise the environmental footprint of its coal-fired power plants, ensuring that they meet stringent emission standards and adhere to national and international environmental regulations. In 2021, TNB won the prestigious ASEAN Energy Awards in the Clean Coal Technology Utilisation for Large Power Generation category for its remarkable project, Jimah East Power (JEP). This recognition highlights TNB's dedication to utilising clean coal technology as a means to minimise the environmental impact of its power generation operations.


Increase Renewable Energy Capacity

In FY2022, TNB's RE capacity has reached 3,780 MW, a growth of 8% compared to FY2021 and we believe that we are on track to achieving our goal.



Expansion of international RE asset is a top priority for TNB as a growth enabler that will help our business thrive in the long-term by significantly ramping up our RE installed capacity to capture 66% of capacity mix by 2035. Our New Energy Division (NED) is positioned to grow RE portfolio in targeted international markets through strategic partnerships. NED oversees two (2) key entities responsible for exploring opportunities at different market regions; Vantage RE focuses on the UK and Europe markets, while TNB Renewables focuses on the domestic and Southeast Asia market. NED targets to achieve an installed capacity of renewable energy of 14.3 GW by 2050 with an estimated equity investment of RM30 billion. Additionally, our subsidiary, Sabah Electricity Sdn. Bhd. (SESB) has set a target of 110 MW of RE installed capacity by 2025 from the current capacity of 99.84 MW.

In FY2022, Vantage RE has been awarded the Right-To-Build (RTB) for the construction and commissioning of 102 MW solar farms in the UK. The project also includes an option to develop 65 MW co-located Battery Energy Storage Systems (BESS), which upon development may enhance TNB's revenue streams through participation in ancillary services and the capacity market. This investment represents a significant milestone for TNB as it broadens into RE greenfield development in the UK. The solar farms are expected to achieve Commercial Operation Date (COD) by Q1 2024 and will be built on two sites. This project will provide stable long-term revenues under a 15-year Contract-for-Difference (CfD) subsidy scheme. Upon its commissioning, it is forecasted to generate enough clean energy to meet the equivalent annual needs of over 37,000 homes and save over 46,750 tonnes of CO₂ per annum compared to fossil fuel generation. Both sites also offer opportunities for environmental initiatives to promote biodiversity net gains, supporting TNB's wider biodiversity agenda. In 2023, we will broaden our focus beyond ASEAN and explore potential projects in Asia Pacific and Oceania to pursue opportunities in achieving out 2025 RE target.

 For more information on our strategy to increase our renewable energy capacity, please refer to Sustainable Business Expansion section, pages 41-42.

Reduce Coal Generation Capacity

TNB has committed to no longer investing in greenfield coal plants. JEP power plant, which was commissioned in 2019, is the last coal plant in our generation portfolio to be commissioned. The existing coal-fired plants will be phased out upon expiry of their Power Purchase Agreements (PPA), with consideration for early retirement. For plants retiring before 2030, TNB has planned to re-power them using natural gas. We have recently received a Letter of Intent (LOI) from the Ministry of Natural Resources, Environment and Climate Change (NRECC) for the development of 2.1 GW combined-cycle power plant in Kapar, which is slated for a commercial operation date by 2031. Prior to that, we have received an LOI to repower the retired 1,400 MW Paka gas power plant with cleaner technology.

Beyond this, we are exploring other solutions and technologies to enable low-carbon fuel sources to be deployed at coal-fired power plants to help us decarbonise further. A key step we have taken is a joint-collaboration with PETRONAS Gas and IHI Corporation for a feasibility study on ammonia co-combustion in coal-fired power generation systems. The feasibility study was successfully completed and the outcome derived from pilot-scaled combustion testing programme at TNBR has proven the feasibility of the technology.

Climate Change and Environment

Carbon Management

TNB's Carbon Management approach focuses on three (3) key pillars - **Reduce Emission**, **Carbon Capture** and **Carbon Offset**.

- 1) **Reduce Emission**: TNB reduces emissions by reducing absolute emissions and emission intensity, phasing out coal capacity, increasing renewable energy capacity generation and increasing operational efficiency across the value chain.
- 2) **Carbon Capture**: We have identified carbon capture and storage (CCS) as a solution in decarbonising the power sector and we are committed to play an active role in advancing this technology. To demonstrate our commitment, TNB has inked a Memorandum of Understanding (MoU)
- 3) **Carbon Offset**: Carbon credits enable a company to offset a portion of its carbon emissions. TNB's stance is to reduce and capture emissions before looking at purchasing viable, high quality carbon credits. Additionally, TNB is also exploring the development of carbon credit through removal or avoidance projects. The sale of these credits can then be used to support the energy transition at TNB.



For more information on CCUS, please refer to Feature Story 3 : Decarbonisation Through Innovative Solutions : Carbon Capture section, pages 64-65.

TNB currently has a healthy pipeline of upcoming renewable energy and green technology projects to support the **Future Generation Sources** pillar:

Project	Description	Commercial Operation Date (COD)	Emission Avoidance (Equivalent to CO ₂ emission)
RENEWABLE ENERGY			
TNB Bukit Selambau 2 (LSS@MEntARI Scheme) 50 MW	<ul style="list-style-type: none"> Commencement of work since September 2022. 	2023	0.08 million tCO ₂ e/ year
Sungai Perak Hydro Life Extension Programme 650.75 MW	<ul style="list-style-type: none"> Uprate and upgrade the Sungai Perak Hydroelectric Scheme which consists of Stesen Janaelektrik (SJ) Temengor, SJ Bersia, SJ Kenering, SJ Chenderoh and SJ Sungai Piah with eighteen (18) generating units. with the latest technology. The project will commence in Q3 of year 2024. 	2025	0.5 million tCO ₂ e/ year
Nenggiri Hydro Project 300 MW	<ul style="list-style-type: none"> Commencement of work since 1 March 2022. 	2027	0.3 million tCO ₂ e/ year
Solar greenfield development, UK 102 MW	<ul style="list-style-type: none"> Greenfield project with option to develop co-located battery energy storage systems. 	2024	0.05 million tCO ₂ e/ year
GREEN TECHNOLOGY			
Paka Repowering 1,400 MW	<ul style="list-style-type: none"> Brownfield project to repower the retired SJSI Paka using highly efficient Combined Cycle Gas Turbine (CCGT) with hydrogen ready technology by 2030. 	2030	3.2 million tCO ₂ e/ year
New Combined Cycle Power Plant, Kapar 2,100 MW	<ul style="list-style-type: none"> Greenfield project that is marked for combined cycle gas-fired plant with hydrogen-fired combustion capability; replacing KEV coal capacity and supplying cleaner electricity. 	2031	4.7 million tCO ₂ e/ year

Climate Change and Environment

Energy Transition Pillar 2: Grid of the Future

Grid of the Future



Enabling Smart Grid

- Enhance grid flexibility to enable higher penetration of Variable Renewable Energy (VRE) and Distributed Energy Resources (DER) and electrification by investing in network infrastructure, and demand response.
- Strengthen regional interconnection.



Hydrogen

- Application for power, industrial and mobility sectors for domestic market.
- Production for export market.



Energy storage

- Stabilise the grid.
- Manage grid's peak demand.
- Enable off-grid supply and peer-to-peer generation among prosumers.
- Energy Storage Systems (ESS) developer.

Smart Grid Enhances Grid Flexibility

TNB will continue to prioritise investing in modernising our world class national grid into GoTF – a smart grid which remains reliable, resilient, smart with digital technology and flexible in meeting the country's needs for energy transition. A smart grid is an advanced electricity network that incorporates the use of digital technologies to improve the efficiency, reliability and resilience of the grid. It allows for two-way communication between the grid and Distributed Energy Resources (DER), as well as real-time monitoring and control of the electricity flow. Expanding regional interconnection allows for a wider reallocation of RE resources that helps decarbonise the ASEAN power system.

Leveraging on the smart grid, DER can provide energy to the grid during periods of high demand and absorb excess energy during periods of low demand. Also, this helps to balance the grid and reduce the need for conventional power plants to ramp up or down production. This enables the grid to allow higher penetration rates of intermittent renewable energy sources, improve the efficiency of energy consumption while maintaining the high performance of the conventional power plants.

TNB is planning to invest a total of RM21 billion capital over a period of 3 years until 2024, in strengthening the grid and ensuring reliability of energy supply. Our grid reliability performance is exemplified by the fact that the recovery time has not surpassed our most recent approved Guaranteed Service Levels (GSL).



TNB is partnering with Microsoft Malaysia to collaborate on discovering and validating potential opportunities through series of projects over a period of two (2) years as well as to accelerate digital transformation to support TNB's Grid of Future strategic pillar. The MoU also covers digital skills and development initiatives where TNB employees are exposed to technical and digital competencies in using Microsoft tools and cloud services.



For more information on our Smart Grid initiatives, please refer to Smart Grid section, pages 37-40.

Climate Change and Environment

Hydrogen Fuel of the Future

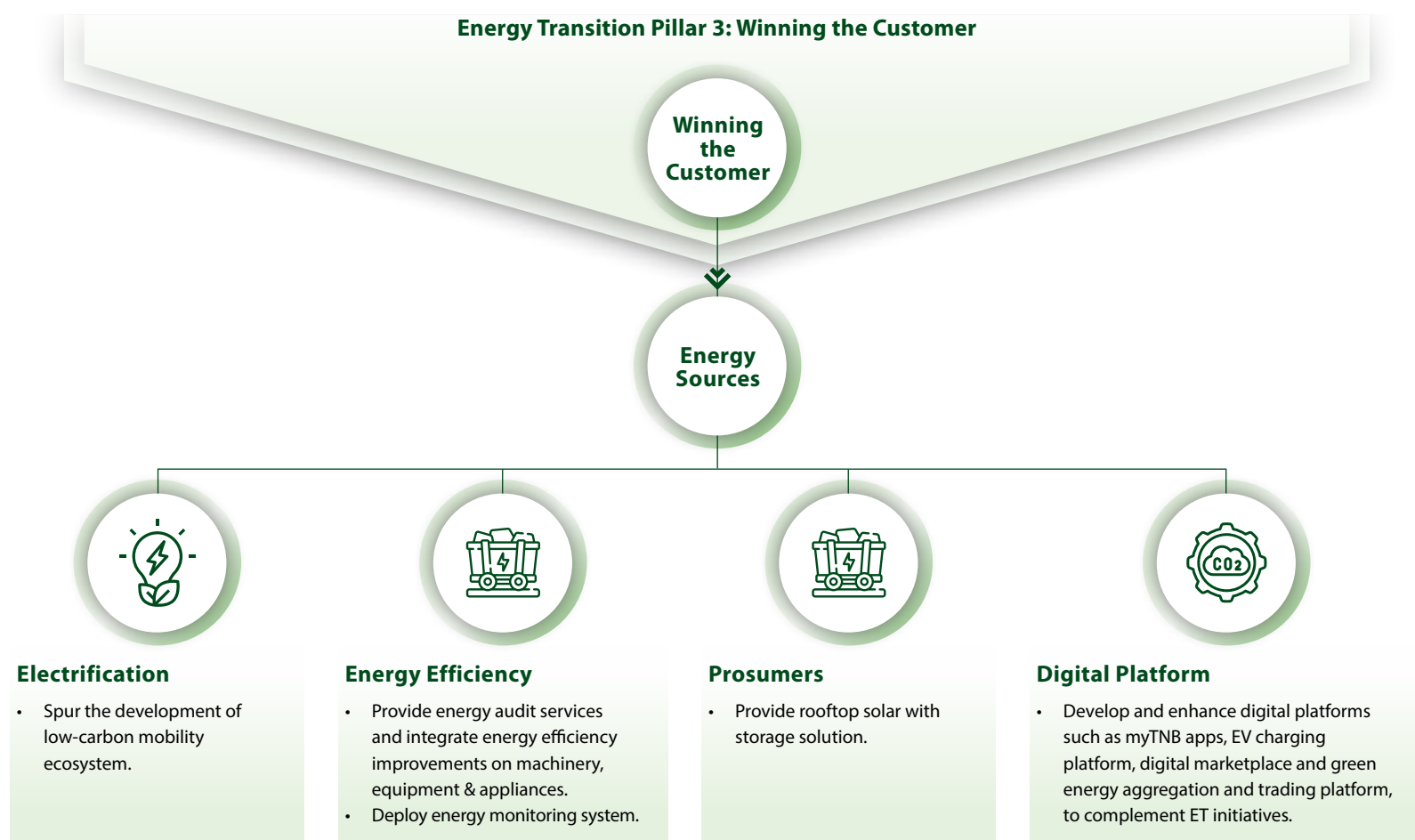
TNB's strategy is to repower retired coal and gas plants with CCGT equipped with hydrogen-ready technology, as hydrogen is regarded as the fuel of the future, particularly green hydrogen produced from renewable energy sources. As such, a sustainable and economically viable supply of green hydrogen is required. TNB will undertake research on the production of green hydrogen using electrolyzers that are more efficient in an effort to reduce the levelised cost of energy for green hydrogen.

In parallel, TNB is collaborating with PETRONAS to develop the green hydrogen ecosystem by 2030. The ecosystem includes the whole value chain from the supply of green electricity, electrolyzers, compression, storage to transportation.

Energy Storage Provides Security

To support the National Energy Policy 2022-2040 and Malaysia's vision to include more renewable energy sources into our generation mix, battery storage plays a crucial role in our nation's grid reliability. By storing energy during periods of low demand and releasing it during periods of high demand, battery storage can help to stabilise the grid and improve the overall efficiency of the power system.

TNBR has an ongoing pilot project for Virtual Power Plant (VPP) technology, which utilises software and energy storage to enable peer-to-peer generation among energy prosumers and demand response control for system stability in the future. TNB and South Korean companies invested USD 7 million in R&D on this project in order to better regulate the supply of electricity from renewable sources during peak demand on the national grid. The VPP project involves installation of four (4) battery energy storage systems (BESS) with a total of 2 MW capacity.



Electrification

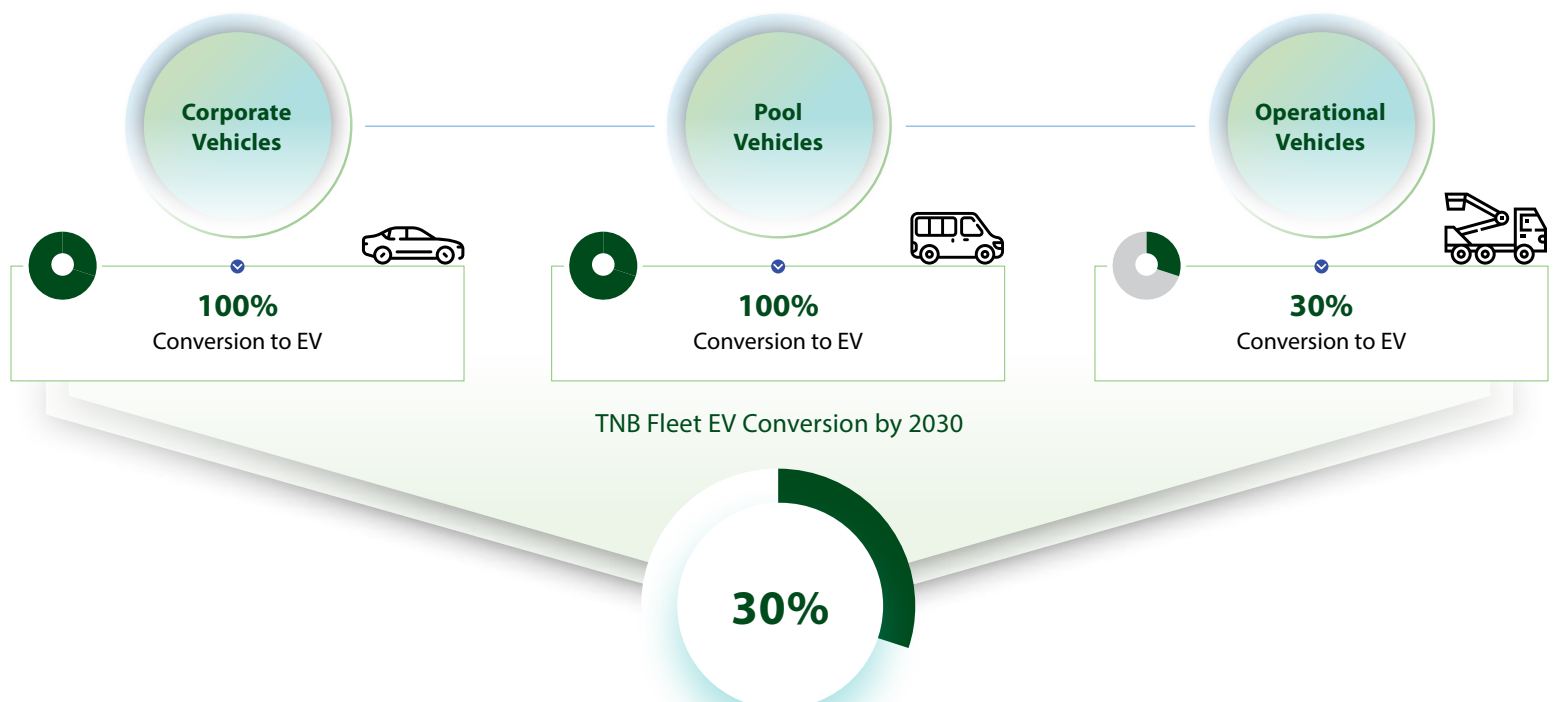
TNB is ready to lead Malaysia's transition towards low-carbon mobility. Understanding the increasing demand for electric vehicles and the present state of EV infrastructure in Malaysia, TNB aspires to play an active role in building charging infrastructure within strategic locations and delivering the charging facilities needed. TNB has projected 3,300 charging points by 2025 and 18,000 charging points by 2030 across the country through the various Charge Point Operators (CPO). TNB is committed to investing RM90 million in the span of three (3) years (2022-2024) to uplift the development of the EV ecosystem in Malaysia. TNBX Sdn. Bhd. (TNBX) plays an important role to position TNB in the EV marketplace as the CPO, while Tenaga Switchgear Sdn. Bhd. (TSG) functions as a manufacturer of equipment and charger for TNB Electron stations. In 2023, we plan to deploy EV charging stations along Peninsular Malaysia's highways and trunk roads to enable seamless travels for Battery Electric Vehicle (BEV) owners throughout Peninsular Malaysia.

In building up the EV ecosystem, we have initiated strategic discussions via various platforms to bring EV players together and collaborate towards common objectives. This includes building charging infrastructure, fostering coalitions among EV players, sponsoring EV-related studies, electrification of TNB's own fleet and reskilling of employees for the electric vehicle (EV) industry. In 2023, ILSAS has established an Electric Vehicle (EV) Training Hub to provide reskilling for the EV industry, focusing on fundamental knowledge such as basic battery storage and EV technology where the training sessions are certified by International bodies.

Climate Change and Environment

Our ongoing and new initiatives on low-carbon mobility includes:

TNB and Sime Darby Motors Malaysia to explore various initiatives to accelerate the adoption of EV.	TNB and Sime Darby Motors (SDM) Malaysia, have entered into an MoU in a collaboration to support the country's low-carbon mobility ambitions. The collaboration will explore various initiatives to accelerate the adoption of electric vehicles (EV) as well as ensuring a network of highly efficient EV charging infrastructure and digital platform. The collaboration also aims to identify other energy-efficient and renewable energy initiatives to optimise the cost of EV charging infrastructure and to reduce carbon emissions.
TNB and Majlis Amanah Rakyat (MARA) collaborate for the development of EV charging infrastructure and learning.	TNB and MARA entered into a strategic collaboration to install photovoltaic solar system panels for the generation of clean electricity at MARA educational institutions (IPMa) and the development of EV charging infrastructure for the operation and management of MARA Liner buses. The chargers are MARA Group's first DC fast chargers with a capacity of 120 kW for its MARA Liner pilot project in Langkawi. This electric bus project is a showcase of sustainable development agenda and is a major contribution towards realising Langkawi Low Carbon island vision. The MoU also includes the provision of telecommunication services and internet access at MARA educational institutions by TNB subsidiary, Allo Technology Sdn. Bhd. and the development of human capital with a target of over 30,000 students and trainees in the field of Technical and Vocational Education and Training (TVET), which will be empowered under the MARA and TNB ecosystem. The collaboration is in line with the National Renewable Energy Policy 2025 under the Sustainable Energy Development Authority (SEDA) Malaysia.
TNB MoU with Gamuda Land for EV charging infrastructure.	TNB has inked an MoU with Gamuda Land to build two (2) electron stations for electric vehicle (EV) charging at Gamuda Land's property development projects in Selangor. Malaysia's first electron stations will be developed at Gamuda Cove in southern Klang Valley and Gamuda Gardens in northern Klang Valley for communities in the projects and visitors to the water theme park at Gamuda Cove.
TNB collaborates with PLUS Malaysia in developing EV charging station network.	TNB and PLUS Malaysia collaborated to reduce carbon emissions on PLUS highways through three sustainability initiatives – the development of a charging station network, installation of energy efficiency monitoring and solar photovoltaic systems at selected Rest and Service Areas (RSA) along the PLUS highway network. Fast EV charging points were installed at several RSAs along the PLUS North South Expressway (NSE) and Lebuhraya Pantai Timur 2 (LPT2). In FY2022, TNB launched three (3) EV charging stations dubbed "TNB Electron" at RSA Ayer Keroh Northbound, Tapah Northbound and Paka Eastbound which are equipped with Direct Current Fast Charger (DCFC) for pilot testing. Our subsidiaries, TNB Switchgear Sdn. Bhd. (TSG) and TNBX Sdn. Bhd. (TNBX) will be involved in development and operations of the Electron stations.
TNB and Malaysia Automotive, Robotics, and IOT Institute (MARii) partnership to develop the EV Ecosystem.	TNB and MARii are in a Research and Development partnership to develop EV Telematics and Internet of Things (IoT) as part of the EV ecosystem. The partnership aims to set up Co-Joined Research and Reports to develop comprehensive telematics and IoT solutions related to EV ecosystem. It also focuses on the use and development of technologies to monitor and manage identified EV parameters for EV and EV Charger utilisation.



Climate Change and Environment

Through the Fleet Management Department (FMD), TNB set a target to replace 30% of its vehicles with electric vehicles (EV) by 2030, through three phases. Phase 1 (introducing EVs at TNB) and Phase 2 (introducing TNB operational EVs) have been implemented, with 15 vehicles from TNB fleet being replaced with EVs thus far. Currently, FMD is planning the implementation of Phase 3, to replace operational vehicles with EVs with an emphasis in strategic locations.

To facilitate the transition of EV replacement in TNB's fleet, TNB is also installing EV chargers at TNB premises, with a total of 13 charging station installed in FY2022.

Energy Efficiency

TNB actively assesses and adopts efficient technologies and ensures that all plants are properly maintained and where possible, upgraded to maintain their efficiency. To improve energy efficiency, TNB systematically assesses and adopts efficient technologies while pursuing operational excellence by undertaking plant-level business turnaround, improving the overall production processes, ensuring all power plants are promptly overhauled and adequately maintained and implementing technical upgrades, where possible. Increasing energy efficiency enables our power plants to conserve energy, allowing efficient use of the fuels we burn and reducing our overall emission intensity. TNB's aim has always been to harness as much energy as possible from each unit of fuel burned. This approach will enable us to minimise our environmental footprint and fuel costs. To deliver a sustainable low carbon future, we have been modernising our fleet by retiring inefficient and ageing CCGT plants and replacing them with best-in-class and highly efficient technologies. For example, our newest addition power plant that was commissioned in 2021, the 1,440 MW Sultan Ibrahim Power Plant in Pasir Gudang utilises the latest turbine technology with a net thermal efficiency of 60%, thus contributing to a lower carbon footprint.

TNB is continuously growing and expanding its energy efficiency expertise including conducting energy audits and integrating energy efficiency improvements. This service is conducted throughout TNB's assets such as buildings, fuel stations and fuel terminals with subsequent integration of energy efficiency improvements.

Prosumers

Over the years, through various RE programmes in Malaysia, we have seen an increasing shift from consumer to prosumer. An electricity prosumer refers to a consumer who also generates their own electricity, typically through the adoption of rooftop solar. This allows for a more efficient and resilient energy system, as the electricity generated by prosumers can be used to meet the needs of their own households or businesses, as well as to supply excess electricity to the grid during times of high demand.

With TNB's strategic pillar of Grid of the Future, the smart grid is expected to support a higher volume of bi-directional power sources from prosumers' own distributed energy sources and renewable energy.



For more information on our prosumers initiatives, please refer to Empowering customers towards energy transition under the Customer Centricity section pages 45-46 for more details.

Digital Platform

TNB complements our initiatives with digital platforms such as myTNB mobile application and TNBX EV Charging Platform application. These technologies are recognised as the key milestone of empowering customers towards the sustainable energy industry of the future.



For more information on our prosumers initiatives, please refer to Customer Centricity section pages 43-46.

Climate Risk Management

TNB business entities are guided by the TNB Risk Assessment Process that provides a structured approach to identify, analyse, evaluate and treat risks. TNB business entities apply the process in a systematic, iterative and collaborative manner, drawing on the knowledge and views of stakeholders to develop their respective risk profiles. Climate related risks are integrated in our ten (10) strategic risks covering external, sustainability, market, customer, finance, capabilities and regulatory risk categories. Moreover, climate-related risks and opportunities are managed in accordance with the ISO 14001:2018 Environmental Management System.

In addition to the above, climate-related risks and opportunities are assessed using scenario analysis, across short-term, medium-term and long-term horizons considering the expected lifetime of the assets or activities.

In managing the climate risks along with other business risks, the Board Risk Committee (BRC) oversees the establishment and implementation of the TNB Risk Management Framework that is embedded into the culture, processes and structures of the Group and is responsive to changes in the business environment. Sustainability and climate risks are included as part of the enterprise risk management process.

Following the TNB Risk Assessment Process, risks identified by business entities are registered and monitored through the TNB Risk Information System (TRIS), an online real-time tool and risk database that is accessible to all employees. Risks are reviewed annually by business entities with participation and eventual approval from the risk owners.

Half-year risk reports are submitted by business entities to the Risk Management Department for consolidation. Group-wide consolidated half-year risk reports, which include reports of emerging risks and climate related risks, are deliberated and endorsed by the Group Risk Management Working Committee (GRMWC) for onward internal dissemination.



For more information on risk management, please refer to pages 16-17.

Climate Metrics and Targets

We have established the climate-related targets as milestones in realising our net zero aspiration:

Reduction of scope 1
emission intensity of

35%

by 2035 and
net zero emission
by 2050, compared to
base year 2020



Reduction of coal
capacity of

50%

by 2035 and 100%
by 2050, compared to
base year 2020



Revenue from coal
generation plants does
not exceed

25%

of our total revenue



FY2022 Performance:

2%

reduction from the
2020 baseline

TNB to reduce

14%

of coal capacity
by 2030

FY2022 Performance:

24%

of total revenue
from coal generation
plants

Climate Change and Environment

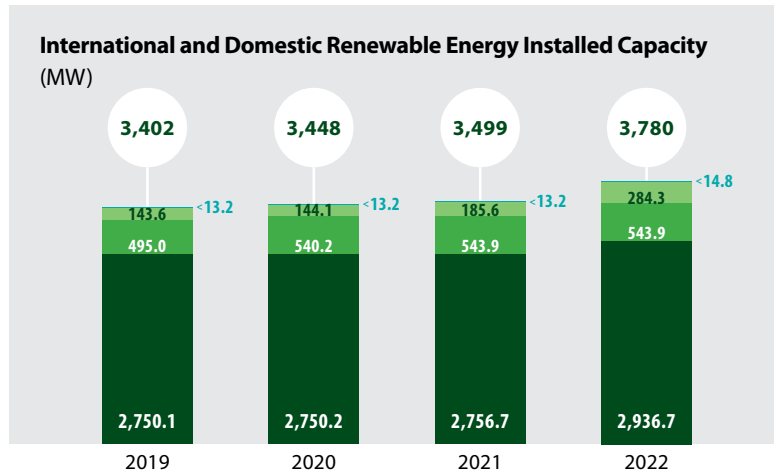
Our Performance in 2022

GRI 305 | 305-1 | 305-2 | 305-4 | 305-5 | 305-7 |

Renewable Energy Installed Capacity

In 2022, our installed capacity for renewable energy is 3,780 MW. With NED's strategy in expanding our renewable capacity, we are on track to achieve our 2030 aspiration of 7,000 MW.

● Hydro ● Solar ● Wind ● Other (Biomass and Biogas)



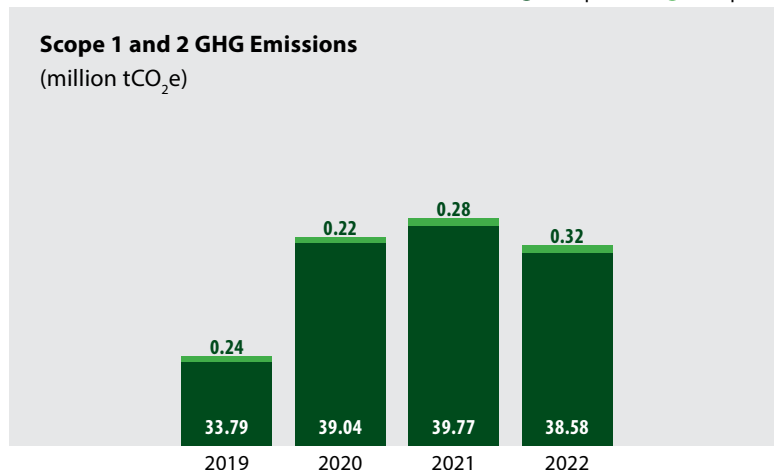
Greenhouse Gas (GHG) Emissions

We utilise our GHG Emissions Management System (GEMS), a web-based data input and processing system for regular monitoring of Scope 1 and 2 emission data. We intend to expand the monitoring of our other environmental data via GEMS progressively.

In FY2022, our Scope 1 and Scope 2 emissions have decreased due to higher operation of our gas and hydro power plants.

We are in the process of assessing our Scope 3 emissions with a focus on several categories relevant to our business. We will commence Scope 3 emissions disclosure in FY2023.

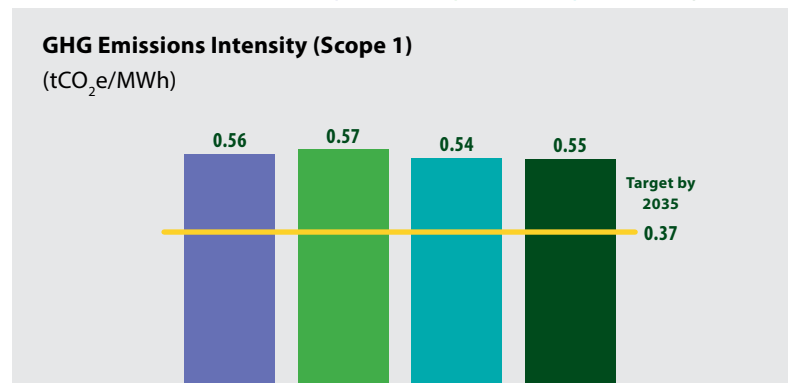
● Scope 1 ● Scope 2



GHG Emissions Intensity (Scope 1)

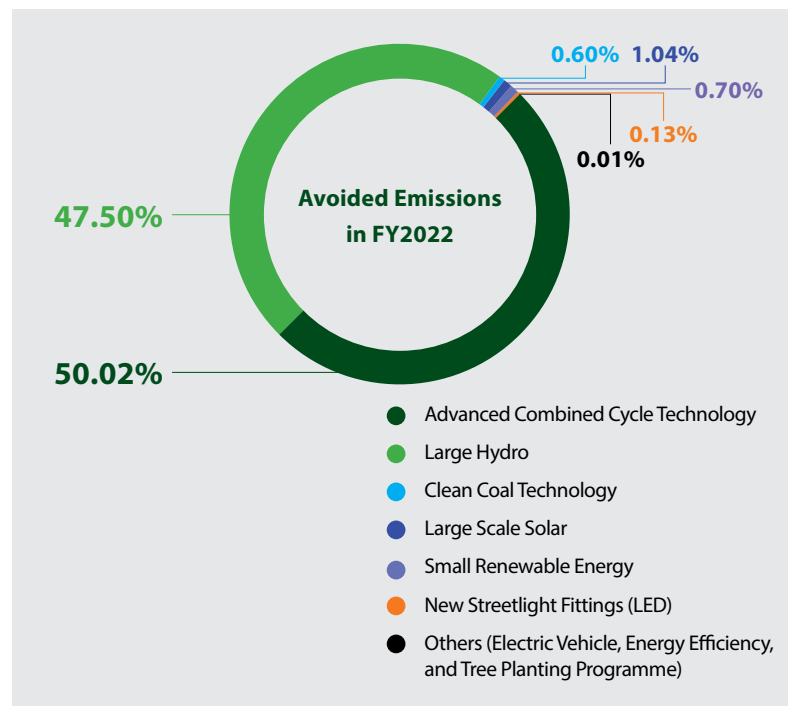
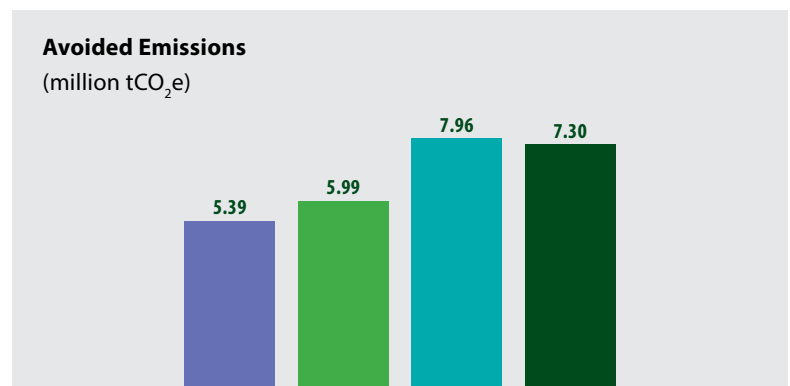
(tCO₂e/MWh)

● 2019 ● 2020 ● 2021 ● 2022



Avoided Emissions

(million tCO₂e)



The following guidelines and methodologies are utilised in preparing our GHG emission calculation:

- GHG emissions methodologies applied were 2006 IPCC Guidelines for National Greenhouse Gas Inventories, GHG Protocol, and Clean Development Mechanism (CDM).
- Consolidation of data was based on equity share approach.
- GHG emissions are assessed annually for TNB operations in Peninsular Malaysia only.

Climate Change and Environment

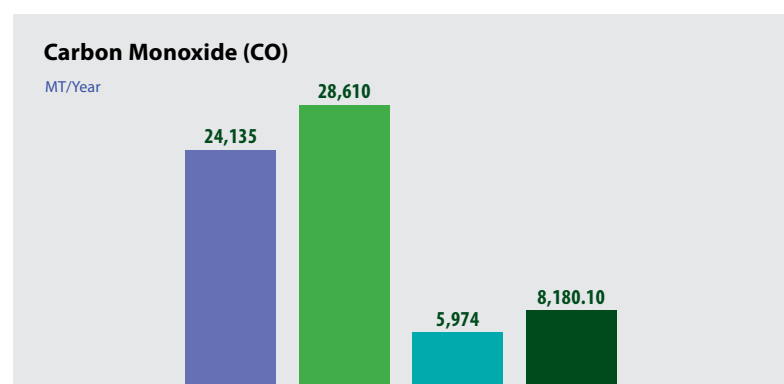
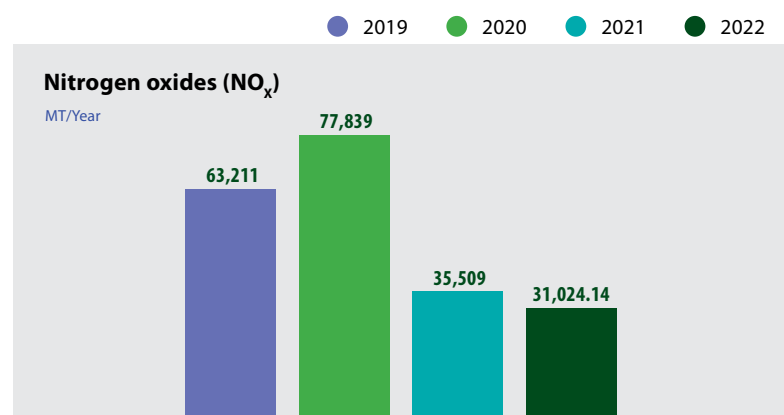
Our GHG emission assessment was subjected to a verification and assurance process based on ISO 14064-1:2018 part 1 (Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals) and part 3 (Specification with guidance for the verification and validation of greenhouse gas statements).

Toxic Emissions

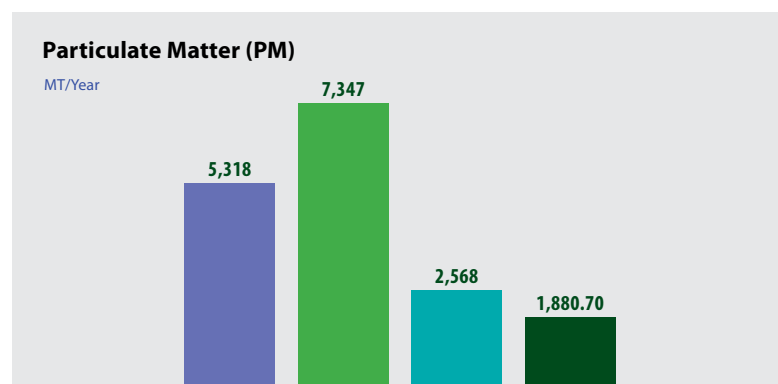
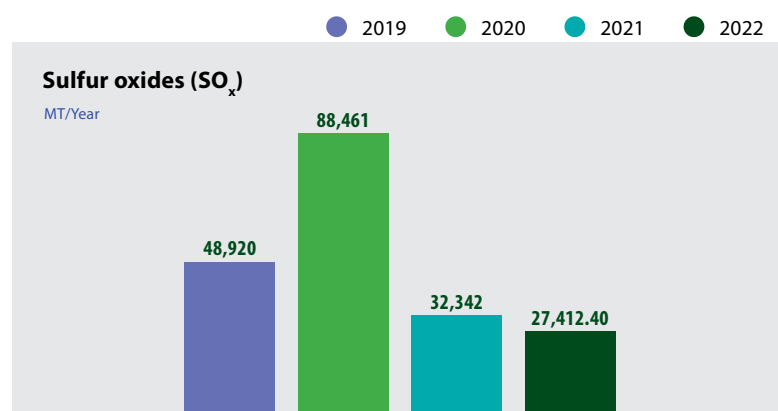
We demonstrate our dedication to enhancing air quality in the areas where we operate through our unwavering focus on continuously reducing the primary atmospheric pollutants linked to thermal production: Sulfur Oxides (SO_x), Nitrogen Oxides (NO_x), Carbon Monoxide (CO) and Particulate Matter (PM). Our meticulous attention to these pollutants underscores our commitment to creating a cleaner and healthier environment for all.

It is important to note that the global crisis, due to supply chain disruptions, geopolitical tensions (i.e., Russia-Ukraine War), and changes in market dynamics, is affecting energy production and availability. These factors can impact the energy mix and subsequently influence emissions.

To address this increase in emissions, it would be essential for the company to explore alternative low-carbon generation options, invest in renewable energy sources, improve energy efficiency, and continue efforts to reduce the environmental impact of its operations, which we are currently exploring in the ET Plan.



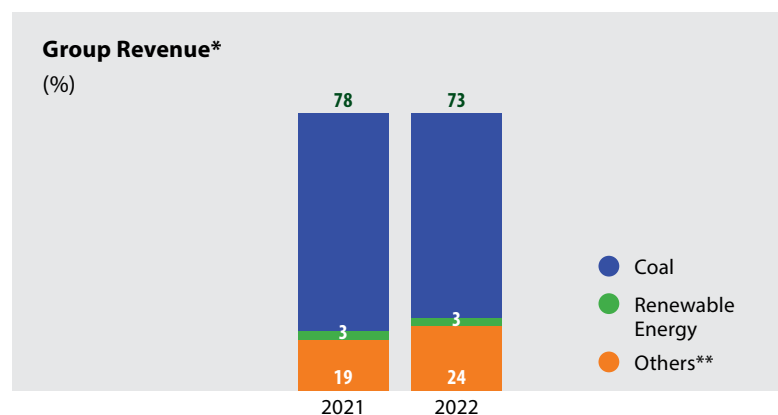
Note: The reported data exclude Jimah East Power (JEP) due to unavailable data and TNB is currently assessing the JEP data for future disclosure.



Note: The reported data exclude Jimah East Power (JEP) due to unavailable data and TNB is currently assessing the JEP data for future disclosure.

Reducing our Coal Capacity

We are actively reducing our coal capacity through ongoing initiatives under our Future Generation Sources strategy pillar and we are on track to achieving our target of reduction of coal capacity by 50% by 2035 and 100% by 2050, compared to the baseline of the year 2021. We continue to maintain our revenue from coal generation plants to be below 25% of our total revenue in FY2022.

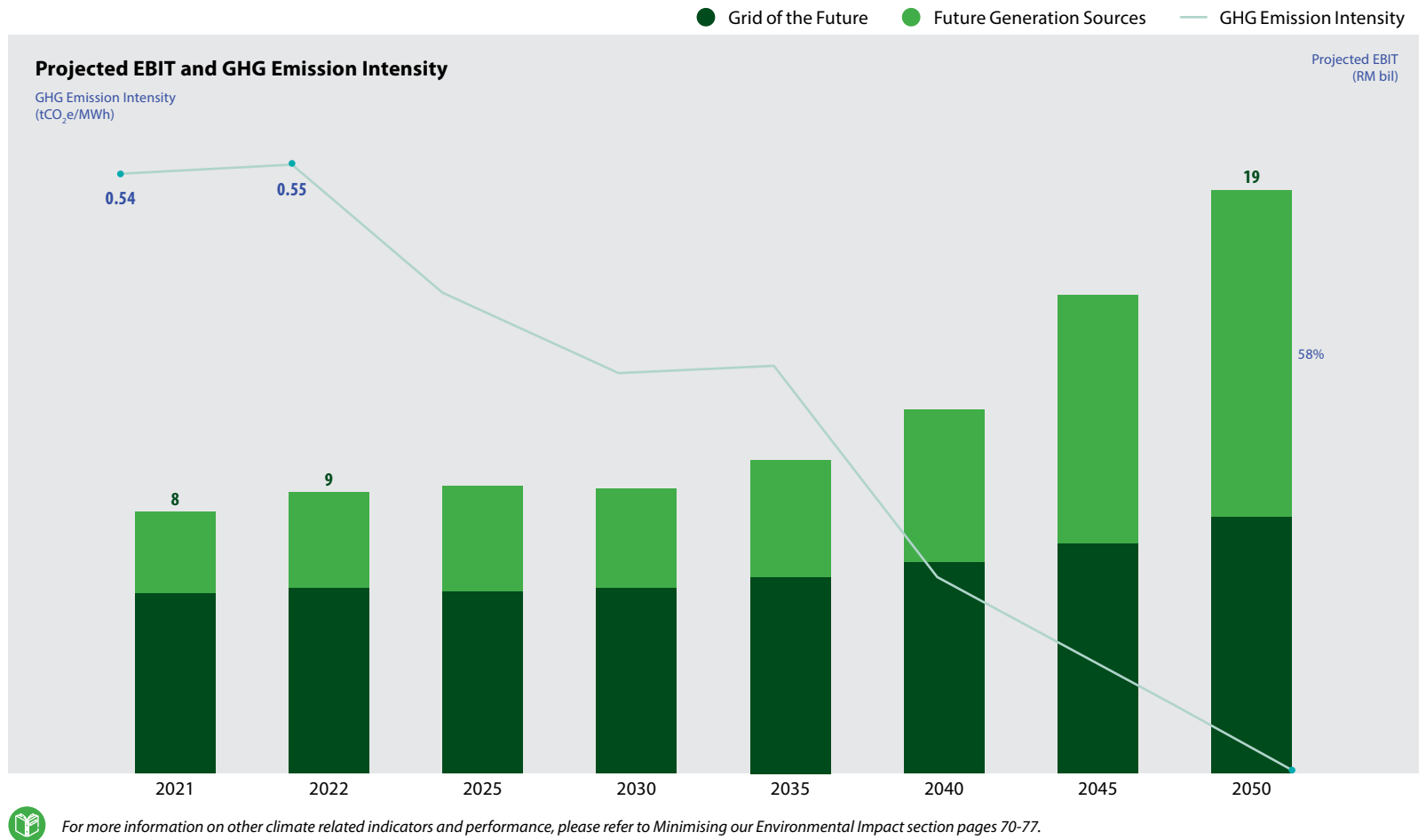


* Total revenue includes ICPT.

** Others include revenue from regulated business, subsidiaries and generation from gas.

Climate Change and Environment

While the transition to low carbon may require substantial investments, we believe that these investments in capitalising the low carbon economy and diversifying our revenue streams will ultimately increase our earnings in the long run. TNB's ET strategy could grow TNB's Earnings Before Interest and Taxes (EBIT) up to 140% to RM19 billion by 2050 as we decarbonise our carbon footprint at the same time.



Feature Story 3

Decarbonisation Through Innovative Solutions: Carbon Capture

Being a prominent power utility player, we acknowledge the significance of tackling climate-related risks for business resilience and addressing the interests of our stakeholders. We strive to minimise our carbon footprint as well as capitalising on decarbonisation opportunities. In line with our net zero aspiration, we have designed a holistic carbon management strategy that focuses on reducing emissions, capturing emissions and offsetting remaining emissions, net of reductions, via high-quality and credible carbon credits.

Since 2011, TNB has been extensively involved in research and development (R&D) as well as innovative projects to uncover promising initiatives and technologies through our research subsidiary, TNB Research Sdn. Bhd. While amplifying efforts to reduce carbon emissions, in tandem, TNB has recognised carbon capture and utilisation (CCU) as a critical solution for the removal of emissions. TNB has made significant progress in the field of CCU R&D whereby our pilot plants have achieved promising results of absorbing up to 90% of carbon emissions from our coal-fired power plant flue gas. Nonetheless, we are refining the implementation of CCU technology on a larger-scale, with a focus on enhancing its economic viability and exploring its full potential. We believe that by working together with industry partners, academic institutions and government agencies, we can accelerate our ET Plan initiatives in achieving our milestones towards net zero aspiration.

Our CCU R&D journey thus far covers the following areas:

1. CHEMICAL APPROACH

Our research focuses on optimisation of chemical-based post combustion carbon capture process to reduce the CCU energy requirement. We have completed five (5) projects with our chemical-based R&D facilities.

Through R&D at our pilot plants, we have found that our pilot plants are able to capture 90% of CO₂ from coal fired power plant flue gas. Reduction of energy requirement was also observed through the optimisation of capture process. We hold two (2) patents and numerous publications in relation to our completed projects.

2. BIOLOGICAL APPROACH

We have completed seven (7) projects using the direct carbon utilisation from flue gas emission through microalgae photosynthesis process, producing biomass as by-product. Our research includes monetisation of the biomass which can be cultivated and post processed for downstream applications:

Key highlights:

- First pilot algae bio-CCU technology in Malaysia tested with actual flue gas from live coal fire power plant.
- Four (4) local marine species of microalgae have been identified to capture CO₂.
- Development of Microalgae Mass Cultivation and Monitoring Training Module for local and international participants.
- Able to capture up to 2.3g CO₂ /litre from 4,500 litre of outdoor microalgae culture facility.



Climate Change and Environment

3. CARBON UTILISATION APPROACH

Carbon utilisation is the process of converting captured CO₂ into useful products such as chemicals, fuels and construction materials. We are conducting R&D on CO₂ Utilisation using Renewable Energy (CURE), where CO₂ from our thermal power plant is combined with hydrogen to produce methane as an alternative fuel. The project utilises green hydrogen which is produced using renewable energy. The products from carbon utilisation have the potential to create new revenue streams for TNB when commercialised.

FY2022 Highlight



Partnering for a Sustainable Malaysia: Spearheading New Green Technologies in Malaysia

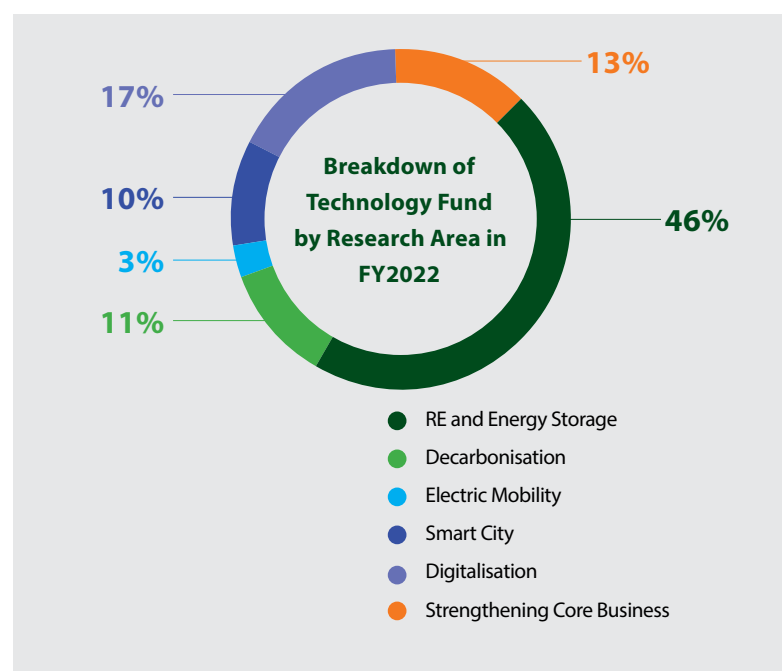
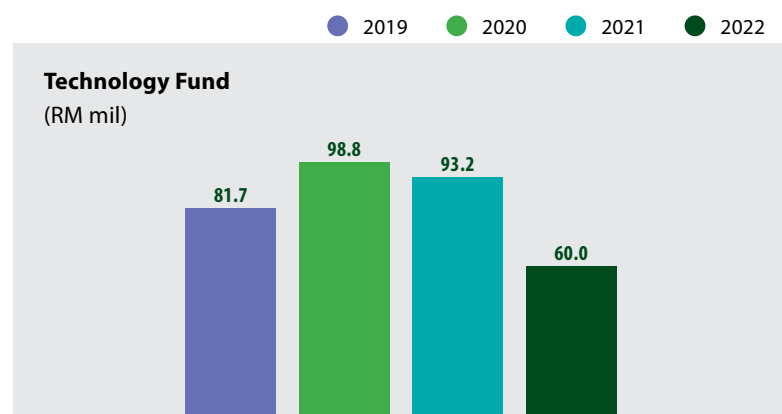
In accelerating decarbonisation in the energy sector, TNB has signed an MoU with PETRONAS to explore new green technologies against a mutually beneficial ambition of supporting the national aspiration to be a carbon neutral nation by 2050. The first initiative under the MoU is a collaborative study on the development of green hydrogen ecosystem and CCUS leveraging on TNB's power plant assets. The collaboration seeks to develop green hydrogen fuel for power generation and intensify efforts to co-create a green hydrogen ecosystem to provide cleaner energy solutions for Malaysia and international markets.

TNB plans to invest RM6.3 billion in the rebuild of TNB's retired Sultan Ismail Power Station in Paka, Terengganu using high-efficient CCGT by 2029 towards cleaner energy production. Paka power plant serves as a unique pioneering project in deploying green technologies that may be utilised in future power plants. The MoU will also include evaluating integrated onshore and offshore CO₂ facilities.

Climate Change and Environment

Ongoing Innovation & Research And Development

TNB has been actively investing in R&D of new technologies which can assist in climate change mitigation. Commencing this year, we have centralised our R&D, innovation and technology expenditure under TNB Technology Fund, governed by the Technology Council. This fund is responsible for managing projects that promote the Energy Transition agenda, enabling greater focus on impact of investment. Although our investment in research and development decreased in FY2022 in comparison to previous years, we have entered into several MoUs, strategic partnerships and collaborations, providing additional resources for the ET agenda. For the year 2023, we have allocated RM60 million towards research and development efforts related to the Energy Transition.



List of ongoing research and development projects:

RENEWABLE ENERGY

Solar PV Cooling Technology

TNB Research Sdn. Bhd. (TNBR) has successfully developed two types of retrofit PV cooling systems (active and passive cooling systems), which improve the energy yield of the PV system.

Biogas production via Co-Digestion Technology using Palm Oil Mill Wastes

TNB has concluded research on biogas production using anaerobic co-digestion method on a combination of substrates containing Palm Oil Mill Effluent (POME), empty fruit bunches (EFB) fibres and decanter cake. The research project determined biogas potential from different combination ratio of these substrates and provided recommendations to optimise the current biogas facility.

Biogas source from non-POME organics

TNBR is collaborating with other divisions, subsidiaries, and external parties to carry out feasibility study of biogas plants from non-POME organics, such as food and animal waste.

Biodiesel Fuel for Greener and Sustainable Power Generation

This research aims to develop a fully automated, large-scale biodiesel processing unit to produce biodiesel from waste cooking oil for TNB Fleet Management, as well as to assess the potential savings from using biodiesel blended diesel in TNB mobile gensets and TNB vehicles.

Small hydropower solution

TNBR has collaborated with Sedania Technologies Sdn. Bhd. to develop small hydropower for installation at Gunung Pulai water treatment plant and Seluyut Dam.

Melaka Smart Grid Demonstration

TNBR partnered with Malaysian Industry-Government Group for High Technology (MIGHT) and Majlis Perbandaran Alor Gajah (MPAG) for rooftop solar PV System installation.

Exploring suitable crop alternatives for biomass energy generation

TNBR has developed a technology that improves the fuel properties of empty fruit bunches (EFB) for power generation.

Pyrolysis of Organic and Plastic waste to Bio-oil (Waste-to-Energy)

TNB is exploring waste to energy system which aims to divert the organic and plastic waste from the municipal solid waste (MSW) in landfills for this project. A trial of the systems is currently in progress.

Climate Change and Environment

Green Hydrogen

The research is in its initial stages whereby we are studying the potential use of Two Stage Anaerobic Digestion Technology (TSAD) on organic waste.

Floating Solar

TNB has also made use of its ash pool at Sultan Azlan Shah Power Station in Manjung, Perak to construct its pilot floating solar plant with an installed capacity of 105.12 kWp. The 175-hectare pond which is a dumping ground for ash from the power plant, can now be potentially used as a floating solar farm to generate energy of at least 100 MW. TNB is also conducting a feasibility study on floating solar potential at hydro dams with local solar Engineering, Procurement, Construction and Commissioning (EPCC) vendors and solar float manufacturers.

DECARBONISATION

Carbon Capture, Utilisation and Storage (CCUS)

TNB has been conducting CCUS studies since 2021, including chemical, biological and utilisation approach.



For more information on our CCUS R&D, please refer to Feature Story 3: Decarbonisation Through Innovative Solutions: Carbon Capture section on pages 64-65 for more details.

Developed an algorithm for palm oil plant optimisation

TNBR partnered with Sime Darby to achieve an optimum output of oil extracted from palm oil plants.

Empty Fruit Bunch (EFB) Co-firing Feasibility Study

TNBR has embarked on a collaborative effort with TNB GenCo in carrying out a feasibility study for co-firing high quality empty fruit bunch (EFB) pellets in a power plant.

Ammonia-Biomass Coal Firing (ABC) Feasibility Study

GenCo, JEP, Mitsui & Co. and Chugoku collaboratively agreed to conduct a feasibility study on co-firing of biomass and ammonia in Jimah East Power Sdn. Bhd. to reduce our coal usage in tandem with efforts to reduce the emissions from plant operations. The first phase of the feasibility study has been completed in FY2022 and we are currently embarking on the second phase, which focuses primarily on small-scale ammonia, biomass and coal firing.

Research Collaboration agreement for joint development of battery energy storage system

TNBR collaborated with Korean technology partner for joint development of Battery Energy Storage system.

BIODIVERSITY

Hydroelectric Dams Impact on Wildlife Diversity

TNBR and Department of Wildlife and National Parks (DWNP) conducted a comprehensive environmental impact analysis for the impact on wildlife diversity and sustainability resulting from construction and impoundments of hydroelectric dams.

WATER MANAGEMENT

Water Stress Assessment

TNBR has also conducted assessment on potential water stress of its selected thermal power plants in Peninsular Malaysia. The assessment covers the water footprint and identifying various mitigation measures to reduce water consumption and achieve minimum water discharge. The outcome is to install a water reclamation plant to recycle water discharged from the thermal power plants and explore alternative water resources.

BUILDING RESILIENCE TOWARDS NATURAL DISASTERS

Monitoring Flood Risk with the Latest Climate Technology

TNB collaborated with *Jabatan Pengaliran & Saliran* (JPS) and Malaysia Meteorology Department (MetMalaysia) to introduce the Flood Analysis and Risk Assessment (FARA) as a measure to monitor and analyse rainfall and water level in operating areas, as well as weather forecast information which is subsequently sent out to our Operation Team. We utilise information gathered from the JPS website and geo-spatial mapping to identify and trigger flood warnings to our team.



Feature Story 4

Our Flagship Green Building - TNB Platinum Campus

TNB Platinum is a campus-style office development consisting of four (4) low-lying blocks in cascading heights, along with a convention centre. All office blocks are horizontally connected by a contiguous space known as The Atrium. Within this Atrium, the seamless space on the ground floor provides a business lounge, gallery, clinic, gymnasium, and a few retail corners, creating a vibrant and energetic office environment.

Envisioned as a sprawling campus, the design is aimed to create a contemporary and futuristic workplace that meets the requirements of the highest rating under the Green Building Index (GBI), the Platinum certification. The green features of the development include green-roofed buildings; the Brise-Soleil which consists of undulating V-profile metal fins positioned at varying angles to follow the sun's path and provide shade to the occupants within the buildings while also reflecting the harsh glare of the sun; double-glazed facades with low emissivity that not only help control heat and noise but also harvest natural daylight; and overhangs that provide shade and improve thermal comfort. This sustainable architecture is expected to bring about a transformative change in its workplace culture and workforce development.



✓ The new TNB Platinum buildings are environmentally friendly in design with energy efficient and water efficient features.

Climate Change and Environment

TNB Platinum Campus is designed according to GBI principles with the following key design features:

Energy Efficiency

01



- 25% less electricity consumption compared to conventional building designs.
- Exceptional building envelope for both glazing and rooftop reduce external heat transmissibility.

Responsible Material Selection

02



- More than 10% recycled content in construction material.
- More than 50% of the timber used is Forest Stewardship Council (FSC) and Malaysian Timber Certification Council (MTCC) Certified.

Occupant Safety & Comfort

03



- Excellent daylighting and minimal obstruction to external for the building occupants.
- Reducing harmful indoor pollutants by avoiding usage of hazardous chemicals such as Volatile Organic Compound (VOC) and formaldehyde.

Water Efficiency

04



- Usage of highly efficient water fittings throughout the building to reduce potable water consumption.
- Rainwater harvesting system to be used for irrigation.

Innovation

05



- EV charging station.
- Automated Waste Management System (AWCS).
- Photovoltaic system with capability to cater up to 2% of the building's total electricity consumption.

Additional Green Building Features:

- Automation include lighting zoning control, motion sensors and daylight sensors.
- Integrated Building Management System Energy Sub-Metering System.
- At least 2% reused building materials utilised during construction.
- More than 50% of the construction material is a regional material (500km radius from project site).
- Carbon dioxide monitoring and control to avoid CO₂ level exceeding 1,000ppm.
- Provides occupants thermal comfort and ease of control.
- Enables adjustments to the background noise level for occupant comfort with acoustic treatment.
- Parking guidance system for non-allocated parking.
- Energy and water usage display.
- Deployment of metering and leak detection system for domestic water supply to avoid water wastage.
- Grey water recycling system to reduce potable water consumption.



Climate Change and Environment

Minimising Our Environmental Impact

GRI 3-3 | 2-27 | 302-1 | 303-3 | 304 -1 | 304-3 | 304-4 | 306-1 |

TNB strives to minimise the environment impacts caused by our business operations and value chains, in line with our commitment to progressively improve our environmental performance.

GOVERNING ENVIRONMENTAL MATTERS

The generation of electricity from our thermal plants inevitably leaves a large environmental impact, in the form of carbon release, water consumption for power plants and fuel consumption. Our environmental management is principally guided by the TNB Environmental Policy which was reviewed in FY2021 to reflect the latest changes in environmental requirement and emerging issues.

The Health, Safety, and Environmental (HSE) Council, which consists of the Environmental Performance Monitoring Committee and Environmental Regulatory Compliance Monitoring Committee, oversees the Group's environmental performance and compliance.

Six (6) divisions in TNB have been certified ISO 14001:2015 compliant in Environmental Management System (EMS). We are also guided by TNB's Health Safety and Environmental Management System (HSEMS) which outlines environmental risk identification and control requirements across all divisions, departments, and business units in TNB. The introduction of HSEMS has strengthened the governance of environmental management across the group.

In FY2022, a compound of RM20,000 was issued by the Department of Environment (DOE), due to the non-compliance with Environmental Quality (Scheduled Waste) Regulation 2005 regarding coal ash management. Our efforts to mitigate this issue includes establishing strict monitoring and process

improvements of coal ash transport, enhancement of Standard Operating Procedures and streamlining applicable DOE acts and regulations to ensure continuous compliance.

Since 2021, Guided Self-Regulation (GSR), the self-monitoring environmental management tool, has been implemented across all TNB divisions and subsidiaries. The GSR scoresheet has been analysed for gaps in order to continuously enhance our operations.

Our overall commitment towards reducing our environmental impact is embodied in our comprehensive environmental management policies and guidelines:

- TNB Environmental Policy 2021
- 2nd Edition of Scheduled Waste Guidelines 2021
- Polychlorinated Biphenyls (PCB) Guidelines 2021
- Environmental Impact Assessment (EIA) Guidelines 2022
- E-waste management circular and guideline 2022
- Grid Division Green Code Conduct

In supporting our Net Zero by 2050 aspiration, the Grid Division has introduced its Grid Green Code Conduct. The Green Code Conduct shows our commitment towards ESG that mirrors efforts to creating a greener future. We aim to lead as a green responsible grid owner by reducing our climate footprint and promoting sustainability throughout the supply chain. Our long-term targets and initiatives are outlined below:

Grid Division Green Code of Conduct 2021-2050:

Align with **TNB's Net Zero** by 2050 aspiration.



Achieve **zero pollution** impact on nature.



Achieve **30% reduction** in deforestation by 2050.



TNB Grid aims to lower its SF₆ emissions by **recycling and replacing** SF₆ gas in its assets. Additionally, TNB Grid will tackle losses through the adoption of new technologies.



Manage potential pollutants from TNB transformer operations while leveraging new environment friendly products to reduce the impact of pollution.



To minimise the impact of deforestation in accordance with the **environmental standards** and promoting biodiversity.



FY2022 Performance:
3,266 kg SF₆ gas recycled.



FY2022 Performance:
100% of transformers were tested for Polychlorinated biphenyl (PCB) and no contamination was found.



FY2022 Performance:
Continuously **conserving forests** by reducing deforestation from grid development activities.



Climate Change and Environment

TNB Grid Initiatives and FY2022 key highlights are outlined below:

Grid Division Initiatives	FY2022 Highlights
GHG REDUCTION	
<ul style="list-style-type: none"> Gas Insulated Switchgear (GIS) Refurbishment and sulphur hexafluoride (SF₆) leak management to achieve <0.5% leak rate. SF₆ Gas Recycling and Reconditioning Centre to promote circular economy. Replacement of old R22 air conditioner as part of energy efficiency and to reduce impact to environment. Change of CO₂ firefighting system to environmentally neutral inert gas system. Usage of High Temperature Conductors (HTC) by using material with lower resistance, enabling higher current-carrying capacity and improved efficiency to minimise energy losses. 	<ul style="list-style-type: none"> Four (4) out of six (6) identified substations have undergone GIS refurbishment in 2022. 3,266 kg SF₆ gas recycled. Completed R22 air conditioner replacement at Southern Region. Completed change of CO₂ firefighting system for three (3) substations. Grid Division has initiated the pilot project on HTC, and further updates will be provided as the evaluation progresses.
POLLUTANT MANAGEMENT INITIATIVES	
<ul style="list-style-type: none"> Switching from Oil Impregnated Paper (OIP) to Resin Impregnated Paper (RIP) bushings helps reduce failures on transformers, which contribute to oil pollution risk caused by catastrophic bushing failure. In addition, the RIP bushings are considered environmentally friendly as they do not contain oil, which can be harmful to the environment if leaked during a failure. Elimination of PCB content in oil-filled transformer that have dangerous effects on the environment and our health. Usage of bio-based ester oil for new transformer to reduce the impact of pollution. Transformer oil-water separation pit for better effluent management. 	<ul style="list-style-type: none"> Completed replacement of OIP in 77 transformers. 100% of transformers are tested for PCB content and no PCB contamination was found. 60% progress for implementation of transformer oil-water separation pit for identified substations. Specification of ester oil for pilot project approved.
DEFORESTATION CONTROL INITIATIVES	
<ul style="list-style-type: none"> EIA process improvement in project delivery. Tree Hyperspectral Identification System (THySIS) that will identify endangered species using artificial intelligence and drone with LiDAR sensors to ensure less impact of deforestation and preserve biodiversity and natural habitats during project development. The Caissons method can help protect the environment by minimising environmental destruction while preserving the forest ecosystems. This method is applied specifically in hilly terrain areas and will minimise the requirement of land clearance and subsequent occurrences of soil erosion. 	<ul style="list-style-type: none"> Grid Division has developed the EIA handbook which has been verified by the Department of Environment (DOE). Grid Division has applied the Caissons foundation method for towers located in hilly areas in various projects.

Our approach and key highlights

Our performance in FY2022

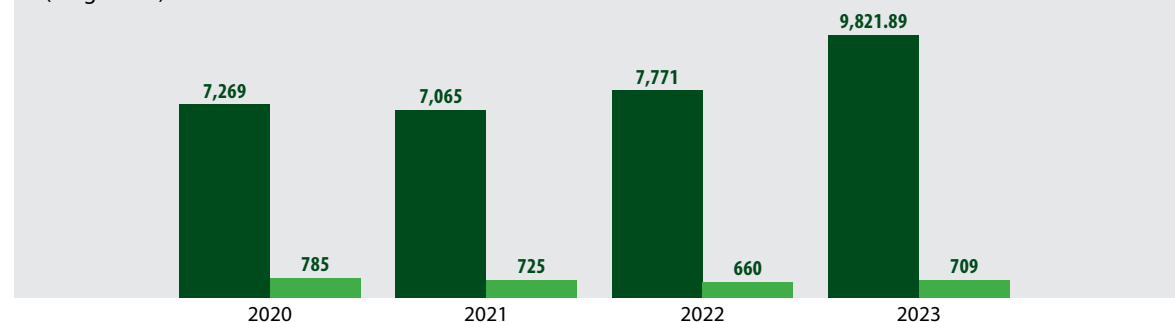
WATER MANAGEMENT

We closely monitor our water withdrawal at operational sites to minimise the risk of water overuse and contamination. In addition, we investigate any deviation from the norm in water consumption at all power plants and carry out any necessary mitigation measures and implementation plans.

There is a slight increase in total water withdrawal for FY2022 compared to FY2021, due to improved business operations and increased in office occupancy post COVID-19 pandemic recovery.

● Peninsular Malaysia ● SESB

Total water withdrawal across TNB's Operations
(Megalitres)



Climate Change and Environment

Our approach and key highlights

Our performance in FY2022

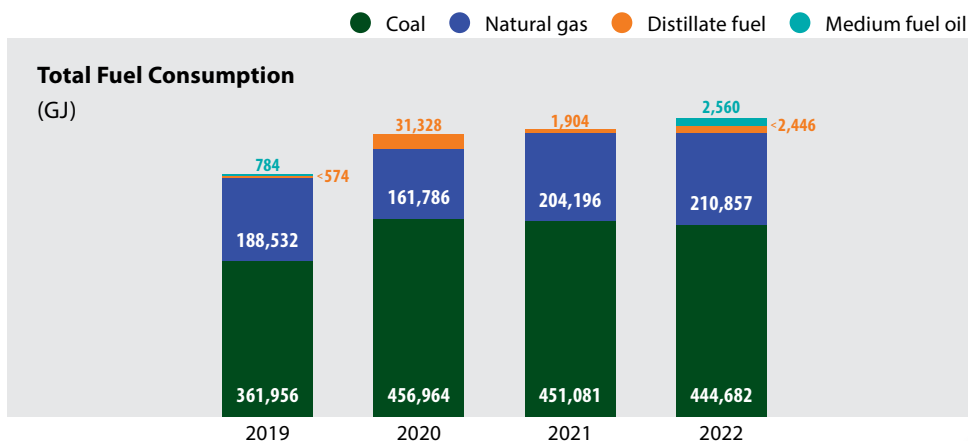
FUEL MANAGEMENT

TNB is committed to ensuring a sustainable, reliable and cost-effective fuel supply and consumption for power generation.

In line with the Group's aspiration to become net zero by 2050, TNB Fuel has launched an in-house sustainability framework in December 2022 to be the sustainable fuel thought leader and supplier for the regulated industry.

In addition, we have optimised our plants to ensure they operate at optimal efficiency.

Fuel consumption from non-renewable sources to power the generation plants are shown below. In an effort to reduce coal capacity, we continue to explore the viability of increasing natural gas in our energy mix as a transition fuel while we research the commercialisation of green fuel.

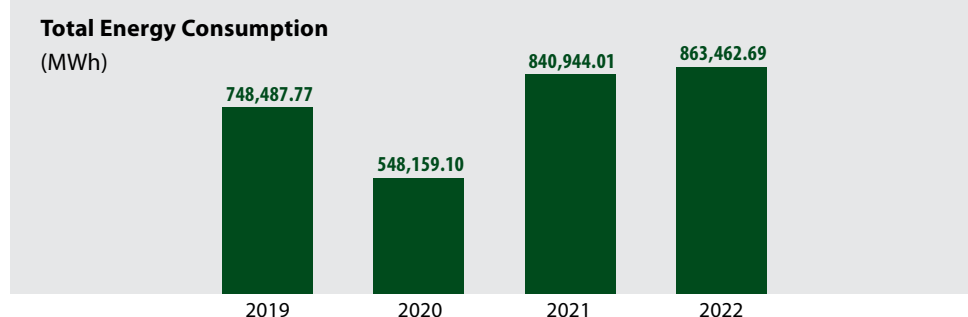


ENERGY MANAGEMENT

At TNB, we practice energy efficiency initiatives and programmes across our buildings.

TNB new buildings including Balai Islam and TNB Platinum Campus incorporated energy efficiency design features as an effort to reduce our energy consumption.

There is a slight increase in total energy consumption for FY2022 compared to FY2021, due to increasing business operations and office occupancy post COVID-19 pandemic.



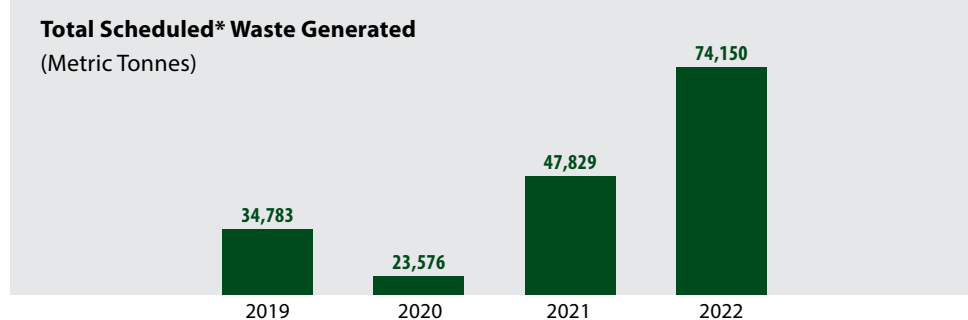
WASTE MANAGEMENT

We manage all hazardous waste centrally in accordance with our Health, Safety and Environment (HSE) guidelines on Scheduled Waste Management, which are in compliance with regulatory requirements set by Department of Environment (DOE).

We continuously improve our waste management process through site inspection and internal audit.

In FY2022, we have developed our E-waste management circular and guideline which is enforced across all TNB premises. All electric and electronic waste categorised under SW110 will be managed and disposed in accordance with DOE guidelines. To track our progress, we are in the process of developing an online reporting system for E-Waste inventory.

TNB monitors its scheduled waste generation directed to disposal and diverted from disposal regularly. The scheduled waste are disposed responsibly through licensed waste contractors.



* We refer to DOE's terminology of scheduled waste which means waste that has hazardous characteristics, and thus has the potential to negatively affect the environment and public health

Climate Change and Environment

Our approach and key highlights

Our performance in FY2022

BIODIVERSITY MANAGEMENT

In FY2022, we increased our efforts in conserving biodiversity surrounding our operation sites:

Nenggiri Hydroelectric Project

- TNB conducted a study on threatened flora species (based on the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species) found at the project site area.
- TNB has also developed a Wildlife Management Plan with consultation from Department of Wildlife and National Parks (DWNP) that will outline implementation steps in monitoring and managing wildlife.

Sungai Perak Hydroelectric Station**- Temenggor Dam**

- TNB conducted a study on threatened flora species based on the IUCN's Red List of Threatened Species found at the Temenggor Dam.

Cameron Highlands - Jor and Ringlet Lakes

- TNB is running a Pilot Development of Habitat Rehabilitation for Sediment Deposit Area in Cameron Highlands. This project is in collaboration with the Pahang State Forestry Department to rehabilitate and restore dredging disposal sites at Jor and Ringlet Lakes.
- The pilot development aims to identify suitable tree species and soil treatment required, as well as identification of routine practices that will enhance tree growth.

Bukit Selambau Large-Scale Solar (LSS) Plant

- TNB's study to manage human-macaque conflict through Behavioural Ecology and DNA Metabarcoding has concluded in 2022.
- The results of the study has allowed TNB to understand the daily activity, behaviour and dietary requirements of the macaques which will be utilised to reduce human-macaque conflicts.

Hulu Terengganu Hydroelectric Station

- TNB conducts annual assessment on changes in aquatic life population.
- The findings from the annual assessment are important for us to understand and evaluate impacts from the station's operation to surrounding aquatic habitat.

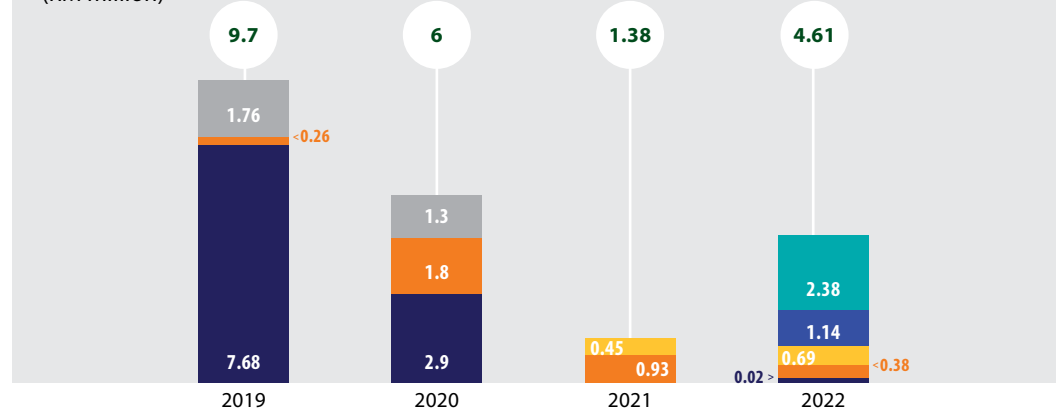
SESB conserves the forest and wildlife of Sabah through a joint partnership with the Sabah Forestry Department (SFD).

In FY2022, a total of RM4.61 million was spent on biodiversity studies at Nenggiri Hydroelectric Project, Cameron Highlands - Jor & Ringlet Lakes, Solar Farm Bukit Selambau, Temenggor Dam and Hulu Terengganu Hydroelectric Station.

Legend: ● Hulu Terengganu Hydroelectric Station
● Pergau Dam, Sungai Perak Hydroelectric Station ● Temenggor Dam, Sungai Perak Hydroelectric Station
● Nenggiri Hydroelectric Project ● Cameron Highlands - Jor and Ringlet Lakes ● Solar Farm Bukit Selambau

Total Spend on Biodiversity Studies

(RM million)

**Key Findings of TNB's IUCN Red List Studies as of FY2022**

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

Site	Species Group	Number of Species							Total Expenditure in FY2022 (RM'mil)
Nenggiri Hydroelectric Project	Fish	0	1	0	0	28	4	0	2.38
	Bird	1	4	8	31	142	0	0	
	Terrestrial	6	21	7	13	95	4	4	
	Flora	1	2	3	10	137	7	658	
Cameron Highlands – Jor and Ringlet Lakes	Fish	0	0	0	0	0	0	0	1.14
	Bird	0	0	0	0	0	0	0	
	Terrestrial	0	0	0	0	0	0	0	
	Flora	0	73	168	20	533	0	0	
Bukit Selambau Large-Scale Solar (LSS) Plant	Fish	0	0	0	0	0	0	0	0.69
	Terrestrial	0	1	0	1	0	0	0	
Sungai Perak Hydroelectric Station (Temenggor Dam)	Fish	0	0	0	1	57	2	2	0.38
	Terrestrial	0	32	46	0	0	0	0	
	Flora	0	32	103	47	0	0	3,339	

SESB recognises the importance of conservation of our natural environment for future generations and is proud to contribute to organisations that share the same values and objectives. As part of the commitment, SESB has contributed RM20,000 to Sabah Wetlands Conservation Society (SWCS) to fund their operations. SWCS aims to promote the conservation of wetlands in Sabah and the variety of plants, birds and other living organisms that call these wetlands home.

In addition, SWCS is committed to raising public awareness and appreciation of wetlands, as well as encouraging public involvement in protecting them. Furthermore, SWCS manages the Kota Kinabalu Wetlands as a model wetland centre for the purpose of conservation, education, recreation, tourism and research. By demonstrating the importance of wetlands through practical examples, they hope to inspire others to take action to protect wetlands in their own communities.

Climate Change and Environment

SITE AND HABITAT PROTECTION

At TNB, we implement preventive and rehabilitative measures to reduce our impact on local biodiversity, including minimising our operations within areas of high biodiversity value. However, there are several areas in which TNB conducts its activities and are home to an abundance of flora and fauna. Some of the species in these areas are protected under domestic and/or international declarations by public authorities.

Our current activities situated in areas of high biodiversity value have either commenced prior to the issuance of declarations of protections or after exhaustive analysis of alternatives and environment assessment with oversight from competent authorities where it was determined that there were no viable alternatives. The following table outlines the TNB facilities located within or adjacent to protected areas of high biodiversity value and our key ongoing initiatives on habitat protection and restoration.



On-hand fish feeding at fish sanctuary AKEKCHEP Sg. Tiang



Night view from AKEKCHEP Sg. Tiang

01

Fish Management & Eco – Tourism

Location and Area: Sungai Tiang, Royal Belum State Park (12km)

Biodiversity Value

- IUCN Red List.
- Aquatic freshwater fauna.
- Culture and tradition of Jahai Tribe.

Methodologies

- Release of fish fry at Tiang River.
- Quarterly fish and water quality assessment.
- Tourist satisfaction surveys.

Third Party Partnerships

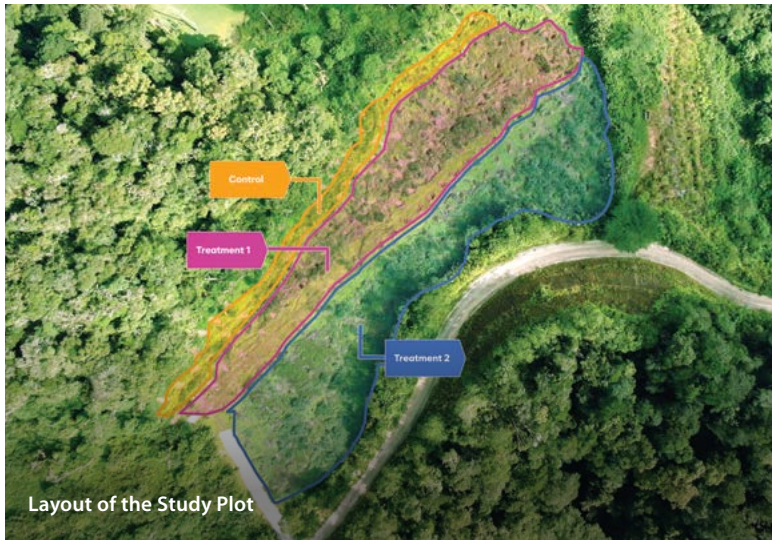
- Perak State Parks Corporation: monitor implementation progress.
- Fishery Department of Perak: provide fish fry for the sustainability efforts of the fish sanctuary.
- Department of *Orang Asli* Development Perak: provide additional funding, moral and material support such as boats, ICT equipment's for the successful implementation of this project.
- Malaysia Co-Operative Societies Commission: provide skill and technical development through various training initiatives.

Outcome:

This project has successfully developed business models for community based eco-tourism for the community of *Orang Asli* Kampung Sg. Tiang. The business is currently on-going and operated independently by Koperasi *Orang Asli* Kg Sg Tiang (KOAST). KOAST was established as one of deliverables in this Project.

AKEKCHEP is a sustainable management programme for fish resources and eco-tourism products development to generate income for *Orang Asli* community at Kampung Sg. Tiang, Perak. The word 'AKEKCHEP' originates from the language of *Orang Asli* Jahai whereby 'AKEK' means 'Prohibited' and 'CHEP' means 'Fish/Catch'. The AKEKCHEP system, founded on the spirit of strategic partnership between the local community, TNB, TNBR, Perak State Parks Corporation, Fishery Department of Perak, Department of *Orang Asli* Development Perak and Malaysia Co-Operative Societies Commission to empowers the local community through monitoring, active and holistic participations and related policy. The system indicates that fish population has grown in size, population, and diversity, achieving the Environmental, Social, and Governance (ESG) goals of securing biodiversity management, social well-being, and positive relationships with other stakeholders.

Climate Change and Environment



Layout of the Study Plot



Tree planting in the Study Plot



Monitoring of tree growth

02

Sediment Deposit Habitat Rehabilitation

Location and area: Jor Lake (20.23 hectares) and Ringlet Lake (87.34 hectares), Cameron Highlands

Biodiversity Value

- IUCN Red List.
- Tree species available within PDA3 of dumping site Jor (HS Bukit Tapah) and Cell 5 of dumping site Jasik (HSK Ringlet).

Methodologies

- Terrestrial Flora Revegetation.
- Biomass Estimation.
- Carbon sink extrapolation.
- Cost Benefit Analysis.

Third Party Partnerships

- Forestry Department of Pahang: Grant permission to utilise land for disposal and provide technical advice on habitat rehabilitation.
- Universiti Sains Malaysia (USM): Provide technical advice for rehabilitation work.

Outcome:

The study will develop Habitat Rehabilitation Procedures as an output for the Closure Plan, as required by Jabatan Alam Sekitar (a requirement based on the Environmental Quality Act 1974). A total of 262 trees were planted in the study plot, and close monitoring of tree growth is ongoing as an input in the development of the Habitat Rehabilitation. An engagement session was held with SMK Kg. Raja involving tree-planting activities (73 trees planted) and other environmental education matters, such as recycling and environmental quality.

This project comprises strategic implementation and management of the rehabilitated habitat based on short-term and long-term goals. The project supports the holistic and sustainable sedimentation management program of the Cameron Highland Scheme.

03



Macaca fascicularis – the studied monkey observed at site

Human – Monkey Conflict Management

Location and area: Solar Farm: TNB Bukit Selambau LSS Plants Adjacent Areas (600 hectares)

Biodiversity Value

- IUCN Red List.
- National Policy on Biological Diversity (NPBD) 2016-2025.
- National commitment to the Convention on Biological Diversity (CBD).

Methodologies

- Fecal sampling of existing monkey population for DNA sequencing works.
- Social survey to understand community perception.
- Behavioural study of the monkey population.
- Installation of electric fence as per Energy Commission Guidelines.

Climate Change and Environment



First mitigation established for TNB Solar Bukit Selambau – creation of buffer zone immediate to perimeter fencing



The Management Plan produced as an outcome from this study

Third Party Partnerships

Department of Wildlife and National Parks (DWNP):

- Collaborate to eradicate monkey population as a last option if all mitigation measures applied are unsuccessful.
- Provide input and review on Management Plan document.
- Supported awareness session conducted with local community.

Universiti Kebangsaan Malaysia:

- Role as a technical expert to provide expertise in primate and ecological management.

Outcome:

The study provided better macaque management recommendations for TNB Solar farm at Bukit Selambau, with the potential for adoption at other TNB sites. This development has resulted in reduced conflicts with affected communities and substantial cost savings through the implementation of mitigation measures. Additionally, this effort has contributed to the Environmental, Social, and Governance (ESG) score, as recognised by Bursa.

Furthermore, TNB has showcased its commitment to international policies by aligning with Sustainable Development Goal 15 (Life on Land) to protect terrestrial ecosystems, combating animal cruelty through systematic conflict management, and complying with international agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the International Union for Conservation of Nature (IUCN). At the national level, TNB has demonstrated its dedication to Malaysian policies such as the National Policy on Biological Diversity (NPBD) 2016-2025, the Convention on Biological Diversity (CBD), and the Wildlife Conservation Act 2010 (Act 716) by considering species as totally protected under DWNP.

Wildlife management for Nenggiri hydroelectric development

Location and area: Nenggiri Hydroelectric Project Site Area

Biodiversity Value

- IUCN Red List.

Methodologies

- Data collection using satellite collar and camera traps.
- Wildlife inventory.
- Wildlife conflict and management.
- Habitat rehabilitation and wildlife corridor.
- Education and awareness.

Third Party Partnerships

- DWNP: Role as a partner in wildlife management, which encompass various aspects, such as wildlife enforcement, wildlife rescue operations, and investigations into wildlife conflicts.
- Universiti Kebangsaan Malaysia (UKM): Role as a technical expert to provide expertise on wildlife and ecological management.



Napier grass planting in nursery

Climate Change and Environment



Wildlife Education & Awareness session with local communities and site workers



Camera trap installation and field observation on wildlife traces

Initiatives:

A series of wildlife education and awareness sessions were held for communities impacted by project development (local community, site workers). In order to ensure full compliance with the Wildlife Conservation Act 2010, patrolling and enforcement were undertaken by Jabatan PERHILITAN on a regular basis. Furthermore, wildlife rescue and inventory were undertaken at site prior to construction and logging works. The rescued wildlife were translocated and released to safer sites away from the development area. Wildlife monitoring is also ongoing, with monthly data review and analysis, aimed at understanding changes in habitat utilisation in line with project development at the site. This is to identify potential wildlife conflicts and ensures accurate record-keeping for future reference and wildlife management decisions. Should there be any event of wildlife conflicts, PERHILITAN shall be responsible to perform site investigations besides providing advise to address the case. In such critical situations, wildlife translocation might be needed (as a last resort to settle the problem). Lastly, wildlife corridors shall also be established as a natural pathway for the wildlife to cross from one forest fragment to another. This involves nursing and planting napier grassland areas, together with artificial saltlicks to enrich the habitat.



Engaging Our People and **CULTIVATING TALENT**

Related Material Matters



Safety, Health
and Well-being



Employment
Culture



Community Development
and Human Rights



Engaging Our People and Cultivating Talent

Employment Management and Growth

GRI 3-3 | 401-1 | 401-2 | 404-1 | 404-2 | 404-3 | 405-1 | 405-2 |

In TNB, our people stand at the core of our operations. Their effort and diligence in contributing towards TNB's aspirations whilst upholding company values are highly appreciated.

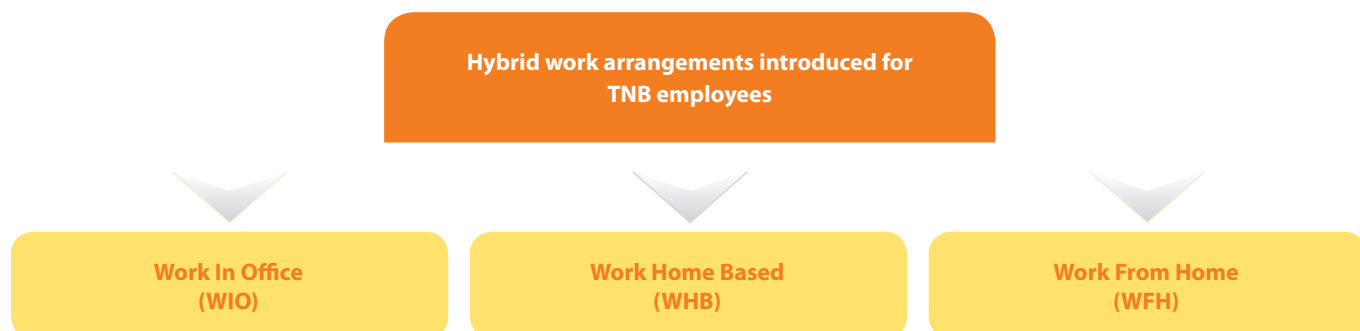


In FY2022, there has been a heightened awareness in operationalising the sustainability agenda in tandem with TNB's journey to achieve net zero emissions. This requires more proactive initiatives in building up the needed talent and right skillset of our employees. Numerous initiatives and measures have been put in place to retain and attract employees. Along with that, we aim to cultivate a strong culture of diversity, professionalism, leadership, and competency in our workforce.

Creating A Conducive Workplace

In the countries where we operate, we comply with all relevant labour laws, and we support the rights of freedom of association and collective bargaining. Additionally, executive and non-executive employees' rights are well-protected through our unions, which enable us to provide better working conditions. We uphold human rights by treating all employees with respect and have zero tolerance for discrimination, harassment, or bigotry, ensuring fair and humane treatment of everyone.

Throughout FY2022, TNB conducted a pilot phase of TNB Ways of Working (TWoW), involving more than 8,500 people from selected departments from eight (8) divisions and subsidiaries. This initiative was launched to construct a better working environment and facilitate the needs of our employees. Depending on the nature of the job (i.e. field force, office-based or customer-facing), we introduced options for employees in selecting the most suitable working arrangement as follows:



Three (3) key elements of TWoW are flexible and hybrid working arrangements, flexible working hours, as well as smart casual dress code. At the end of the pilot programme, it was approved for implementation throughout TNB effective from 1 January 2023. This aligns with TNB's timeline to implement flexible working throughout the organisation.

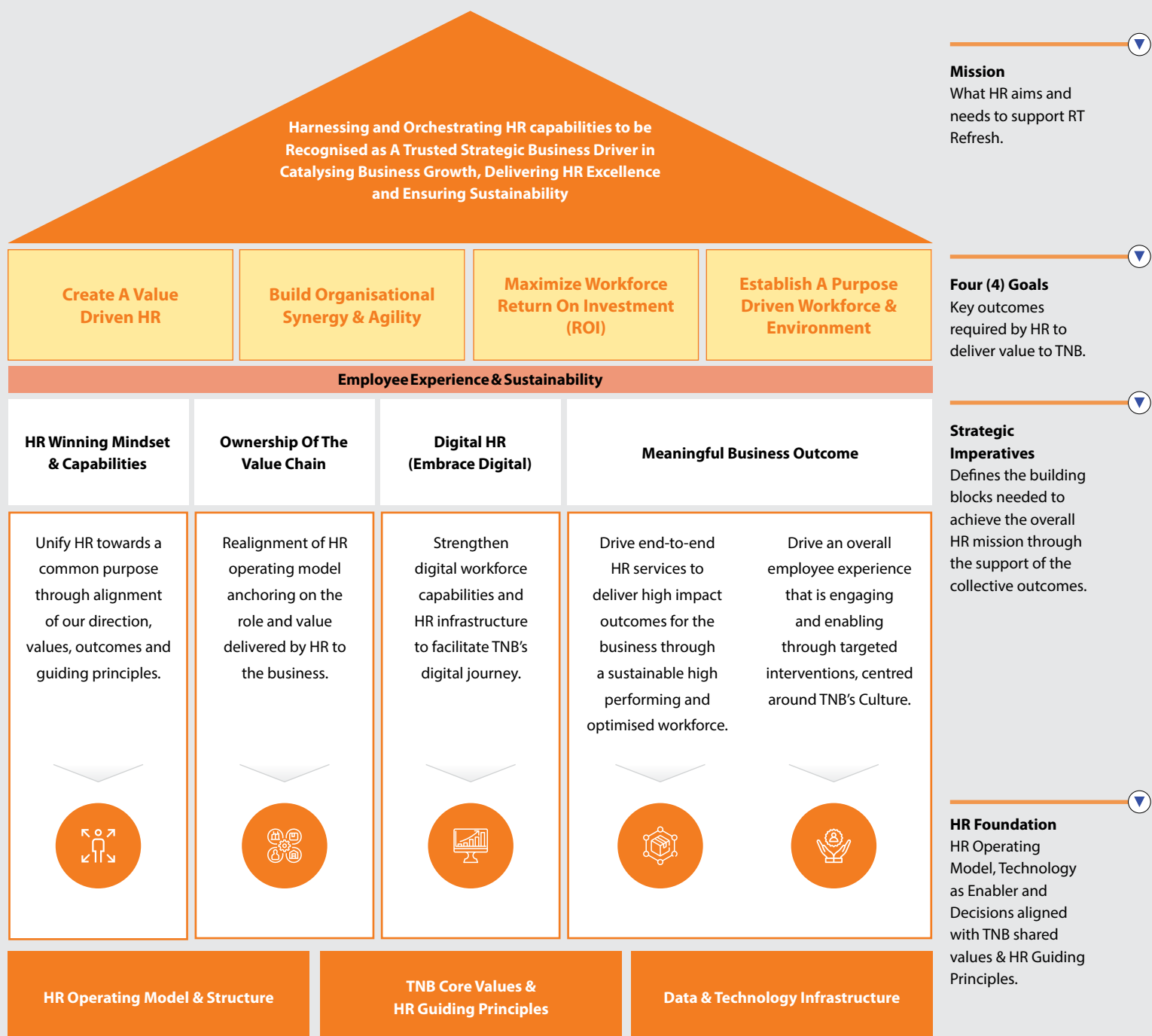
Engaging Our People and Cultivating Talent

HR Guiding Principle and Strategy

Our people are our most valuable asset. In ensuring that our people are equipped with the right capabilities and environment to enable us to strive in the changing market landscape, we continue to execute the intended action plan guided by our HR Master Plan support and align to our Transformation Journey – Reimagining TNB (RT) through our Human Resources (HR) strategy. In 2022, we revised our mission statement as part of our commitments in building up our workforce in meeting the company's sustainability agenda throughout the organisation. The revised mission statement is "Harnessing and Orchestrating HR capabilities to be Recognised as A Trusted Strategic Business Driver in Catalysing Business Growth, Delivering HR Excellence and Ensuring Sustainability". We continue to create new initiatives and measures to ensure the sustainability of our workforce and operations.

HR Master Plan 2020-2025

Building blocks to deliver the desired outcomes in support of Reimagining TNB's Aspiration and Towards A High Performing Culture



Engaging Our People and Cultivating Talent

Our Corporate Culture

TNB Reimagining Culture (RC) was established in FY2020 to redefine our core values and culture – Integrity, Collaborative, Professionalism, Customer-centricity, Forward thinking, and Mindfulness – that would drive our business transformation along with the development of a high performance culture. As part of this journey, we launched our TNB Identity comprising our Purpose, Aspiration, Culture and Behaviours.

In our effort to disseminate and embed the culture and values within our people, we have conducted several engagement and promotional programmes:

1. Established **Corporate and Divisional High Performance Culture Action Plan** which entails programmes and initiatives to be conducted to drive High Performance Culture in TNB throughout 2022.
2. On-going communication efforts on the **TNB Identity** at Corporate and Divisional Levels via internal bulletin (Tenagawan), Facebook, and other platforms. We also embedded elements of TNB Identity in the TNB Appointment and Offer letters as well as People Development courses and trainings.
3. Organised **Majlis CEO Turun Padang** and **Pengiktirafan Wira Budaya** which aims to provide recognition to employees that have demonstrated exemplary acts and contribution beyond their essential duties through their involvement in the company, community, country and at the international level guided by the TNB Core Values. Sessions were held at four (4) states with accumulated attendees of 1,723. During those sessions, 55 employees were awarded with the Wira Budaya award based on the specific TNB Core Values.
4. Organised **Majlis Anugerah Kecemerlangan TNB 2022 (ACE TNB 2022)**, an appreciation ceremony held to recognise the contribution and service of TNB employees identified from all divisions, departments and subsidiaries within TNB. Awards presented include *Anugerah Wira Budaya Kebangsaan*, *Anugerah Kecemerlangan Pekerja*, *Anugerah Nampak, Dengar dan Rasa Selamat (NDRS)*, *Anugerah TNB Performance Leaderboard*, and *Anugerah Khas Presiden*.
5. Conducted **Change Engagement Circle (CEC)** quarterly engagement sessions with representatives from all divisions and subsidiaries, to update and share on High Performance Culture initiatives and programmes.



For more information on TNB's Reimagining Culture, please refer to About TNB section, page 7.



TNB employees at CEO Townhall

Engaging Our People and Cultivating Talent

Talent Retention and Attraction

At TNB, we value the retention and attraction of good talent. To support employees in working as effectively and efficiently as possible in line with TNB's business strategic objectives and goals, we developed TNB Performance Management as an integrated and continuous approach. To promote healthy and constructive relationships between immediate managers and subordinates, performance conversations are mandated throughout the management cycle. In FY2022, 100% of our employees underwent regular performance and career development reviews. Through regular performance conversations, employees are empowered to constantly strive for improvement, measure progress, and work towards achieving better career progress.

Our approach in managing and nurturing our human resources and key highlight in FY2022:

Talent attraction, recruitment, and retention is vital to build a strong workforce pipeline

Key highlights for FY2022

We conducted various programmes and initiatives to retain and develop our talent pool:

- 95 employees were enrolled in the Transition Leadership Programme.
- Three (3) out of four (4) employees were appointed to C-Suite and ten (10) out of eleven (11) were appointed as Senior General Manager (SGM) from TNB's successors pool. There are 9% and 30% successor conversation rate increase for C-Suite and SGM respectively from 2021 to 2022.
- 1,438 training programmes were conducted for TNB employees.
- 5,800 individuals were certified as *Orang Kompeten Suruhanjaya Tenaga* (OKST) certification holders.
- 183 employees obtained non-technical certification, such as ACCA, CPA, and CIMA.
- Distribution Network Engineering Centre (DEC) conducted DEC Executive Attachment programmes which successfully attracted 60 talents into DEC Graduates pools.

We offer competitive employee benefits packages to maintain employee morale, and attract and retain talent

Key highlights for FY2022

We have developed a compelling Employee Value Proposition (EVP) which is a competitive remuneration and benefit package that supports work-life balance as well as the mental and physical health of our employees, and includes:

- Competitive benefits.
- Childcare facilities and nurseries.
- Parental leave.
- Accommodation for employees.
- Counselling services.
- Sports and recreational facilities.
- Career and development opportunities.
- Religious facilities.

The EVP Policy was established in April 2022 for all permanent TNB employees and serves as a guide and reference for TNB subsidiaries appointed employees.

Hiring of gig workers (on-demand free agents)

Key highlights for FY2022

TNB has started the hiring of gig workers, providing flexible short term employment opportunities since 2018. Employee mobility via secondment or assignment has become more structured with new guidelines introduced in 2022. The TNB On-Demand Free Agent (ODFA) Guideline was introduced to detail the provisions for the appointment of ODFA in TNB. An ODFA refers to a free agent, freelancer, or gigger hired by TNB on a contract for service basis. The establishment of this contract for service is between TNB and the appointed ODFA individual.

An appointed ODFA is not considered an employee and hence, not covered under the Industrial Relations Act and Employment Act.

Using digital platforms to attract talented workforce

Key highlights for FY2022

We have showcased our talent achievement and conducive workplace through social media platforms and participation in industry awards events as part of our Employee Branding strategy. We have also engaged with future talents through our postings on social media via the Instagram handle *@electrifyingcareers* to showcase TNB's initiatives as well as to promote job openings to the public.

Employee engagement for open communication and sharing of different perspectives

Key highlights for FY2022

We encourage two-way communication with our employees through various engagement channels. Employees are able to air their grievances through the Whistle Blowing Information System (WBIS), reporting to the whistleblowing toll free number or reporting via email using the Whistleblowing Complaint Form.

Our extensive workforce is represented by three (3) Registered Unions and two (2) Workers Associations comprising both executives and non-executive employees. The biennial Employee Engagement Survey (EES) and Culture Barometer conducted in December 2022, conducted to gain understanding of our strengths and areas for improvement in our workforce, received a score of 86.6% in comparison to the previous score of 85% in 2021. In FY2022, we have maintained a low turnover rate of 3.93% which reaffirms our exemplary efforts in employee management.

Engaging Our People and Cultivating Talent

Feature Story 5

Empowering Our People

We encourage our employees to embark on lifelong learning, enabling them to achieve their personal and career goals.

We aspire to be a learning organisation, focused on creating, acquiring and transferring knowledge and skills that continuously evolves with new business needs and global trends. We are committed to ensure that all our employees have access to learning and development opportunities. We aim to develop our employees' capabilities and ensure they carry out their roles to meet TNB's strategic objectives primarily, considering global trends and predictions for the future. This is achieved through huge allocation of funding of various learning programmes and initiatives in various learning institutions under TNB.

Learning and Development Investment

RM161 million

Total Learning and Development hours

1,024,777 learning hours

Upskilling and Reskilling Programmes

Programmes targeted to upgrade employee skills

- A total of 749 staff were enrolled in upskilling/reskilling programmes.

TNB Top Talent Development Programmes

Development programmes that aim to develop a surplus of leaders that embody TNB identities

- 130 talents were equipped with Individual Development Plan (IDP), which resulted in 97.6% critical positions that have ready successors and 86.7% succession realisation.
- Six (6) women from TNB successors have completed the Women Leadership Accreditation Certificate Programme.

Reskilling employees for energy transition programmes

Programmes targeted to upgrade employee skills especially in energy transition-related skills

- Solar technology training: 21 people.
- Smart meter training: 332 people.
- ILSAS EV Training Hub to provide reskilling training for the EV industry.

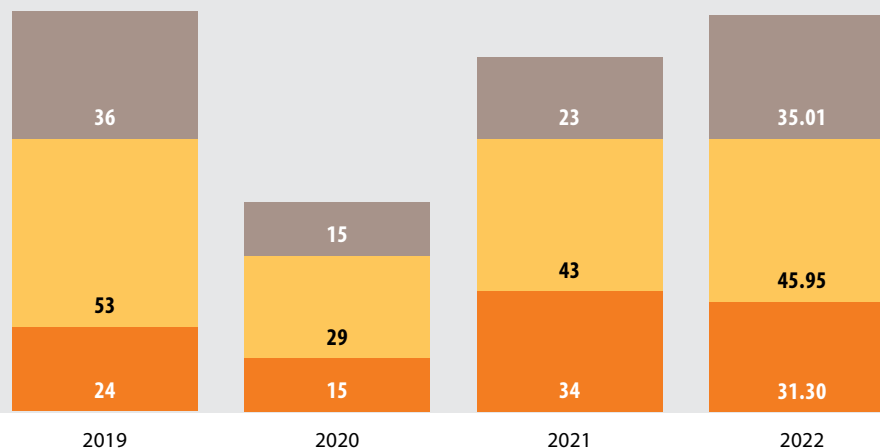
Digital Skills Training

Digital learning solutions for TNB employees

- 821 sessions conducted with 15,178 participants from TNB employees.

● Senior Management ● Executives ● Non-Executives

Average Hours of Learning by Employee Category
(Hours)



Engaging Our People and Cultivating Talent

Learning and Development

Learning and development play a crucial role in TNB by contributing significantly to the formation of an exceptional workforce. At TNB, we recognise that the continuous growth and improvement of our employees directly translate into sustainable business growth and success. Our learning and development programmes are designed to be experiential and practical, as we firmly believe that this approach yields the most effective results. By providing employees with hands-on experiences and real-world applications of knowledge, we enable them to acquire and hone skills that are directly applicable to their roles and responsibilities.

Through these L&D programmes, employees are given ample opportunities to enhance their capabilities and expand their expertise. By participating in various training initiatives, workshops, and skill-building activities, they acquire new knowledge, develop essential skills, and stay updated with the latest industry trends and best practices. This continuous learning not only empowers individuals to perform their current roles more effectively but also prepares them for future career growth and new challenges.

By investing in the learning and development of our employees, TNB creates a talent pool that is adaptable, agile, and capable of driving the company's growth and sustainability. It enables us to respond to changing market dynamics, technological advancements, and customer needs with confidence and competence. Ultimately, the continuous improvement of our workforce through learning and development programmes positions TNB as a leader in the industry, driving innovation, excellence, and long-term success.

Our learning and development initiatives developed to enhance existing talent and FY2022 highlights:

1 Division Academies

TNB established division academies in collaboration with TNB Integrated Learning Solution Sdn. Bhd. (ILSAS) with the aim of developing Subject Matter Experts (SMEs) who can deliver on-the-job technical training and upskilling within their respective divisions, thereby contributing to the Division Transformation Programme and ensuring sustained high business performance. In FY2022, there was a total of 69 participants from GenCo Academy, 25 participants from Grid Academy, 32 participants from Distribution Network (DN) Academy, 3,214 participants from Retail Academy, 30 participants from HR Academy and 794 participants from ILSAS Academy.

2 Upskilling & Reskilling Programmes

These programmes are targeted to upgrade employee skills especially in energy transition-related skills

- a. A total of 749 staff were enrolled in upskilling/reskilling programmes in 2022, namely:
 - i. PPKK - *Program Pendidikan Kemahiran Ketukangan*
 - ii. PPKJ - *Program Pendidikan Kemahiran Juruteknik*
 - iii. PPPS - *Program Pendidikan Penyelenggara Stor*
 - iv. PPPT - *Program Pendidikan Pembantu Tadbir*
 - v. Conversion Programme - *Juruteknik Mechanical to Electrical*
- b. 63 people underwent Conversion Programmes to facilitate continued employability among TNB employees.
- c. 32 employees benefited from the Degree reimbursement programme, with a total of RM413,000 investment for partial course fee sponsorship to assist executives in their professional advancement.
- d. 55 employees participated in the Transition Leadership Programme for Executives with a total of RM328,000 investment, whereas 40 employees participated in the Transition Leadership Programme for Non-Executives with a total of RM173,000 investment.
- e. 332 people underwent reskilling programmes to train meter operators on ways to install and collect readings from smart meters, in an effort to support transition towards smart meter and digital billing.
- f. ILSAS conducted training for 21 individuals on solar technology.
- g. The newly launched ILSAS EV Training Hub is expected to provide reskilling training for the EV industry, focusing on fundamental knowledge covering basic battery storage and EV technology. This will align with the government's initiative to improve EV technology in the country.

3 Digital Skills Training

Collaboration with ILSAS to accelerate digital learning solutions for TNB employees. A wide variety of e-learning modules allow employees to pace their learning and development. TNB is committed to meeting the need for digital talents across its business entities by nurturing internal talent, and to achieve this, TNB will introduce a range of development programmes for three specific job roles within the organisation, namely Data Scientist, Data Analyst, and Data Engineer, as part of establishing the Digital Academy. Most face to face (f2f) classroom activities were enhanced to provide a digital learning option, or an alternative hybrid approach combining the best of both approaches. Digital learning platforms and contents were employed, including bite-sized learning, webinars, virtual learning, and e-learning. In FY2022, 821 sessions were conducted with 15,178 participants and cumulative total e-learning hours of 8,640 hours under ILSAS E-Learning Programmes.

Engaging Our People and Cultivating Talent

4 TNB Leadership Development Programme

This provides experiential leadership development interventions that aim to develop leaders that embody the TNB Identity. The leadership interventions are diagnosed from TNB's strategic intent and employees' career lifecycle. These include the TNB Leadership Competencies Programmes and TNB Leadership Development Centre.

- a. **TNB Leadership Competencies Programmes.** The continuous leadership learning and development initiatives, such as the Leadership Webinar series feature internal and external speakers on various current and future leadership topics. This year, 26,900 employees participated in the programme with a total investment of RM77,380. TNB conducted 68 webinar to date with 21 webinars were conducted in 2022. Also, TNB developed First-Time Manager Programme (FTM) for 55 aspiring managers and re-strategise (review) development content for 144 Young Executive Development Programme (YEDP) participants to strengthen leadership capabilities when employees transition to different roles in the organisation. There is also Informal Learning through Group Coaching in FTM.
- b. TNB Leadership Development Centre which specialises in formulating experiential leadership and development programmes caters to employees at all levels. The participation in FY2022 is as follows:
 - i. 44 talents participated in strategic dialogue with Board members.
 - ii. 525 top management and talents participated in premium leadership webinars and trainings.
 - iii. Six (6) women successors have completed the ASB - WLF Women Leadership Accreditation Certificate Programme, a collaboration between ASB and MIT Sloan.
 - iv. 100% of 130 talents were equipped with the Individual Development Plan (IDP), which resulted in 97.6% critical positions having ready successors and 86.7% succession realisation. They were chosen through 10 sessions of TNB wide Succession Management Committee's deliberations.
 - v. 52 talents participated in strategic management breakouts.
 - vi. 20 talents placed in roles along pathways leading to critical positions.

5 TNB Reskilling Malaysia Programme

Spearheaded by ILSAS, this initiative provides job matching opportunities to unemployed members of the public as well as training of necessary skills for their new roles. Introduced in 2020, the programme helps empower and provide reskilling for retrenched and unemployed Malaysians. A total of 5,827 participants from the programme were successfully matched with employers in 2022, and 5,072 participants successfully completed their training in the programme.

6 Digital Learning Initiatives

Various platforms and content providers were utilised to conduct learning courses for TNB employees virtually through TNB Corporate Digital Learning Platform Experience (LXP) and LinkedIn Learning. TNB LXP aims to provide TNB Executives with external content providers via its digital platform. It is a digital learning experience with external content provider and platform. A robust strategy ensures the success of delivery and cultivation of a self-directed and self-paced digital learning culture in TNB. LinkedIn Learning module was developed in FY2022 and will roll-out to 1,000 executives for Pilot Phase in the year 2023, prior to roll-out for the whole company.

7 Graduate and Apprenticeship Programme

The PROTÉGÉ programme creates a pool of competent, well trained, knowledgeable and skilled graduates through industrial attachment. The PROTÉGÉ programme (previously known as Skim Latihan 1 Malaysia (SL1M)) supports the Malaysian Government and the Ministry of Entrepreneur Development and Cooperatives (MEDAC) initiative to create a pool of skilled graduates through industrial attachments that will help them to attain relevant competencies to enhance their marketability and employability. Since November 2011, TNB has trained about 6,110 trainees with a RM143 million investment from AAIBE (RM66.5 mil) and TNB (RM76.5 mil) and the average employability rate (FY2011 - FY2021) was 73%. TNB trained 547 PROTÉGÉ trainees during the year. TNB has managed to secure RM12.13 million from Akaun Amanah Industri Bekalan Elektrik (AAIBE) to fund the implementation of the PROTÉGÉ Phase 8 programme. At the end of the programme, TNB PROTÉGÉ trainees were able to acquire new skills and gain industrial exposure from both soft-skills training and On-the-Job Training throughout the 8-month period.

Engaging Our People and Cultivating Talent

Human Rights

GRI 3-3 | 2-23 | 2-26 | 410-1 |

Human rights are very well incorporated into the TNB Core Values which upholds the highest standards of ethics, honesty, integrity and demonstrating respect and dignity for one another and those with whom we do business. With operations in Malaysia and around the world, we comply with the local legal requirements around protecting human rights in which we operate.

We uphold global standards for responsible business, providing a safe working conditions; non-discrimination and equal opportunity; freedom of association and collective bargaining; security; grievance procedures; and the elimination of modern slavery and any forms of forced labour including child labour. We exercise our influence by conducting our business operations in ways that seek to respect, protect, and promote the full range of human rights. We ensure our employees undergo training programmes designed not only to focus on technical skillsets, but to also increase their awareness around human rights.

We believe employees should be treated fairly without prejudice or discrimination. With this in mind, we have established channels for employees to raise labor and human rights-related issues and concerns. The grievance mechanism established by TNB provides a starting point for collating information around any potential human rights related violations. The mechanism also covers dialogue facilitation, fair investigation, and the provision of appropriate remedies where necessary. There is also a whistleblowing channel for employees to raise human rights violations anonymously.

TNB's grievance mechanism requires employees to submit their grievances in writing using a prescribed form and following the steps outlined in the Collective Agreement and company policies in effect. The company aims to resolve grievances promptly to prevent negative impacts on employee morale, efficiency, and productivity. The management of grievances is guided by the following principles:

- Both the Company and the Union acknowledge that unresolved grievances can adversely affect an employee's morale, efficiency, and productivity.
- Both parties agree to settle complaints or grievances at the lowest level as fairly and quickly as possible. In the case of executives, if the immediate superior is also the Head of Department, the aggrieved party should escalate the grievance to the next higher level.
- Upon receiving a grievance, the concerned party must take immediate action to address and resolve it appropriately.

A grievance is defined as an employment-related complaint brought to the attention of an employee's immediate superior, either in writing or through other methods, that is not addressed to the employee's satisfaction within seven (7) working days and continues as an ongoing matter.

FY2022 Key Highlights:

- 15,425 employees completed the Human Rights Management topics resulting in growing awareness on human rights management.
- 636,002 training hours on human rights topics.
- 94% of security personnel have received formal training in the organisation's human rights policies or specific procedures and their application to security.
- TNB did not receive any grievances from employees concerning human rights violation as prescribed in TNB Collective Agreement with TNB Unions.



For more info on Whistleblowing Procedure, please refer to Championing Sustainability at TNB section, page 18.

Advocating for Diversity and Inclusiveness

TNB is deeply committed to fostering diversity and inclusiveness among its workforce, recognising it as an essential element of our human rights efforts.

We firmly believe that every individual, regardless of their age, gender, religious affiliation, or disability, deserves equal opportunities and a supportive work environment. At TNB, we actively promote a culture of respect, understanding, and acceptance. We strive to create an inclusive workplace where all employees can thrive and contribute their unique perspectives and talents. We value the diverse backgrounds, experiences, and ideas that our employees bring to the table, as it fuels innovation, creativity, and collaboration.

In line with our commitment to diversity and inclusiveness, TNB implements policies and practices that ensure fair and unbiased recruitment, selection, and promotion processes. We provide equal opportunities for career development and advancement, based on merit and qualifications, fostering a level playing field for all employees. Through these efforts, TNB aims to cultivate an environment where employees feel valued, respected, and empowered to bring their whole selves to work. By embracing diversity and inclusiveness, we harness the collective strength and potential of our diverse workforce, driving innovation, productivity, and sustainable growth.

Engaging Our People and Cultivating Talent

A Diversity and Inclusion (D&I) Policy was launched in FY2022 which explicitly details TNB's commitment to ensuring a diverse and inclusive workplace without consideration of age, gender, race, religion, nationality, background or previous experiences. This will help to attract talents from diverse backgrounds. The effectiveness of the policy will be gauged through yearly surveys conducted by Group HR. Additionally, the Employee Experience Policy was established to cover the Employees Experience phase start from Plan, Recruit, Develop, Retain, Growth and Exit, which is aligned with the six (6) pillars of HR Leap 6 to complement GHR's strategy and operating model.



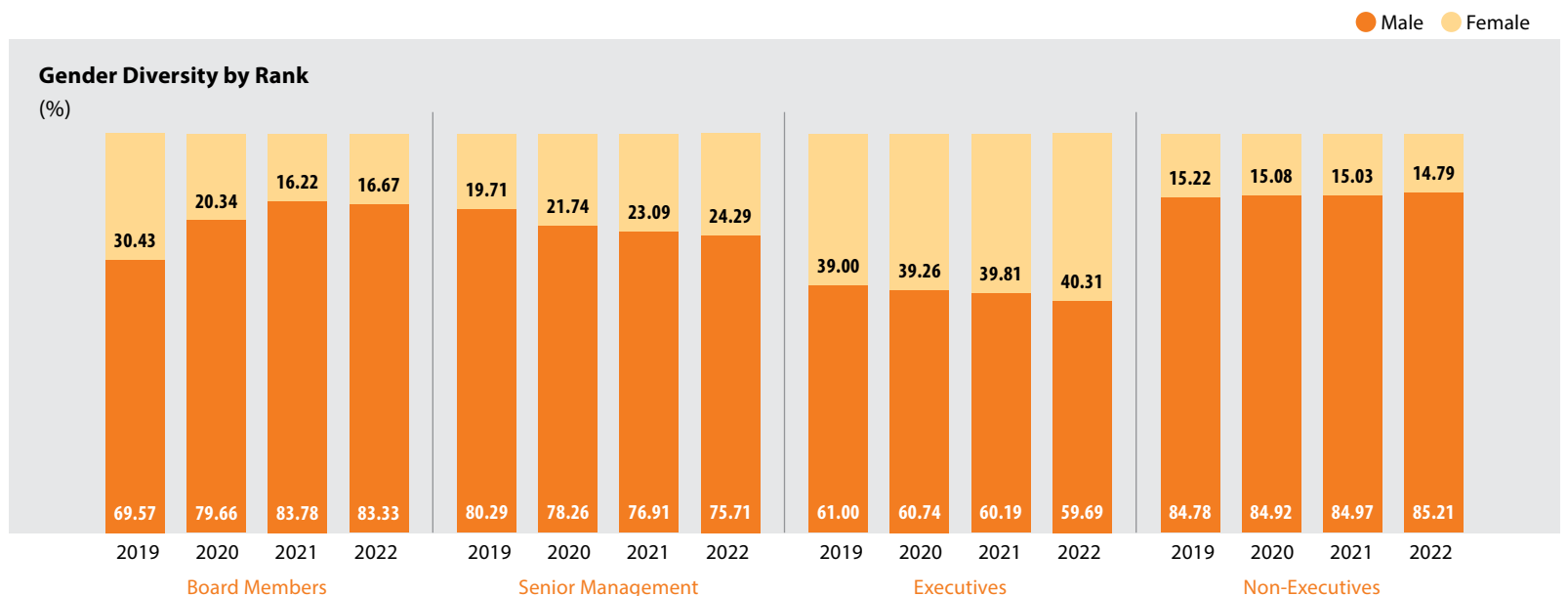
The D&I Policy covers employee experience phase from Plan, Recruit, Develop, Retain, Growth and Exit which include:

- Membership of TNB Top Management Group.
- Diversity of employees in terms of background.
- Expatriate recruitment.
- Employee participation in career development.
- Prioritising safety, health and well-being.
- Fair & equitable treatment and job opportunities for persons with disabilities (PWDs).
- Appreciating and rewarding employees based on their contributions towards the Company.
- Creating a safe workplace atmosphere free from any form of harassment whether verbal, physical, visual or statements in the form of discrimination.
- Promoting the practice of TNB's Core Values.

Key highlights for FY2022:

1. In FY2022, TNB Group saw an increase in the number of women in senior management roles from 100 people in FY2021 to 103 people.
2. Ten (10) women leaders were featured in TNB's Women's Day Celebration.
3. A Board Engagement Programme was conducted focusing on women's leadership. The programme consisted of 40% women attendees throughout the organisation.
4. We continue to be a member of the 30% Club, which advocates at least 30% women's representation on all boards and in top management globally.
5. We continue to provide employment opportunities for 25 Persons With Disabilities (PWD) as of FY2022.
6. TNB supports the right to freedom of association and collective bargaining and promotes equal pay for men and women based on their roles and responsibilities, as outlined in our HR manuals and Collective Agreement (CA) document. The Company maintains a basic salary and remuneration ratio of 1:1.

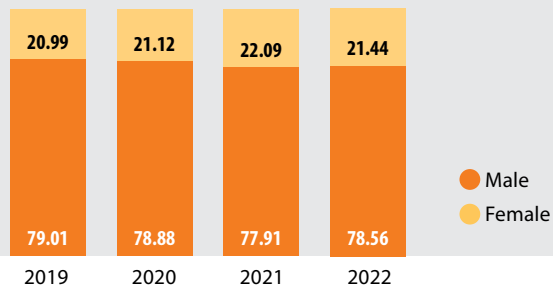
Our Performance in FY2022



Engaging Our People and Cultivating Talent

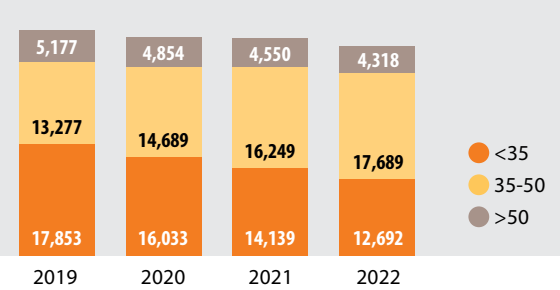
Employee Breakdown by Gender

(%)



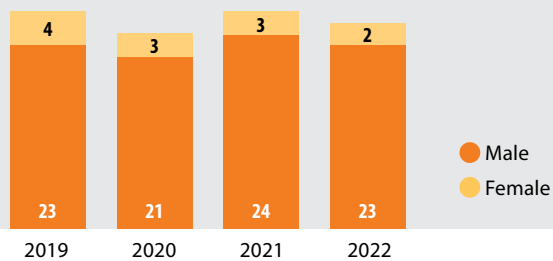
Employee by Age Group

(No.)



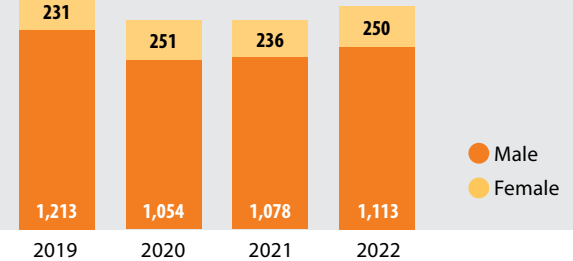
Differently Abled Employees by Gender

(No.)



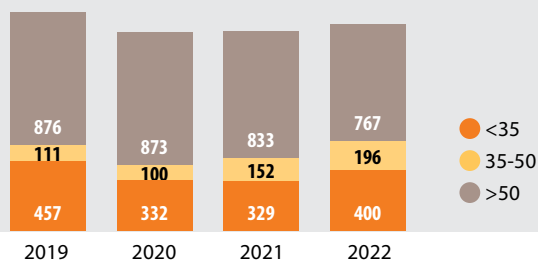
Employee Turnover by Gender

(No.)



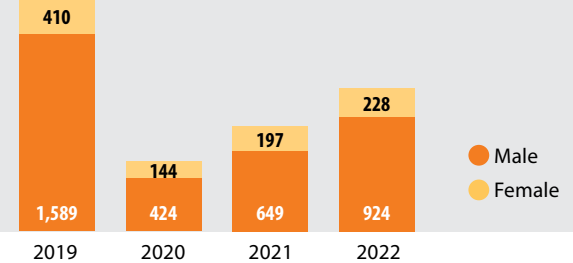
Employee Turnover/Attrition by Age Group

(No.)



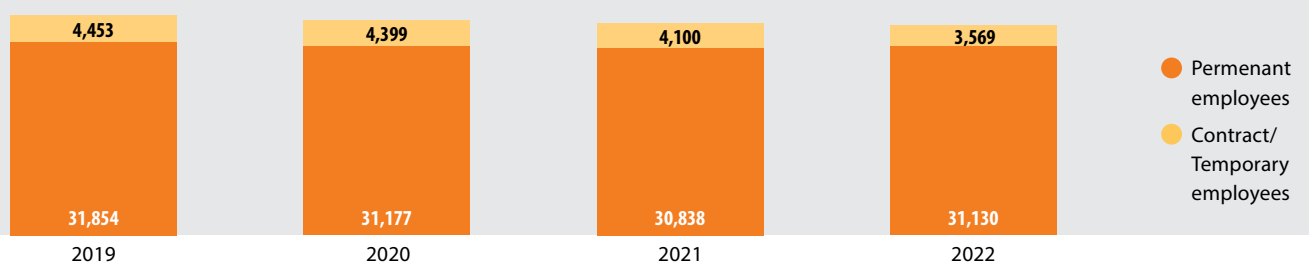
New Hires by Gender

(No.)



Employee by Type of Employment

(No.)



Engaging Our People and Cultivating Talent

Employee Engagement

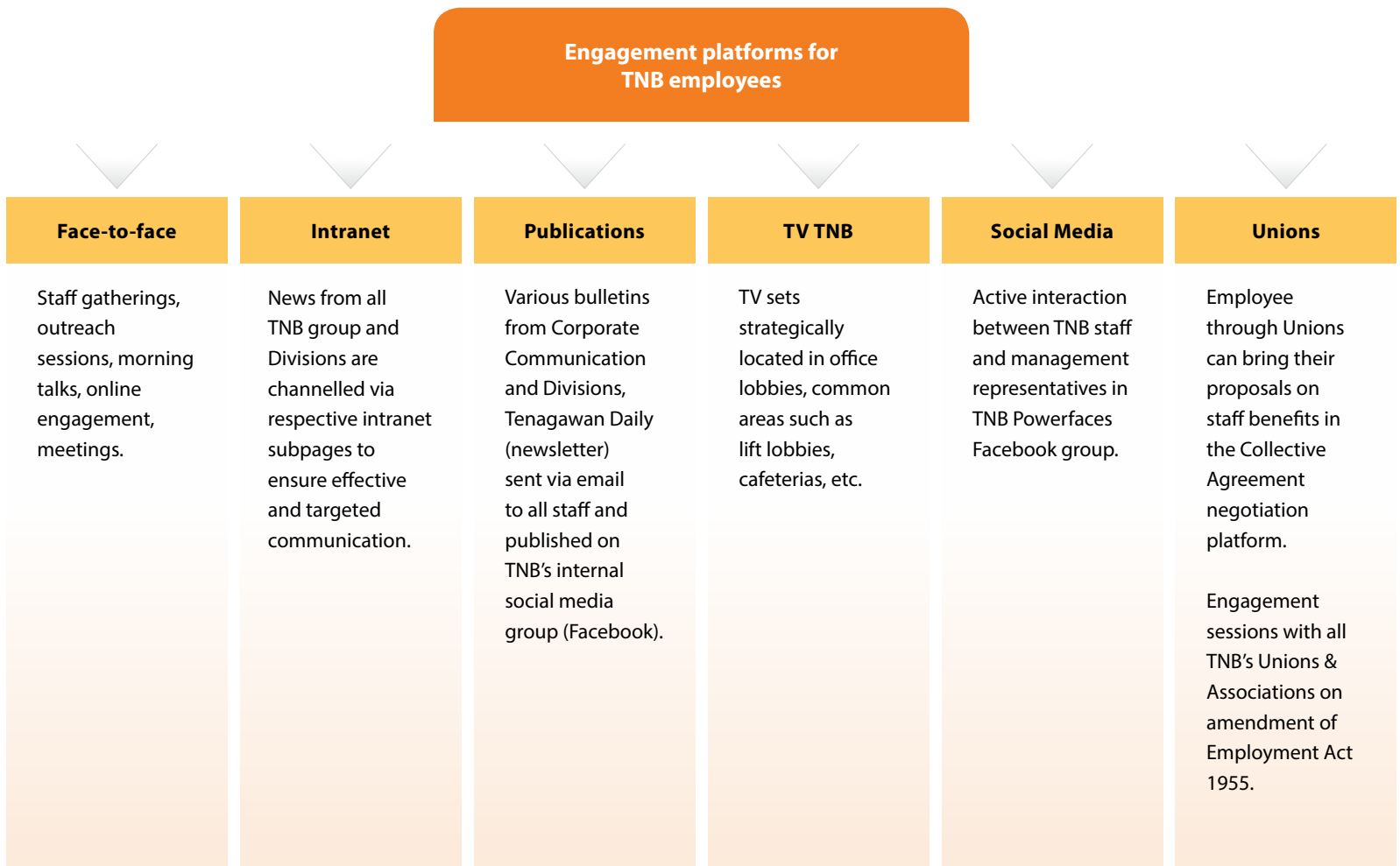
Employee engagement is an essential aspect that drives TNB's success. We believe that engaged employees are more motivated, productive and committed to delivering their tasks and roles. They feel appreciated and are willing to go the extra mile to perform their job and duties, resulting in improved work quality, customer service, work efficiency and performance, as well as a healthy work culture. Furthermore, engaged employees are likely to stay with the company, reducing turnover and serving as TNB's ambassadors and advocates. Formal and informal engagement sessions are conducted across different levels of employees, supplemented by communication through various print, social media and audio-visual channels, both online and offline.

This year, we conducted the TNB Employee Engagement Survey (EES) and Culture Barometer as a form of employee pulse check to assess and measure the awareness, understanding, attitude and ambassadorship amongst our employees towards the TNB Identity, which consists of TNB's Purpose, Aspiration and Core Values. This survey, which was initiated in 2020, also focused on measuring the extent of our employees' engagement with TNB. The survey also served its purpose to identify the efficacy of programmes and initiatives that have been organised to drive High Performance Culture in TNB. By soliciting feedback from the employees and taking their suggestions into account, we aim to continuously foster a culture that is more responsive to the needs and concerns of our employees.

Following the result of the survey, a workshop was conducted with representatives from each division, department and subsidiaries to look for trends and patterns in the survey results and identify areas for improvement to increase employee engagement. Based on the results of the survey and the areas identified for improvement, each representative is responsible for developing a plan to address the issues and enhance employee engagement. The plan is aligned with the initiatives and programmes planned to drive High Performance Culture within TNB. Additionally, constant follow up and measure of progress was done to ensure initiatives and programmes were executed accordingly.

We also engage with our employees through Employee Union and townhall. Various events are conducted to gauge their feedback. We have always maintained harmonious relations with the unions and are pleased to note that our union leaders are actively involved in all employee engagement sessions such as labs, syndications, joint meetings, and technical/field trips.

We engaged and communicated with our employees through several platforms:



Engaging Our People and Cultivating Talent

Feature Story 6

Prioritising People: Safeguarding Safety and Well-Being

At TNB, we place a high importance on ensuring the safety of our employees and providing them with a safe working environment. This can be seen clearly through the improvement of our HSE performance in FY2022, where we successfully achieved our target of reducing LTIFR to <1.00, recording LTIFR of 0.82 in 2022 compared to 1.03 in 2021.

TNB recorded zero (0) employee fatality and two (2) contractor fatalities when conducting operations on sites last year. This can be attributed to the effectiveness of the many guidelines, policies, and training undertaken by the Group HSE to safeguard our employees that is in line with our values in ensuring the well-being for all.



In FY2022, the Stop Work Intervention (Intervensi Stop Work - ISW) guidelines were put into effect, allowing all employees and contractors to take responsibility for their safety and trigger a stop work intervention under unsafe work conditions or unsafe acts. The guidelines mandate employees and contractors to identify unsafe work behaviour, conditions, or activities that do not follow existing compliance requirements.

TNB introduced the HSE Wallet Application to enable easier and timely reporting of these potential incidents. A total of 263,900 Potential Incident (PI) reports have been lodged, indicating that awareness on employee safety and health including environmental protection continues to be taken seriously. Of these reports, only two (2) cases recorded fatalities. These initiatives have received positive reviews from our workforce, as it has helped to keep them safe throughout their time working on sites.

To appreciate the effort of our employees in sustaining high HSE performance and driving the safety culture transformation, the *Nampak, Dengar dan Rasa Selamat* (NDRS) Awards recognition programme was implemented. Under the NDRS Awards programme, we have the NDRS League Awards, Potential Incident (PI) Reporting Awards, Authorised Person (AP) & Competent Person (CP) Awards, as well as the Best Safety Health Committee (SHC) Awards. This prestigious NDRS League Award was presented to the league champions on 6 September 2022 during *Hari Anugerah Kecemerlangan TNB*.

Engaging Our People and Cultivating Talent

Stop Work Intervention (Intervensi Stop Work - ISW) Guideline

The guidelines outlines stop work by peers or anyone through self regulation for any unsafe work behaviour, conditions or activities that do not comply to safety standards for employees and contractors.

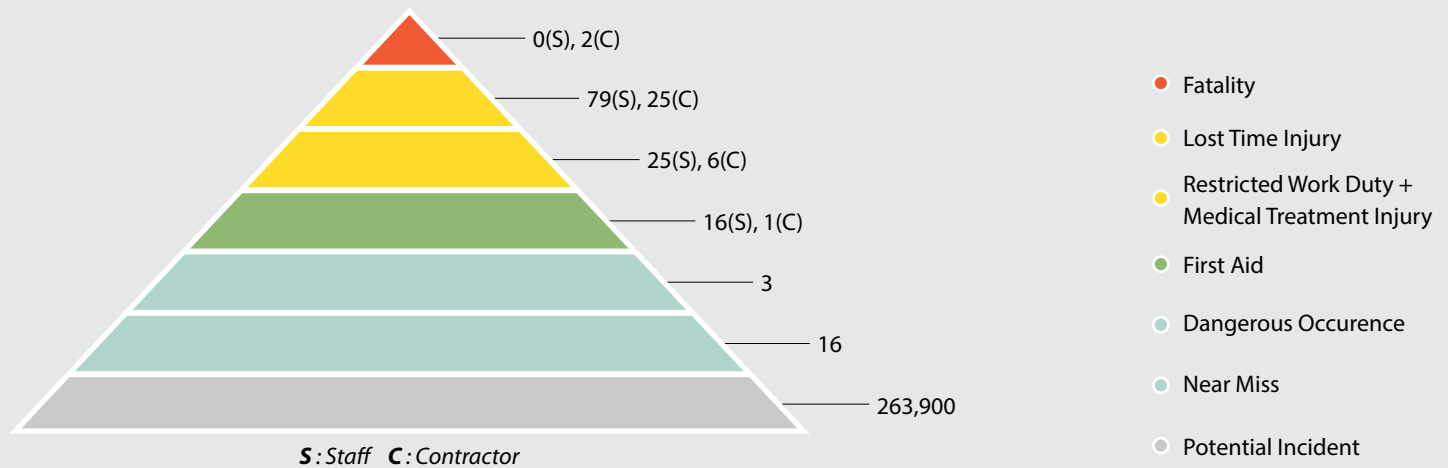
HSE Wallet Application

Digital platform that enables timely reporting for employees to report hazards and potential incidents.

Nampak, Dengar dan Rasa Selamat (NDRS) Award

To recognise our employees' efforts in sustaining high HSE performance.

Number of Incidents Reported according to Incident Triangle



Enhancing Occupational Health and Safety Practices

GRI 3-3 | 403-2 | 403-5 | 403-8 | 403-9 | 403-10 |

Safeguarding the lives of both our employees and contractors through robust occupational safety and health systems and best practices is one of our top priorities. We strongly advocate and implement strong safety standards to prevent occurrence of work-related injuries and illnesses, as well as to achieve our targets of having zero fatality at the workplace and maintaining our LTIFR at below 1.0. We are also well prepared in dealing with emergency situations that may cause potential impact to health, safety as well as the environment.

Implementing a Safety Culture

We believe that safety at our workplace goes beyond standards and policies and should be embedded as a culture within our organisation. In FY2021, we attained our targeted Proactive Safety Culture Level whereby our Safety Culture Assessment (SCA) score was 4.02. The assessment is due every two years, with the next assessment due in year 2023, holding the aim to achieve a higher score.

Our approach and key highlights for FY2022:

1. Tenaga Safety Culture

We have implemented nine (9) Safety Culture Values Activation & Spiritual hour sessions in FY2022 focusing on divisions and subsidiaries that have recorded fatality cases, LTIFR more than 1.0 and high numbers of compounds issued in the previous year. This is to instil and sustain the safety culture values of *Nampak, Dengar dan Rasa Selamat* (NDRS) in the hearts and minds of employees at all times.

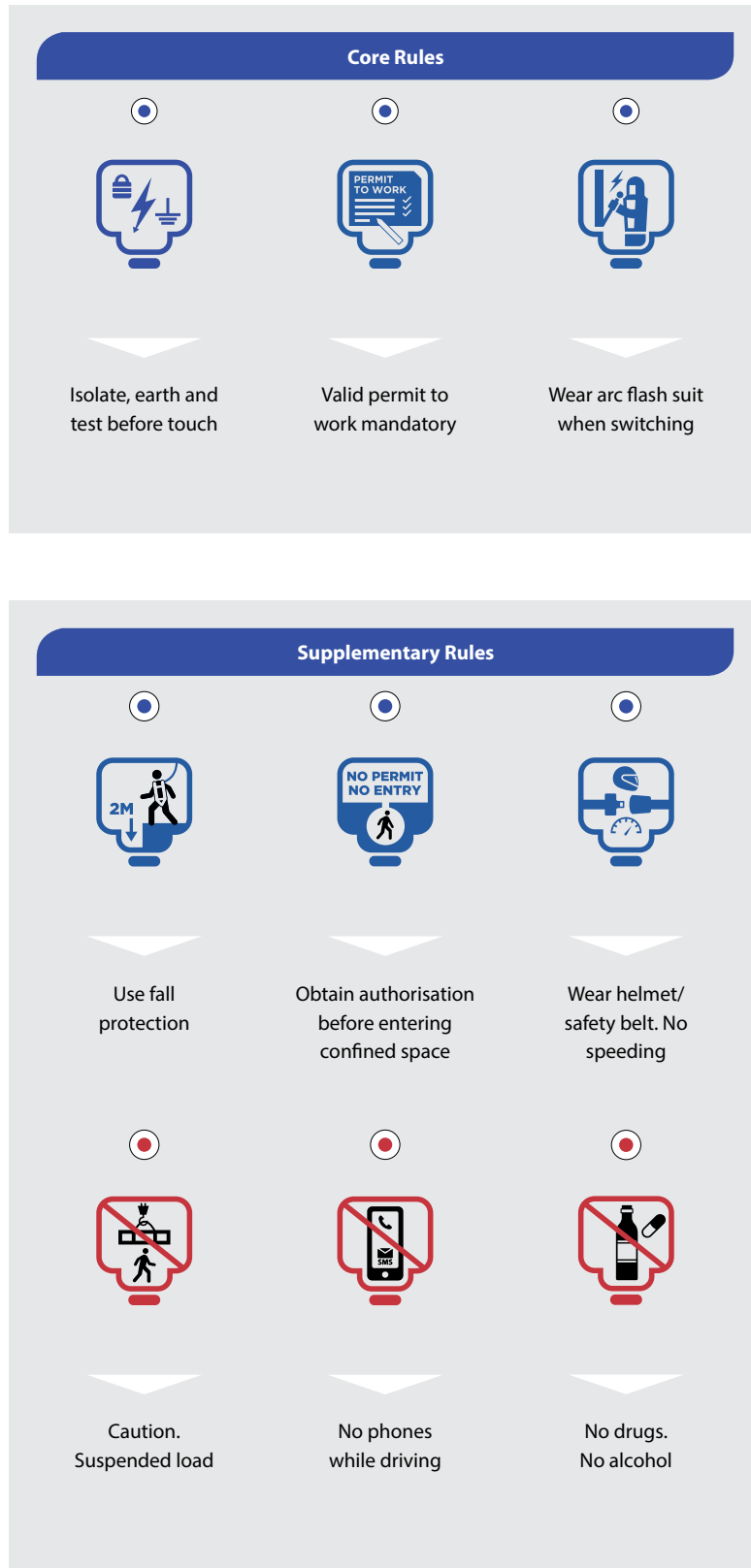
We have implemented the NDRS Awards recognition programme i.e. NDRS League Awards, PI Reporting Awards, Authorised Person (AP) & Competent Person (CP) Awards as well as the Best Safety & Health Committee (SHC) Awards to recognise the efforts and contributions of our employees in elevating HSE performance.

A new initiative introduced under the NDRS (Education) is the HSE Culture Change Agent (HSE CCA) programme which was launched by the HSE Department of TGBS in collaboration with TNB ILSAS on 20 June 2022. The objective of implementing this programme is to inculcate the HSE culture among all TNB employees and subsidiaries. The appointed HSE CCA will play a role as a liaison for interaction and communication of the HSE culture, monitor and evaluate aspects of safety in the workplace and support and encourage the implementation of HSE initiatives. A total of 51 HSE CCA were appointed. A comprehensive plan covering governance, engagements and promotion, competency, rewards and recognition were crafted with HSE CCA to ensure the sustainability and expansion of this programme in TNB.

Engaging Our People and Cultivating Talent

2. Life Saving Rules (LSR)

TNB has established nine (9) lifesaving rules as part of injury and fatality prevention measures.



3. Risk assessments

In TNB, all work-related hazards are identified, its related risks are assessed and relevant controls to eliminate hazards and reduce risks are determined. This is performed throughout the Company with reference to the Hazard Identification, Risk Assessment and Risk Control (HIRARC) procedure. To determine the controls required to eliminate hazards and reduce risks, a hierarchy of controls such as elimination, substitution, engineering control, administrative control, and Personal Protective Equipment (PPE) is used. The effectiveness of the risk assessment is reviewed annually, or when there are incidents and changes in work processes. Additionally, PI reported in the digital platform also will be assessed to alleviate any potential risk.

The Hazard Identification, Risk Assessment and Risk Control (HIRARC) was developed based on the HIRARC Guideline from Malaysia's Department of Occupational Safety and Health (DOSH). Training on HIRARC was conducted periodically with employee and employer representatives. Gaps from these risk assessments were translated as input for improvement in the future. Additionally, any industrial hygiene and occupational health assessments are conducted by competent persons registered with DOSH.

These gaps from risk assessments are evaluated through the HSE management system (HSEMS) audit, inspection and enforcement activities. Gaps identified during the audit, inspection and enforcement activities are closely followed up using NCR online system.

Risk assessments conducted by TNB include conducting:

- HSE Risk Assessment (HSERA), Environmental Impact Assessment (EIA), Hazard Identification, Risk Assessment and Risk Control (HIRARC), Quantitative Risk Assessment (QRA), Fire Risk Assessment (FRA) and Process Hazard Analysis (PHA).
- Chemical Health Risk Assessment (CHRA) for any work activities that relate to hazardous chemicals.
- Noise Risk Assessment (NRA) to identify work related activities with exposure to noise.
- Ergonomic Risk Assessment (ERA) to identify ergonomic related risks at the workplace.

4. Improvements on Ergonomic Programmes

As we have almost 20,000 employees using computers daily, HSE has developed an e-learning module on office ergonomics in the TNB Learning Management System (LMS) to educate all TNB office workers to improve their posture when using computers at workstations. This will help TNB staff to maintain good physical health. As of 31 December 2022, 11,693 TNB staff have completed the e-learning module. In order to tighten TNB's HSE standard, new specifications for office workstations have been developed in collaboration with TNB Property Service Department (PSD) to ensure the new TNB Platinum Campus, Bangsar is provided with the highest ergonomic standard workstations.

5. Improvements on Chemical Health Risk Assessment (CHRA)

Completion and rollout of Online Chemical Register is a best practised initiative in ensuring only approved chemicals are used in TNB operations. Three (3) divisions in TNB have been approved by DOSH to implement Generic Chemical Health Risk Assessment (CHRA).

Engaging Our People and Cultivating Talent

FY2022 Approach and key highlights:

1. HSE Digitalisation (eHSE online system)

In line with greening our office practices, we continue to take strides towards digitalising our HSE practices by progressively rolling out modules in preparation for the full implementation of our eHSE online system in FY2022.

Key highlights for FY2022 include:

- Enhancement of HSE wallet platform that allows all TNB staffs to report any potential incidents (PI) at their workplace. The objective of this process is to promote intervention of any PI.
- Introduced three (3) new modules in eHSE online system consisting of Legal Compliance, Inspection Module & We Care *Kami Kisah*. The online systems are currently conducted as pilot projects at a few divisions/departments in TNB.

2. Health, Safety and Environmental Management System (HSEMS)

We are guided by TNB's Safety and Health Policy to implement our safety governance framework. The TNB Health, Safety and Environment Management System (HSEMS) has progressively been cascaded across divisions to ensure standardisation of HSE management and governance across the Group. Since the introduction of HSEMS in year 2019, rollout to divisions and subsidiaries are still ongoing. Along with that, HSE Corporate Audit has been conducted at a few divisions/departments to measure compliance status based on HSEMS elements. The TNB Group HSE Council, which is supported by division-level HSE Committees, convenes quarterly to discuss safety performance, mitigation measures and the overall strategic direction for HSE management at TNB.

Key highlights for FY2022 include:

- HSE Corporate audit has been conducted for TNB divisions to measure compliance based on HSEMS elements.
- TNB Stop Work Policy has been reviewed and endorsed by our CEO on 30 August 2022.
- Three (3) TNB HSE Council meetings were held quarterly as a form of HSE top management review platform.
- Contractors under the DN are required to provide safety quality assurance through self-declaration of safety compliance before commencing work.

3. Accident reduction programmes

The TNB Safety Information System (TSIS) captures reports of incidents and near misses which are then investigated for corrective and preventive actions for improvement to be identified and taken. The Intervention Stop Work (ISW) programme was developed to ensure our workers are able to safely remove themselves from work situations that they believe could cause injury or ill health.

Key highlights for FY2022 include:

- Endorsement of Intervention Stop Work (ISW) guideline. Through this guideline, all TNB employees and contractors can rightfully issue a stop work order at any premise or workspace, given that any unsafe behaviour, unsafe conditions, or regulatory non-compliance are detected.

- SUTRa (Station Under The Radar) is a new initiative introduced to assist business units, zones and sub-zones to increase the level of compliance with legislation and DN's internal directives towards the achievement of zero fatal accidents in the division. *Ops Sikap* is an initiative that has been proposed during HSE Lab 2022. The purpose of implementing this initiative is among the identified quick wins to maintain LTIF performance until the end of 2022 by monitoring HSE compliance at work sites. In FY2022, 15 inspections were carried out and four (4) stop work orders were issued. The results of this initiative showed positive outcomes as the LTIFR ratings in November 2022 stood at 0.86 and decreased to 0.82 in December 2022. HSE Compliance among staff has improved over time. However, there is still a lot of room for improvement for HSE compliance by contractors. All staff and contractors are encouraged to continue practicing safe work practises to reduce the risk of accidents at the work site.
- A webinar on Fatigue Management was held to educate staff on ways to manage fatigue and work stress to subsequently improve their work quality.

Emergency Response – Flood

We intensified our flood preparations as the country received warnings of flash floods across the country from the Department of Meteorology. Since July 2022, we undertook efforts to reduce water levels in hydroelectric dams, construct retaining walls at the entrance of main intake substations and raise the level of equipment platforms at identified flood prone areas. These steps will assist in preventing flood damage to TNB's operations. Machinery and assets, such as mobile and portable generators, were also put on standby and ready to be deployed when needed. Additionally, employees undergo flood response training even before the start of the monsoon season to ensure that they are able to handle unprecedented situations in case of emergency. Personnel from DN division were engaged as part of the Security Emergency Team to provide round-the-clock assistance to affected customers.

As flood levels rose in several areas of Peninsular Malaysia, we took proactive measures to shut down affected power substations, due to safety considerations. We are saddened to report that an incident involving electrocution of three (3) people occurred on 19 December 2022. This incident happened while they were wading through floodwaters near their house in Tumpat, Kelantan. Members of the public are reminded to exercise caution to avert electrical hazards during floods and report to TNB for further action. We have also published flood safety guidelines on our online platform for public action.

Emergency Response – Equipment Failure

This year, an isolated case of equipment failure in one of our substations in Yong Peng, Johor caused blackouts in several parts of the country. The blackout occurred in July and affected our customers in several areas of Klang Valley, Negeri Sembilan, Penang, Pahang and Johor. Power was restored within 20 minutes of the occurrence of the incident. The quick restoration of power supply proved that TNB's continued improvement of the national grid supply, including our smart grid, is able to overcome problems of power supply efficiently. An investigation was carried out by the Energy Commission on this incident and has confirmed that TNB was clear of any misconduct and adheres to its best practices and maintenance schedule.

Engaging Our People and Cultivating Talent

FY2022 Approach and key highlights:

3. Accident reduction programmes (Cont'd)

Fatality

On 18 April 2021, a fatal incident involving DN division's field crew member occurred in Kuala Lipis, Pahang. The crew member was electrocuted while working on an electric pole. The victim was given emergency CPR until paramedics arrived. The victim was rushed to the hospital for further treatment but passed away on the same day.

Measures were quickly taken to ensure no reoccurrence of a similar incident whereby all DN division workers were ordered to stand down by Chief Distribution Network Officer (CDNO). An Incident Alert report was issued on the next day together with a stop work order for all electrical work by the division nationwide to ensure the safety of workers while tools and equipment were inspected.

The incident case has since been concluded. Contributions from *Tabung Prihatin* DN were channelled to the victim's family by Head of Zone Asset (HoZA) East on 29 April 2021 to assist the family.

Our Performance in FY2022

We have seen an improvement in terms of our safety performance reflected by the decrease in our Group-wide LTIFR from 1.03 in FY2021 to 0.82 in FY2022. We also reduced motor vehicle accidents from 45 cases in FY2021 to 27 cases in FY2022. Meter reader accidents also reduced by 50% this year.

We are however deeply saddened to report that there were two (2) work-related fatalities this year involving two (2) contractors. In our efforts to mitigate these events in the future, we are enhancing our safety procedures and conducting more safety awareness and training sessions across the Group. These include:

- Enhancing safety management procedures, especially for contractors
- Strengthening competencies of contractors
- Continual improvement of our eHSE online system



**Total recordable
incident rate
(TRIR) for FY2022**

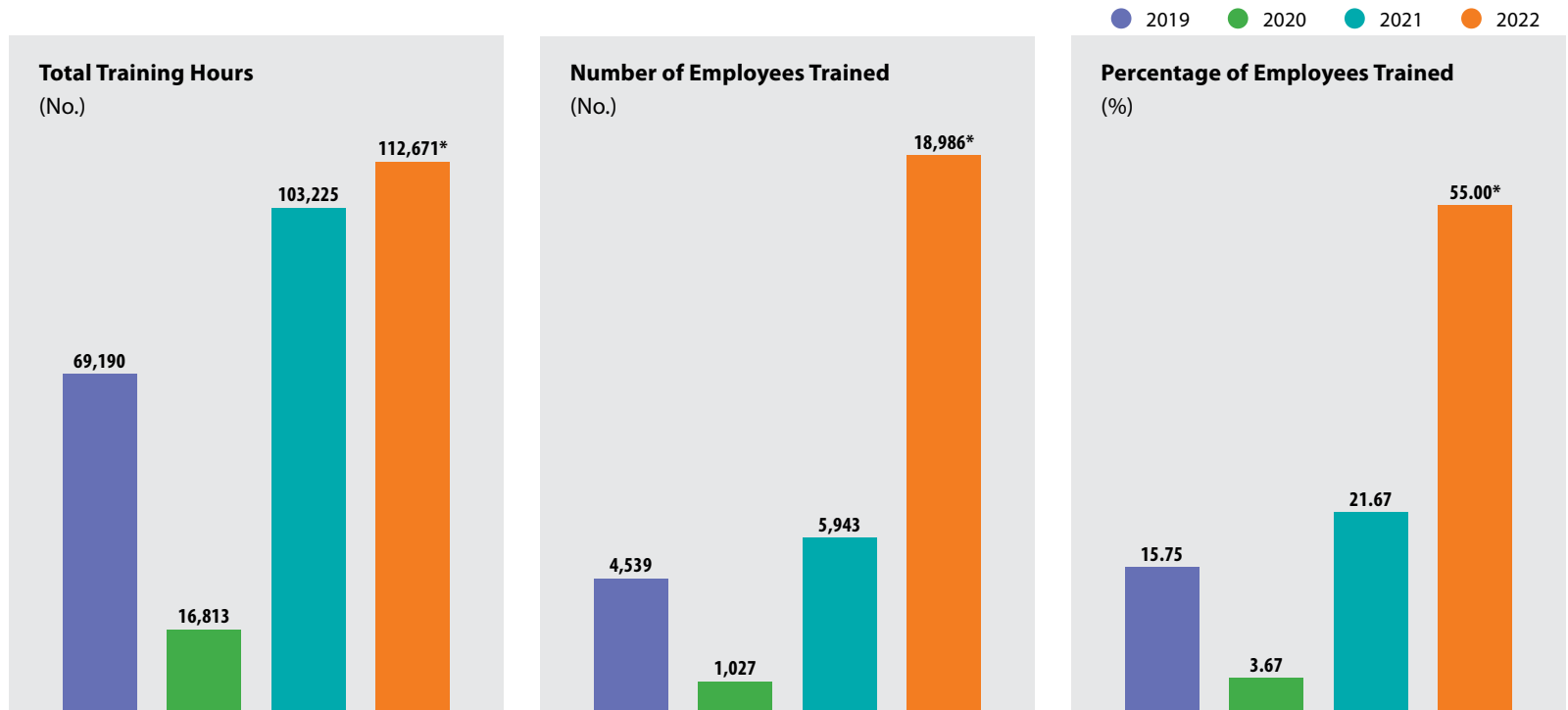
1.26
per million man-hours

**Near miss
frequency rate
(NMFR) for FY2022**

0.17
per million man-hours

Engaging Our People and Cultivating Talent

In 2022, 55% (18,986) of the total employees completed HSE trainings achieving cumulative of 112,671 training hours.



* The total training hours, number of employees trained, and percentage of employees trained for the year 2022 in the TNB Integrated Annual Report (IAR) 2022 have been revised to reflect August to December 2022 updated data.

Supporting Employees Health and Wellness

As part of our commitment towards Environmental, Social, and Governance (ESG) initiatives, TNB encourages our employees to lead an active lifestyle that will nurture good health, promote work-life balance and overall well-being.

Various wellness initiatives were conducted for our employees such as:

- Basic health screening for all our employees nationwide to monitor their health status.
- Subscription to the BookDoc mobile application in tracking daily walking steps to promote healthy lifestyle to employees.
- *Anugerah Piala Presiden* – An annual TNB-wide awards ceremony to reward top steppers in various categories.
- Wellness Wednesday programmes in collaboration with our panel hospitals on health-related topics.
- Empower Your Health programmes to encourage a healthy lifestyle among TNB employees.

In recognition of our commitment and initiatives to improve our employees' well-being, TNB has won Gold in the Activ@Work Challenge Perkesso Award for three (3) consecutive years. This award is presented by the Social Security Organisation (PERKESO).



Creating Shared Values

WITH COMMUNITIES

Related Material Matters



Community Development
and Human Rights



Creating Shared Values with Communities

Feature Story 7

Enhancing the Well-Being of *Orang Asli* Communities

As part of TNB's continuous goals to build sustainable communities, we have launched a new initiative to provide scholarships to *Orang Asli* children.

This special scholarship will provide monetary assistance to help *Orang Asli* children from B40 households to further their studies up to tertiary level. It is also part of TNB's commitment to improve the lives of *Orang Asli* settlements living near TNB operation centres.



The Jabatan Kemajuan *Orang Asli* (JAKOA) were roped in to propose potential scholarship receivers and 10 students were chosen to be enrolled into business and accounting programmes at Diploma levels in UNITEN's Sultan Haji Ahmad Shah Campus (KSHAS). Through this initiative, TNB aspires to uplift the communities through higher education and open up more job opportunities in order to improve socioeconomic levels, towards a better future.

In addition to our decarbonisation initiative, Nenggiri Hydroelectric Project (HEP) engaged the local communities including the *Orang Asli* communities residing in Gua Musang, Kelantan with the aim to positively impact these communities in our operating areas. During the development phase, we will continue to ensure that their welfare and well-being are addressed within our best capabilities. The project will address several issues that have been plaguing the area, such as reducing the impact of floods in the state, improving irrigation systems and clean water supply, as well as better access to amenities, jobs and entrepreneurial opportunities. TNB continues to engage with stakeholders, such as local communities and regulators to ensure their interests and concerns are communicated and taken care of. This project will also align with the government's agenda of increasing green power generation from RE sources.



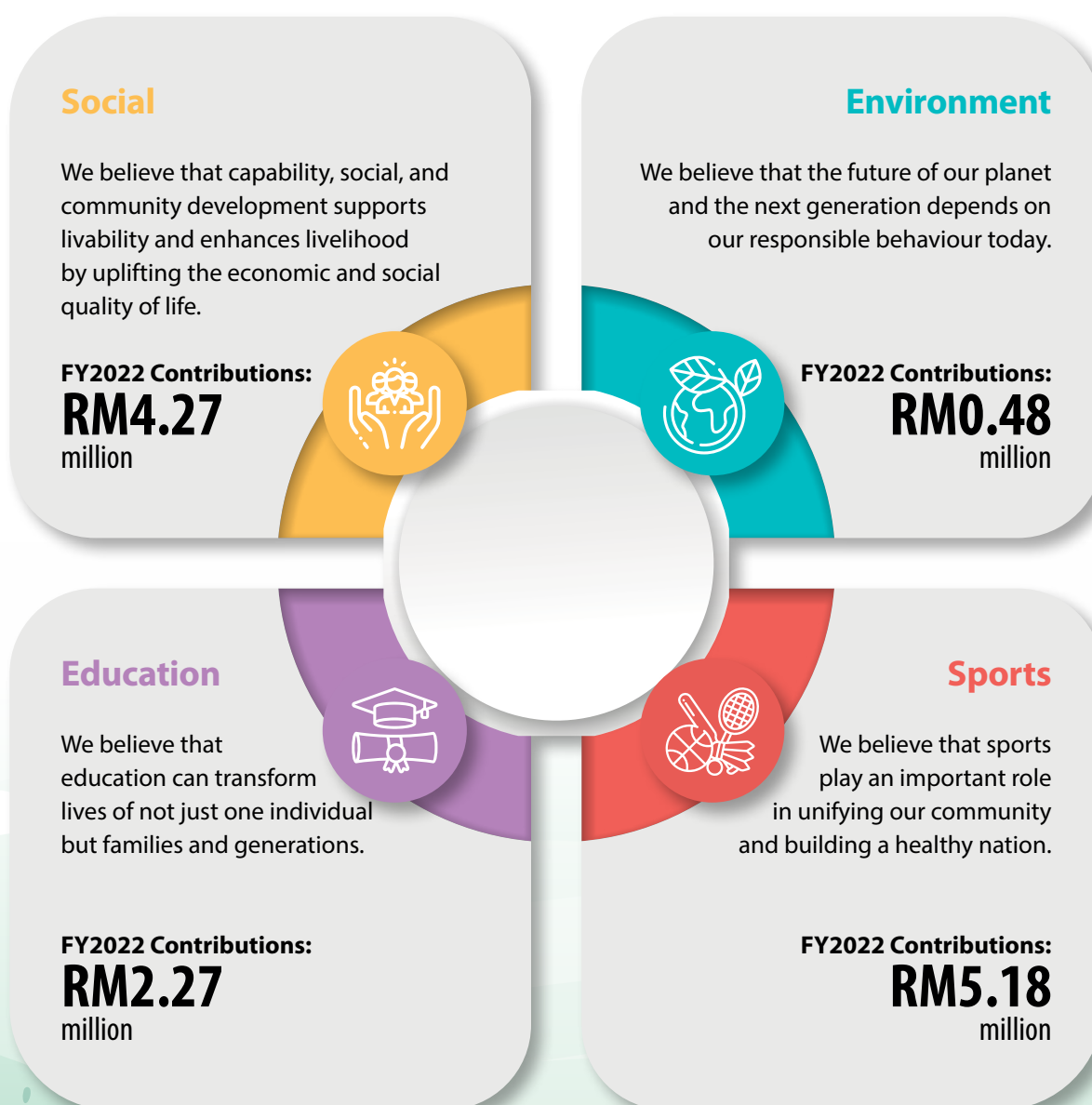
Creating Shared Values with Communities

Contributing to Community Development

GRI 3-3 | 203-2 |

We believe in building the nation through provision of reliable and affordable electricity, as well as contributions that engage and develop the community. We aspire to drive progress and bring positive impact to the community through our various programmes.

In FY2022, we invested a total of RM12.20 million in community programmes which were allocated according to the four (4) focus areas of:



Creating Shared Values with Communities

Economic and Social Transformation

We strive to accelerate growth in local communities by conducting initiatives parallel to the needs of the people.

COMMUNITY AND RURAL DEVELOPMENT

Rural Electrification (BELB) Programme



TNB, with support from the Ministry of Rural and Regional Development, supplies power to rural areas such as villages and Indigenous People settlements that are not within the operational area of local authorities through the Rural Electrification Programme (BELB). We connect these villages to our grid lines, where possible. For settlements too remote to be connected to our grid lines, we utilise off-grid alternatives such as solar hybrids, generator sets and mini hydro. In FY2022, we have improved connectivity of around 18 villages.

Village Street Lighting (LJK) Programme



The government introduced the Village Street Lighting (LJK) programme in 2002 with the purpose of ensuring public areas in remote villages are well lit at night, facilitating community safety. Since 2002, 420,696 streetlights were successfully installed.

Tabung Warga TNB Prihatin (TWTP)

Tabung Warga TNB Prihatin (TWTP) which was established last year was intended to aid Malaysians affected by COVID-19 and the Movement Control Order (MCO). Since then, it was continued and refocused to assist Malaysians who are affected by flood and natural disaster. The amount collected from our employees were matched by TNB. In 2022, TWTP collections from staff totaled RM190,163.88 and with a matching fund by TNB, the fund totaled RM380,327.76. The total TWTP fund distributed for 2022 was RM356,670.



Creating Shared Values with Communities

Sumbangan Kereta Terpakai



Through this initiative, TNB spent RM205,837 to acquire and donate six (6) used vehicles, consisting of one (1) pick-up truck, four (4) funeral vans, and one (1) passenger van to underprivileged communities and NGOs.

Sumbangan Komputer Riba Terpakai

This initiative was introduced to provide laptops and tablets to students from low-income families. TNB contributed RM40,700 for this initiative.

Pos Kawalan Tempat Kejadian (PKTK) in Lembah Bertam in Cameron Highlands

As a contribution to the local community of Lembah Bertam in Cameron Highlands, TNB allocated RM2.58 million to construct a multipurpose hall that will serve as a community centre and emergency assembly point for the local community during floods or other natural disasters. This hall includes facilities such as a covered futsal court, operations room and prayer room. The facility which will be managed by the Cameron Highlands District Council (CHDC), was handed over in 2022.

ESG Community Outreach

The programme was conducted by DN employees in Taman Kubang Gajah, Temerloh, Pahang to help clean up the surrounding area of the neighbourhood park and paint the worn-out playground.

Creating Shared Values with Communities

PROMOTING ENERGY EFFICIENCY

Light-Emitting Diode (LED) Streetlight Replacement Programme

Since 2018, we have begun replacing High-Pressure Sodium Vapour streetlights with LED lights which are more cost and energy efficient. The lower wattage from LED lights resulted in an estimated energy and cost savings of about 30%-40%. In FY2022, this initiative was introduced in ten (10) more cities, with an additional 50,866 lights installed across Peninsular Malaysia, bringing the cumulative total up to 595,427 units.

PROVIDING HOMES FOR COMMUNITY WELL-BEING

Homes for the Needy



Through our Homes for the Needy programme, we have helped refurbish and build new homes for 40 families, mainly B40 communities and hardcore poor including single parents, senior citizens and differently-able individuals. In FY2022, we spent RM1.26 million on this initiative. This programme is carried out under two (2) concurrent projects namely *Program Baiti Jannati* (PBJ) and *Program Mesra Rakyat* (PMR). To date, we have contributed more than RM31.11 million and provided 1,287 new and refurbished homes to the needy.

Better Brighter Shelter



Through this programme, we provided accommodation facilities to family members of those who have come from rural areas to receive medical treatment in the city such as dormitories and transit homes. This service is provided to the underserved communities from rural areas or the outskirts of Kuala Lumpur. We partnered with Melaka Hospital's National Welfare Foundation, the National Heart Institute (IJN) Foundation and Melaka Hospital. In FY2022, around RM245,000 was allocated for this programme, with a breakdown of RM200,000 and RM45,000 spent on IJN and Melaka Hospital respectively.



Creating Shared Values with Communities

ENVIRONMENTAL SUSTENANCE PROGRAMMES WITH THE COMMUNITY

Conservation of the environment and natural resources is crucial in safeguarding both the diversity of flora and fauna, as well as the livelihoods of surrounding communities.

TNB's environmental sustenance programmes conducted are as follows:

Mangrove Planting Programme

As a part of our reforestation efforts, we conducted the second phase of mangrove planting programme which started in FY2021. The second phase involved planting 2,000 mangrove trees at Sg. Limau, Manjung, Perak with a cost of RM100,062.

Distribution Network (DN) Mangrove Planting Programme



DN conducted a Mangrove Planting Programme at Taman Alam, Kuala Selangor, Selangor in August last year. It is hoped that the mangrove trees planted in the programme would help reduce carbon emissions and impacts of flooding, along with improving the ecosystem of the area.

Distribution Network (DN) Coastal Cleanup Programme



DN initiated a programme to help clean the coast of Siring Beach, Melaka in December 2022. This programme was held in collaboration with the Pantai Siring Fishermen's Association, Melaka.



Creating Shared Values with Communities

TRANSFORMING LIVES THROUGH EDUCATION

In FY2022, we continue our commitment to provide accessible and quality education through significant investments in our key educational institutions – UNITEN, TNB ILSAS, Yayasan Tenaga Nasional (YTN).

UNITEN – The Energy University

The establishment of UNITEN in 1997 exemplifies TNB's unwavering commitment to provide top-notch education to the masses, aimed at producing a generation that is competitive, innovative, and resilient in the long run. As part of its BOLD2025 Refresh strategic plan, UNITEN is dedicated to supporting TNB in realising this vision by offering a diverse range of academic programmes, including engineering, computer science & information technology, business & accounting, and energy economics. The university also provides cutting-edge teaching and learning facilities on campus. BOLD2025 Refresh has five (5) primary objectives - Ranking, Enrolment, Teaching, Research, and Financials - and results for FY2022 show that all five goals, especially ranking, teaching, and research, have already been accomplished.

BOLD2025 Refresh is a strategic plan that comprises three strategic goals: teaching and learning excellence, research excellence and financial sustainability. Through this BOLD2025 Refresh, UNITEN contributes to TNB in the areas of:

- 1) National agenda on the Higher Education Industry.
 - UNITEN has produced well balanced graduates.
 - UNITEN provides financial assistance and scholarships to deserving students.

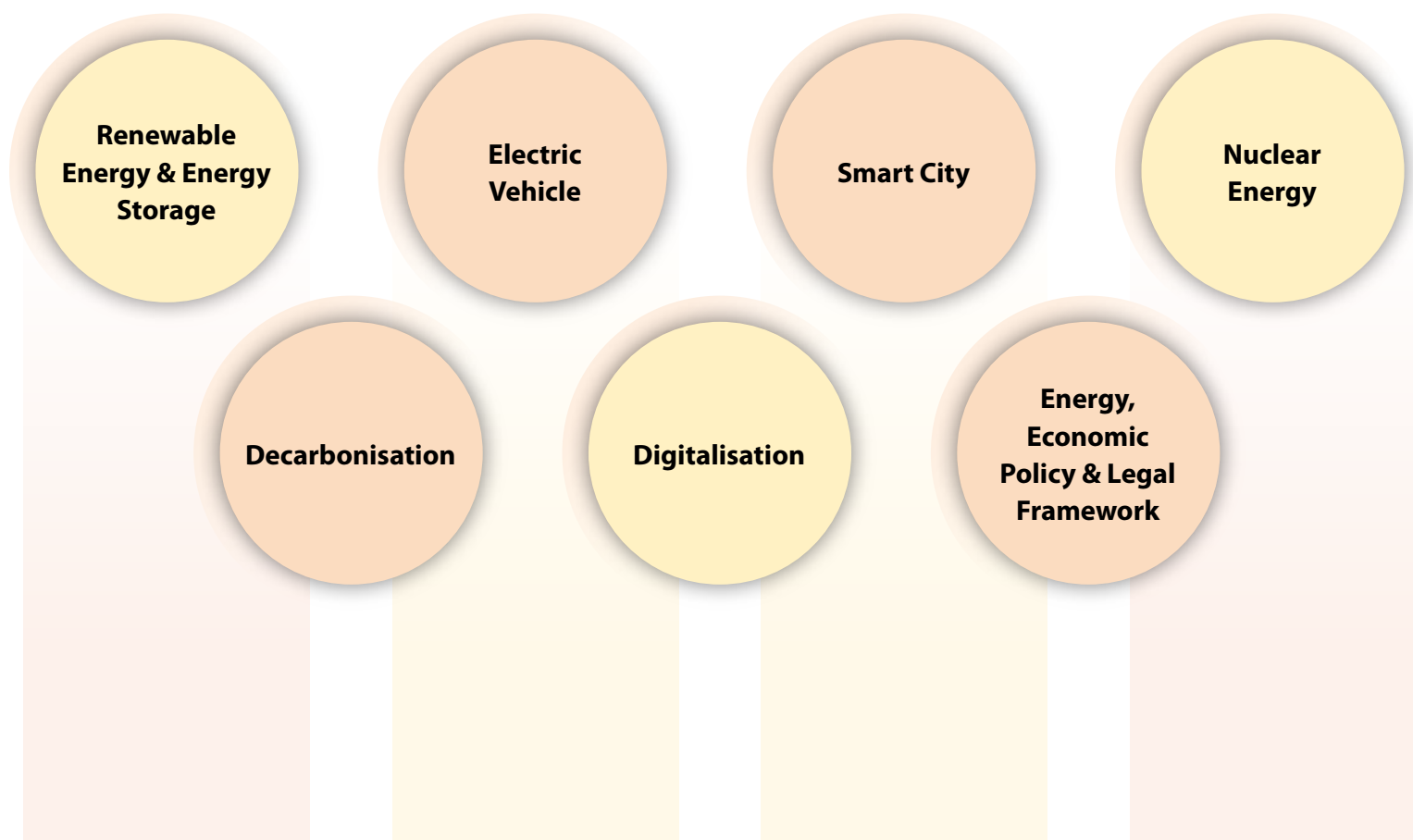
- 2) Improve TNB Group's and TNB Company's financial performance. It is driven by tax-efficiency and significant revenue and OPEX optimisation enabled by BOLD2025 Refresh initiatives and TNB supporting actions.
- 3) Support TNB's sustainability aspiration such as:
 - UNITEN Smart UniverCity.
 - UNITEN as centre of excellence in energy research.

UNITEN is also embarking on energy-related research that facilitates the solution to any operational challenges faced by TNB and the industry, as well as creating wealth from innovation. Through its financial ecosystem that involves *Yayasan Canselor UNITEN* (YCU) and *Tabung Amanah Zakat UNITEN* (TAZU), UNITEN is able to offer various scholarships and financial assistance for the students to pursue their studies at UNITEN, which addresses the nationwide issue of affordability of tertiary education.

In June 2022, UNITEN established the National Energy Centre (NEC) to strengthen energy transition. This centre of excellence aims to cover issues of climate change, sustainable development and renewable energy (RE) at the national and global levels. NEC will play a strategic role in strengthening Malaysia's commitment to make the country carbon neutral as early as 2050 and meet TNB's aspirations of achieving net zero emissions by 2050. NEC, as National Key Labs, will form a Strategic National Energy Framework with the target of making Malaysia an energy hub, with industry players having the opportunity to become strategic partners by opening a branch or satellite incubator laboratory. Currently, UNITEN has five (5) centres of excellence, namely:

- Institute of Sustainable Energy (ISE),
- Institute of Power Engineering (IPE),
- Institute of Energy Infrastructure (IEI),
- Institute of Energy Policy & Research (IEPRE), and
- Institute of Informatics & Computing in Energy (IICE).

These centres will be incorporated into the National Key Labs which will encompass other universities, local and abroad, with HICoE standard or equivalent. NEC will be focusing on seven (7) main areas:



Creating Shared Values with Communities

The studies conducted at UNITEN are expected to benefit a safer, more environmentally friendly future with the development of a low-carbon digital economy, in line with transforming the global energy sector from fossil fuel-based to zero-carbon by the second half of this century. Among those that will be explored in depth are the use of hydrogen, space-based solar power, magma power, algal power, embedded solar power, wind power and fusion power for renewable energy as well as the development of the Electric Vehicle (EV) technology ecosystem. It is hoped that the newly established centre will be able to contribute greatly to TNB's goals of advancing RE initiatives in Malaysia.

This year, UNITEN awarded RM6.81 million to a total of 1,361 recipients, a small decrease from the RM6.79 million awarded to 1,766 students last year.

List of UNITEN funding and scholarship

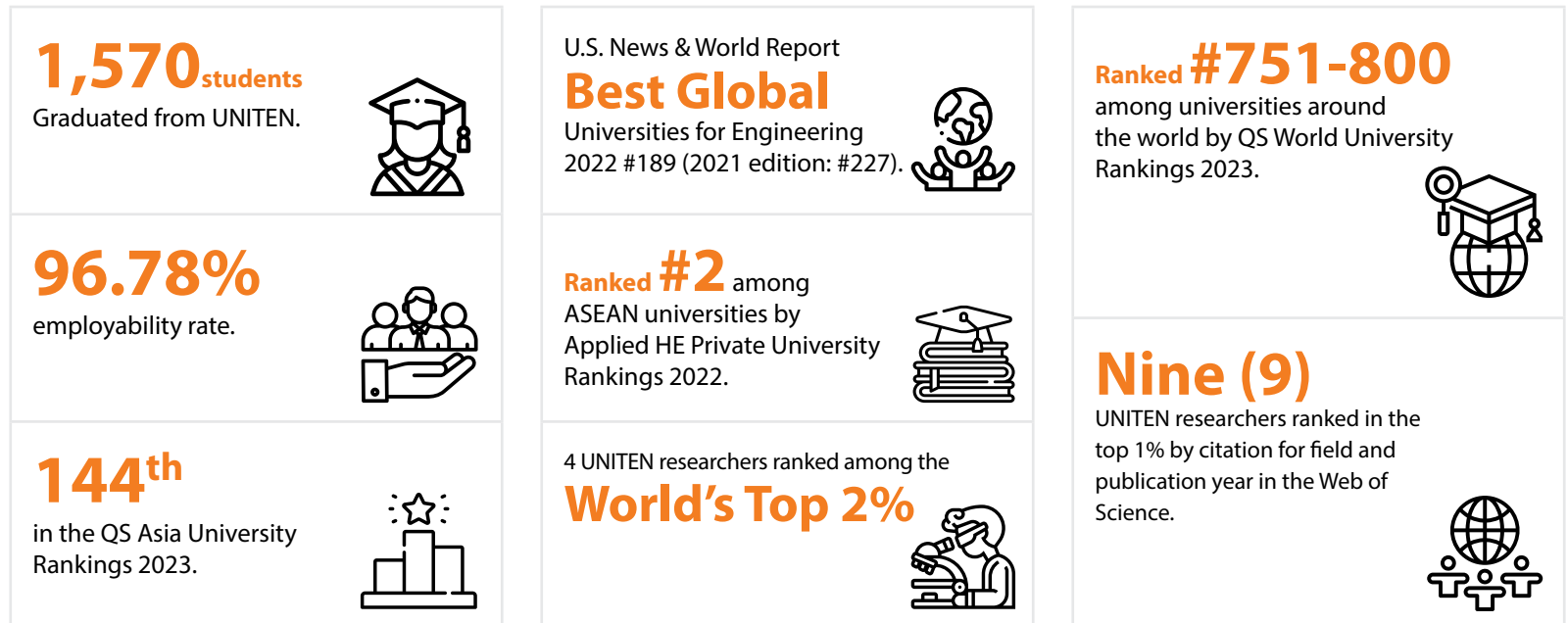
UNITEN BRIGHT Scholarship	UNITEN BRIGHT B40 Scholarship	UNITEN Merit 50% KSHAS Scholarship	<i>Dana Pendidikan UNITEN</i>
<i>Projek Perintis APEL MBA UNITEN</i>	UNITEN BRIGHT/MERIT - Dato Low Tuck Kwong Scholarship	<i>Dermasiswa Yayasan Canselor UNITEN (YCU)</i>	<i>Biasiswa Pelajaran TAZU (B40)</i>
<i>Biasiswa Pelajaran TAZU - YPPB</i>	<i>Biasiswa Pelajaran TAZU (BPT)</i>	<i>Dermasiswa B40 JPA (in cooperation with YCU)</i>	<i>Biasiswa UNITEN (Postgraduate) Master Talent</i>
<i>Biasiswa UNITEN (Postgraduate) PhD Talent</i>	<i>Biasiswa UNITEN (Postgraduate) Master Excellence</i>	<i>Biasiswa UNITEN (Postgraduate) PhD Excellence</i>	UNITEN Sport Excellence
<i>Danasiswa Pensijilan Tahfiz TAZU-MARA (previously - Danasiswa TAZU (Formerly known as Dermasiswa Pelajar Cemerlang)</i>	UNITEN Merit 25% Scholarship	UNITEN Merit 50% Scholarship	UNITEN Merit 75% Scholarship

TAZU = Tabung Amanah Zakat UNITEN



Creating Shared Values with Communities

UNITEN Performance in FY2022:



Research conducted by UNITEN in 2022

TNB Corporate Integrity Health Index (IHI) 2.0

Key highlights for FY2022

The Integrity Department collaborates with UNITEN Research & Development Sdn. Bhd. to conduct Integrity Health Index (IHI) surveys. The IHI dashboard was first developed in 2021 as a systematic method of information gathering to assess and ascertain TNB's standings on integrity issues. The second revamped version aims to broaden the scope of IHI to include other TNB stakeholders.

Biodiesel Fuel for Greener & Sustainable Power Generation

Key highlights for FY2022

This project was initiated to study cooking oil waste and its potential to be converted to biodiesel fuel for power generation purposes and for TNB vehicles. A study will also be conducted to assess the potential savings of using biodiesel blended diesel for the above purposes.

Student Information Management System (SIMS)

Key highlights for FY2022

The Student Information Management System (SIMS) was developed for YTN. The system integrated the functionality that previously required the use of three separate systems - Microsoft Great Plains (MSGP), MicroPac and Legal Management System (LMS).

Automated Safe Racking System For 11kV & 33kV Circuit Breaker

Key highlights for FY2022

Currently, the manual racking system for circuit breakers employed may cause malfunctions, catastrophic and life-threatening incidents due to arc flash explosion, which can occur if proper safety precautions are not taken when handling the system.

Sustainable Biogas Production Via Co-Digestion Technology Using Palm Oil Mill Wastes

Key highlights for FY2022

The research was conducted on biogas production using anaerobic co-digestion method, utilising palm oil mill effluent (POME), empty fruit bunches (EFB) fibres and decanter cake (DC) as the major combination substrates. This research project aimed to determine biogas potential from these substrates via co-digestion method based on different combination ratios, as well as provide recommendations to TNB on optimising the current biogas facility for sustainable biogas production using EFB fibres and DC substrate readily available at mills.

Blueprint for Electrifying Public Transportation (Studies For Ministry Of Transport As Part Of TNB's EV Advocacy Programme)

Key highlights for FY2022

The aim of this project is to develop a blueprint for electrifying public transportation. This includes conducting benchmarking studies on best practices of EV infrastructure development and electricity pricing. The study will encompass the evaluation towards social, economic and technological aspects of EV adoption in Malaysia. It also provides policy recommendation related to the economic viability of electrifying TNB's fleet of vehicles.

Creating Shared Values with Communities

Development of Electric Vehicle Fleet Transition Programme for Road Transport Department of Malaysia (JPJ)

Key highlights for FY2022

This project aims to propose a transition programme of EV fleet for the government. The main objective of this project is to develop an “EV Fleet Transition Programme” for JPJ as the pilot programme for government fleet of vehicles.

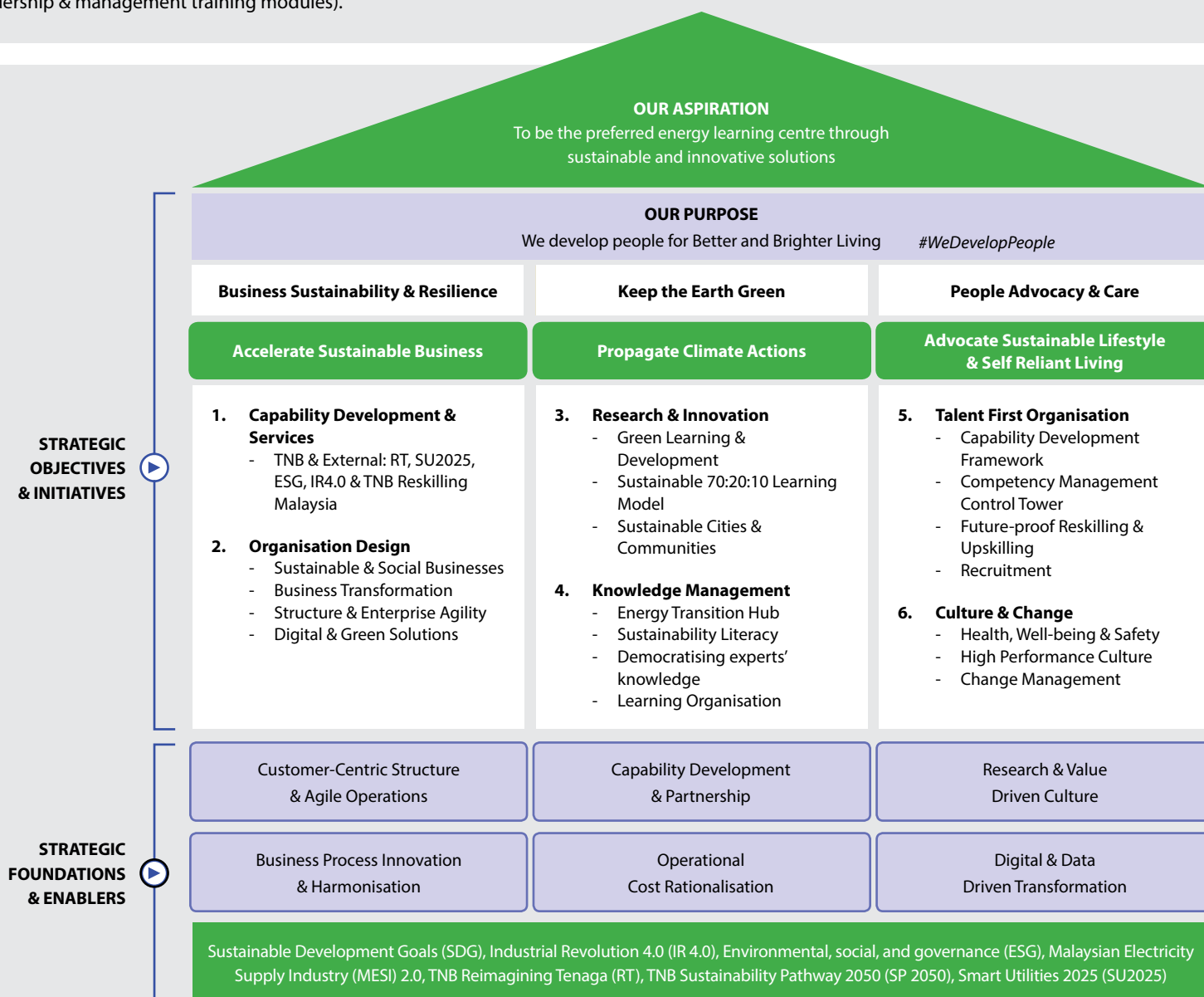
Power Studies For the Construction and Completion of LRT3 from Bandar Utama to Johan Setia

Key highlights for FY2022

This project aims to provide design services for the power supply and distribution system of LRT3. The main scope and responsibility of this project is to perform simulation studies and analysis in the power supply and distribution system which includes Alternating Current (AC) simulation, harmonics, protection coordination, insulation coordination, substation earthing/touch potential, lightning protection and electromagnetic compatibility studies.

TNB Integrated Learning Solution Sdn. Bhd. (ILSAS)

TNB ILSAS is a premier training institution for professionals in the wider power and utility industry and the official training institute for Tenaga Nasional Berhad (TNB). All of the technical capability development programmes conducted by ILSAS are in line with the Malaysian standards requirements. The training modules in ILSAS are also accredited by City & Guilds UK (for technical programmes), and Institute Leadership & Management (ILM) UK (for leadership & management training modules).



Creating Shared Values with Communities

This year, ILSAS introduced an enhanced strategy towards reimagining TNB's aspirations and supporting the national agenda. This enhanced strategy, aspiration and purpose further reflects our continuous commitment to embed sustainability values across our organisation. ILSAS has experienced a shift in purpose where:

- We aspire to be the preferred energy learning centre through sustainable and innovative solutions in both domestic and at international level specialising in energy learning.
- We envision our brand to be innovative and excels in delivering quality solutions that exceeds customer expectations.
- Our expertise covers technical, leadership & management capabilities building as well as consultancy in people & organisation health and performance.

The ILSAS International Conference on Learning & Development 2022 (ICLAD2022) is an initiative designed to support the ASEAN Sustainability Pathways 2050 and serves as a platform to spread awareness of ESG for a sustainable future. ICLAD aims to be the leading platform for people from various vocations to learn, discuss, present, and network with subject matter experts around the world. The 6th ICLAD conference was held on from 29 November to 1 December 2022 with the theme "Towards Energy Transition: Harmonizing With The New Norm".

The main objectives of ICLAD2022 are:

1. To support the ASEAN Sustainability Pathway 2050, and an awareness of ESG for a sustainable future.
2. To equip participants with relevant knowledge, provide a chance to listen to different points of view, learn new ideas and trends in ESG matters from other organisations.
3. To encourage leaders and participants from other organisations to meet and establish collaboration early through networking and exchanging of ideas.
4. To elevate motivation amongst participants to build up confidence to lead and contribute towards the organisation to become a global company.
5. To provide participants with the necessary skills in research, public speaking, critical thinking, creative thinking, system/apps development to be able to compete in the modern labour market.

A total of 2,071 participants attended the conference, with 15 keynote guests presenting at the event. The event is designed with the main objective to support the ASEAN Sustainability Pathways 2050 and an awareness of ESG for a sustainable future. We are delighted with the collaboration with PT Perusahaan Listrik Negara (PLN) to co-organise the event which strengthened the relationship between the two national utility companies.

Key Highlights in FY2022

288 employees

with 133 trainers
under ILSAS.



50,912

individuals trained.



6th

ILSAS International Conference on Learning and Development (ICLAD) was conducted under a hybrid mode and received commendable feedback from participants.



Won the Malaysia Education & TVET Awards (META) 2022 for **Malaysia Best TVET Institution** (Sustainability) category.



Received the **Energy Institute Awards 2022** for Talent Development & Learning Category by Energy Institute (UK).



3rd place in the 8th Annual International Smart Grid Action Network (ISGAN) Awards under the category of Excellence in Smart Grid Workforce Development award for TNB Reskilling Malaysia programme (In Supporting Advanced Meter Infrastructure (AMI) Workforce Development Programme).



Intelligent Cloud Base VR LMS Technical Competency Assessment Solution Selangor R&D and Innovation Expo (SRIE) 2022 Award.



Yayasan Tenaga Nasional (YTN)

Yayasan Tenaga Nasional (YTN) was established with the mission to transform lives through excellent education opportunities. Since its inception in 1993, YTN has been governed by a Board of Trustees and an organisation committee to provide financial assistance through the award of scholarships to pursue higher education locally and abroad. TNB through YTN has also provided convertible loans for students to study at local universities. To date, we have contributed over RM1.80 billion and helped over 20,500 students achieve their dreams.

The My Brighter Future (MyBF) Programme is one of the initiatives set up under YTN which aims to provide opportunities to marginalised youth and families in the B40 bracket to pursue tertiary education in Science, Technology, Engineering & Mathematics (STEM) and TVET at any of seven (7) selected public universities, polytechnic and community colleges in Malaysia. The MyBF Programme covers tuition fees, boarding and living expenses of recipients pursuing tertiary education.

In FY2022, YTN provided a total of RM101 million to 5,753 recipients through financial aid for scholarship, convertible loan and scholarships.

Creating Shared Values with Communities

Key Highlights for FY2022:

RM45.90 million

in financial aid provided to MyBF scholars.



4,354 students

benefitted from MyBF scholarships.



YTN developed PRIME (Professional, Reliable, Innovative, Marble and Edge) Student Development Programme framework and module to enhance student competencies. The objective of the programme is to ensure student's learning journey are more structured and organised.



Scholarship for *Orang Asli* children was established to provide financial assistance in education.



YTN provided a total of **RM101 million** to **5,753 recipients** through financial aid and scholarship.



SUPPORT FOR EDUCATION AND SPORTS

Ceria ke Sekolah Programme



PINTAR School Adoption Programme

The PINTAR School Adoption Programme was continued in FY2022 with 11 primary schools adopted across Peninsular Malaysia. TNB allocated RM315,000 for three (3) years (until FY2023) under this programme. This year, we allocated RM318,000 for the programme, involving 150 students from standard four (4) classes.

Distribution Network (DN) Outreach programme

The programme helmed by DN involved tidying up and painting part of the fence of SK Bukit Beruang, Melaka that was previously worn out.

DN employees visited SK Sultan Idris 2, Felda Ijok Selama, Perak in December 2022 to educate and provide information related to TNB, especially electrical safety awareness to the students and community.

TNB Prime Scholarship

This education fund was established to sponsor high academic achievers regardless of household income, for further studies overseas, in UNITEN and in public universities, benefitting 128 students.

TNB Shine Sponsorship

This programme provides education loan assistance for average academic achievers regardless of household income to study in UNITEN, public universities and polytechnics around the country, benefitting 783 students.

Biasiswa Khas TNB for Orang Asli Children

This scholarship serves as a contribution from TNB to the local indigenous communities, especially for *Orang Asli* communities living in settlement locations near TNB's operational centres such as power stations and others. Ten (10) students were sponsored to further their studies in business and accounting fields at Diploma level.



Every year, TNB holds the *Ceria Ke Sekolah* Programme to provide primary school students from low-income families with adequate school supplies such as school uniform, pants, and headscarves, school bags and facemasks. In FY2022, 4,874 students benefitted from RM1 million channelled by TNB into this programme.

Creating Shared Values with Communities

National Hockey Development and Thunderbolts Programme



Through this programme, TNB employees who were former national hockey players volunteered to coach promising students from Sekolah Sukan Bukit Jalil in Kuala Lumpur, Sekolah Sukan Tunku Mahkota Ismail in Johor, Sekolah Menengah Kebangsaan Seberang in Temerloh, Pahang, Sekolah Menengah Kebangsaan Anderson in Perak and Sekolah Menengah Kebangsaan Pengkalen Permatang in Kuala Selangor, Selangor. Since its inception in 2006, this programme has successfully nurtured several national hockey players. In FY2022, we contributed RM5.18 million to this programme.

INITIATIVES TO ENGAGE INDIGENOUS COMMUNITIES

Engaging with the communities we serve, including Indigenous Peoples or *Orang Asli* communities, is a fundamental commitment of TNB.

We actively engage communities, including the *Orang Asli* communities, who live near our operation sites and roll out initiatives with the purpose of protecting their well-being and enhancing socioeconomic benefits. To provide educational assistance to them, TNB has also set up a new scholarship fund to be distributed to underprivileged *Orang Asli* children. This makes education accessible to the *Orang Asli*, thereby providing opportunities to elevate their living standards and pursue ambitious academic and career goals.

Syndication with *Orang Asli* head of households under Nenggiri Hydro Electric Plant (HEP) project

TNB, through TNBR, also conducted engagements with the *Orang Asli* communities living within hydro project development sites to receive feedback on matters concerning them and their livelihoods.

TNBR meetings with representatives of Jawatankuasa Pembangunan dan Keselamatan Kampung *Orang Asli* (JPKKOA) to gain feedback, comments and suggestions regarding future programmes that will be carried out within the *Orang Asli* communities in Pos Pulat and Pos Tohoi.

Meetings were conducted with *Orang Asli* head of households who objected to the Nenggiri HEP development project. The purpose of these meetings was to provide further information regarding the development of the areas surrounding Nenggiri HEP and its effect on agriculture and submerged areas.

Open Day and Engagement Session at the Environmental Sustainability Information and Operations Centre

An Open Day was organised with the Pos Pulat community as a platform for introduction and engagement. The programme activities include *Majlis Doa Selamat* with the students of SK Pos Pulat.

Engagement regarding conflicts with communities that are indirectly affected from from Kampung Tendrik and Kampung Kuala Yai

TNBR initiated meetings and engagement with community members of Kampung Tendrik and Kampung Kuala Yai, whose agricultural land have been disturbed or destroyed due to the construction of new roads leading to the new resettlement area. The community members have been given compensation for the trees that have been cut down during the construction process.

Engagement with villagers on wildlife conflict in *Orang Asli* villages near operating areas

Consultation session were conducted with *Orang Asli* villagers who have encountered wildlife conflicts resulting in the disturbance of their agricultural lands or homes.

Power Empowerment Programme

An idea to develop a community garden was incepted through a meeting with representatives of the *Orang Asli* community. *Kebun Bakti Warga* (KEBAWA) allows the community to plant various fruits and vegetables in the community garden. This helps provide additional income for their future sustenance.

Distribution Network (DN) also participated in engagement programmes with the *Orang Asli* communities such as:



Orang Asli Youth Engagement

This programme was launched to help *Orang Asli* youths discover their passions and talents. The youths are also encouraged to rope in fellow youths to participate in the programme, thus empowering them to improve their lives by learning various skills.



Engagement session with *Orang Asli* community in Pos Kemar, Gerik, Perak

This programme was conducted in September 2022 to engage with and receive feedback from the *Orang Asli* community in Pos Kemar. Various activities were held during the engagement session.

Performance Table

Below are the key sustainability performance indicators, presenting quantitative data from this report. These disclosures are selected from the GRI Standards and Bursa Malaysia Sustainability Reporting Guide, along with other key performance data.

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark		
BUSINESS PERFORMANCE										
GENERATION										
G4 - EU1	N/A	Generating capacity broken down by primary source and regulatory regime								
		Gas	MW	4,443.43	4,054.43	5,052.16	4,787.43	For wholly-owned power plants in Peninsular Malaysia.	-	✔
		Coal	MW	6,440.00	6,440.00	6,366.40	6,440.00		-	
		Large Hydro	MW	2,536.10	2,536.10	2,536.10	2,536.10		-	
		Solar	MW	50.00	80.00	80.00	80.00		-	
		Generating capacity broken down by other renewable sources with a capacity below 30 MW								
		Mini Hydro	MW	21.76	21.76	21.76	21.76	For wholly-owned power plants in Peninsular Malaysia.	-	✔
		Biomass	MW	10.00	10.00	10.00	10.00		-	
		Biogas	MW	3.20	3.20	3.20	4.80		-	
		Generating capacity broken down by primary source and regulatory regime								
		Gas	MW	103.40	101.16	97.83	97.80	For power plants in Sabah owned by SESB.	-	✔
		Diesel	MW	177.36	169.84	171.68	150.79		-	
		Large Hydro	MW	74.96	72.30	72.16	82.76		-	
		Solar Hybrid	MW	24.11	28.33	27.68	29.93		-	
TRANSMISSION AND DISTRIBUTION LINES										
G4 - EU4	N/A	Length of above and underground tranmission and distribution lines by regulatory regime								
		Transmission	circuit-km	23,964	24,607	25,185	25,838	For TNB operations in Peninsular Malaysia.	-	✔
		Distribution	circuit-km	683,008	703,312	723,134	741,764		-	
G4 - EU4	N/A	Length of above and underground tranmission and distribution lines by regulatory regime								
		Transmission	circuit-km	2,918	2,941	3,153	3,154	For SESB operations in Sabah.	-	✔
		Distribution	circuit-km	24,937	25,448	27,045	27,871		Data restated for FY2021 after third party verification.	
SYSTEM EFFICIENCY										
G4-EU11	N/A	Generation Plant Performance								
		Equivalent availability factor (EAF)	%	81.77	87.39	82.89	83.20	For TNB operations in Peninsular Malaysia.	-	✔
			%	71.43	71.29	75.11	79.45	For SESB operations in Sabah.	-	
		Equivalent Unplanned Outage Factor (EUOF)	%	7.97	6.65	8.13	7.37	For TNB operations in Peninsular Malaysia.	-	
			%	11.86	14.36	20.05	18.54	For SESB operations in Sabah.	-	
G4 - EU12	N/A	Transmission and distribution network losses								
		Transmission in Malaysia	%	1.35	1.47	1.60	1.59	For wholly-owned transmission network in Peninsular Malaysia.	-	✔
			%	4.32	4.05	4.38	5.05	For SESB operations in Sabah.	-	
		Distribution in Malaysia	%	6.30	6.69	6.16	5.45	For wholly-owned distribution network in Peninsular Malaysia.	-	
			%	12.22	13.13	12.01	10.94	For SESB operations in Sabah.	-	

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark			
BUSINESS PERFORMANCE											
SYSTEM EFFICIENCY											
EU12	N/A	Electricity Transmission System									
		Transmission System Minutes	Minutes	0.271	0.081	0.086	0.172	For TNB operations in Peninsular Malaysia.	-	✔	
			Minutes	13.41	11.28	40.74	14.22	For SESB operations in Sabah.	-		
		Percentage of System Availability	%	99.78	99.78	99.79	99.79	For TNB operations in Peninsular Malaysia.	-		
			%	97.34	97.32	93.99	94.61	For SESB operations in Sabah.	-		
ACCESS											
G4 - EU28	N/A	Power outage frequency									
		System Average Interruption Frequency Index (SAIFI)	Frequency/ Customer/ Year	0.83	0.80	0.78	0.84	For TNB operations in Peninsular Malaysia.	-	✔	
			Frequency/ Customer/ Year	11.77	13.87	12.10	0.52	For SESB operations in Sabah.	-	✔	
G4 - EU29	N/A	Average power outage duration									
		System Average Interruption Duration Index (SAIDI)	Minutes/ Customer/ Year	48.13	44.95	45.25	45.06	For TNB operations in Peninsular Malaysia.	-	✔	
			Minutes/ Customer/ Year	307.97	284.15	268.05	286.21	For SESB operations in Sabah.	-	✔	
N/A	N/A	Average power outage duration per customer									
		Customer Average Interruption Duration Index (CAIDI)	Minutes/ Customer/ Year	57.99	56.05	58.31	53.95	For TNB operations in Peninsular Malaysia.	-	✔	
ECONOMIC PERFORMANCE											
GRI 201-1	N/A	Value Added									
		Revenue	RM million	50,939.7	43,976.0	48,119.9	50,867.7	-	Data restated for FY2021 after third party verification.	✔	
		Operating expenses excluding staff costs, depreciation and amortisation	RM million	(29,624.9)	(22,684.2)	(29,878.7)	(49,411.5)	-			
		Net loss on impairment of financial instruments	RM million	(302.4)	(546.2)	(940.2)	(101.4)	-	-		
		Other operating income	RM million	1,131.0	1,061.4	918.1	940.0	-	-		
		Finance income	RM million	525.1	317.7	221.8	277.7	-	-		
		Finance cost	RM million	(3,382.7)	(3,668.7)	(3,793.3)	(4,343.4)	-	-		
		Fair value of financial instruments	RM million	(38.0)	124.9	201.8	130.7	-	-		
		Foreign exchange gain/ (loss) on borrowings	RM million	113.9	26.2	(168.5)	(223.5)	-	-		
		Share of results of associates and joint ventures	RM million	52.6	76.5	193.5	97.6	-	-		
		Total value added available for distribution	RM million	19,414.3	18,683.6	19,384.0	20,549.2	-	-		

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark			
BUSINESS PERFORMANCE											
ECONOMIC PERFORMANCE											
GRI 201-1	N/A	Value Distributed									✔
		To employees								✔	
		Employee cost	RM million	3,747.7	3,825.8	3,954.2	3,798.1	-	-		
		To Government									
		Taxation and zakat	RM million	922.6	521.6	873.6	1,791.2	-	Data restated for FY2021 after third party verification.		
		To shareholders									
		Dividends	RM million	3,014.1	5,235.8	4,568.4	2,181.3	-	-		
		Non-controlling interest	RM million	(84.2)	23.7	202.9	94.1	-	-		
		To reinvest to the Group									
		Depreciation and amortisation	RM million	10,188.9	10,622.4	10,691.5	11,402.5	-	-		
		Retained profit	RM million	1,625.2	(1,545.7)	(906.6)	1,282.0	-	Data restated for FY2021 after third party verification. Previous data was unaudited.		
		Total distributed	RM million	19,414.3	18,683.6	19,384.0	20,549.2	-	-		
CUSTOMERS											
CUSTOMER ACCOUNTS											
G4 - EU3	N/A	Number of residential, industrial, institutional and commercial customer accounts									✔
		Domestic	Number	7,553,229	7,728,407	7,916,379	8,113,221	• In Peninsular Malaysia only. • The category of 'Others' consists of mining, street lighting, agriculture and RE generators.	-		
		Commercial	Number	1,575,198	1,590,373	1,618,366	1,657,478		-		
		Industrial	Number	30,520	31,654	32,846	33,542		-		
		Other	Number	89,975	92,679	95,838	98,805		-		
		Total	Number	9,248,922	9,443,113	9,663,429	9,903,046		-		
CUSTOMER EXPERIENCE											
N/A	N/A	Results of surveys measuring customer satisfaction									✔
		Customer satisfaction index	%	81	86	87	87	• The customer experience survey is conducted monthly, while the customer satisfaction survey is conducted annually. • For TNB operations in Peninsular Malaysia. • In 2022, service request was replaced with enquiries with new definition that was established under the Enquiries and Complaints Framework.	-		
		Corporate reputation index	%	87	81	88	79		-		
		Complaints received	Number	45,275	33,753	25,213	636,751		-		
		Complaints resolved	%	99	99	99	100		-		
		Service request received	Number	285,712	447,530	342,276	21,112,245		-		
Service request resolved	%	100	98	95	99	-					

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary
CUSTOMERS										
CUSTOMER EXPERIENCE										
DMA	N/A	Number of customer interaction channels								
		Digital	Number	6	6	6	7	-	-	✔
		Non-digital	Number	5	5	5	5	-	-	
		Total	Number	11	11	11	12	-	-	
		Percentage of customer interaction channels								
		Digital	%	79.10	87.00	89.90	90.76	-	-	✔
		Non-digital (Kedai Tenaga & etc)	%	20.90	13.00	10.10	9.24	-	-	
GRI 418-1	N/A	Total number of substantiated complaints received concerning breaches of customer privacy								
		Complaints received from outside parties and substantiated by TNB	Number	0	0	0	0	-	-	✔
		Complaints received from regulatory bodies	Number	0	0	0	0	-	-	✔
		Total number of identified leaks, thefts, or losses of customer data	Number	0	0	0	0	-	-	✔
PROCUREMENT PRACTICES										
GRI 204-1	N/A	Number of suppliers and total spent								
		Total number of suppliers	Number	3,124	3,442	3,238	3,299	• Suppliers include Malaysian suppliers and those in the areas where TNB operates internationally. • This include TNB Corporate Divisions, Grid Division, DN Division, Retail Division, New Energy Division, Grid System Operator (GSO) Division and TNB Power Generation Sdn. Bhd. and its subsidiaries, excluding fuel spend, spend by other TNB subsidiaries to their suppliers and Non-Purchase Order payments.	-	✔
		Total spent on procurement	RM billion	9.91	7.15	10.03	10.91		-	
	Bursa C7(a) [Supply chain management]	Proportion of spending on local suppliers								
		Total number of local suppliers engaged	Number	3,067	3,390	3,123	3,186	• For TNB Corporate Divisions, Grid Division, DN Division, Retail Division, New Energy Division, Grid System Operator (GSO) Division and TNB Power Generation Sdn. Bhd. and its subsidiaries, excluding fuel spend, spend by other TNB subsidiaries to their suppliers and Non-Purchase Order payments.	-	✔
		Percentage of local suppliers	%	98.2	98.5	96.4	96.6		-	
		Total spent on local suppliers engaged	RM billion	9.81	7.06	9.82	10.38		-	
		Percentage spent on local suppliers engaged	%	99.0	98.7	97.9	95.1		-	

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary
CUSTOMERS										
RESPONSIBLE AND ETHICAL BUSINESS PRACTICES										
GRI 205-2	Bursa C1(a) [Anti Corruption]	Training on anti-corruption policies and procedures communication	Number	N/A	N/A	N/A	14,238	-	Restated FY2019 to FY2021 data. Training on anti-corruption data only available start from FY2022.	
		Total number of employees that have received training on ethics and anti-corruption by employee category								
		Senior Management	Number	-	-	-	546	Start monitor data in FY2022.	-	
		Executive	Number	-	-	-	2,686		-	
		Non-executive	Number	-	-	-	11,006		-	
		Total	Number	-	-	-	14,238		-	
		Percentage of employees that have received training on ethics and anti-corruption by employee category								
		Senior Management	%	-	-	-	3.83	Start monitor data in FY2022.	-	
		Executive	%	-	-	-	18.87		-	
		Non-executive	%	-	-	-	77.30		-	
GRI 205-3	Bursa C1(b) [Anti Corruption]	Confirmed incidents of corruption and actions taken								
		Total number of confirmed incidents of corruption	Number	12	18	5	1	-	-	
NATURAL RESOURCE CONSUMPTION										
GRI 302-1	Bursa C4(a) [Energy Management]	Fuel consumption for power plants from non-renewable sources								
		Coal	GJ	361,956,288	456,964,497	451,081,428	444,682,239	For wholly-owned power plants in Peninsular Malaysia.	-	
		Natural gas	GJ	188,532,460	161,785,964	204,196,092	210,857,206		-	
		Distillate fuel	GJ	573,644	31,328,099	1,093,738	2,445,795		-	
		Medium fuel oil	GJ	783,847	0	0	2,559,614		-	
		Energy consumption within the organisation (Electricity, heating, cooling, and steam purchased for consumption)								
Energy Consumption	MWh	748,487.77	548,159.10	840,944.01	863,462.69	-	-			
WATER										
GRI 303-3	Bursa C9(a) [Water]	Water withdrawal breakdown by power plant								
		TNB Janamanjung GF1	Megalitres	2,307.55	2,059.50	2,289.76	2,201.56	<ul style="list-style-type: none">For TNB operations in Peninsular Malaysia.JEP was commissioned in December 2019.SPG was commissioned in 2021.PGE was decommissioned in 2022.	-	
		TNB Janamanjung GF2	Megalitres	1,079.57	506.01	971.80	1,173.67		-	
		Manjung Five	Megalitres	331.38	302.99	461.42	700.81		-	
		Kapar Energy Ventures (KEV) [60%]	Megalitres	1,345.46	1,234.16	986.44	1,971.71		-	
		Jimah East Power (JEP) [70%]	Megalitres	N/A	773.36	939.92	1,227.47		-	
		Pasir Gudang Energy (PGE)	Megalitres	58.35	30.51	20.81	N/A		-	
		SJ Putrajaya	Megalitres	14.30	12.99	7.75	9.32		-	
		SJ Gelugor	Megalitres	89.19	62.63	69.61	59.02		-	
		TNB Prai	Megalitres	141.01	99.52	41.97	423.55		-	
		SJ Tuanku Jaafar	Megalitres	300.66	325.92	354.94	30.59		-	
		Connaught Bridge Sdn. Bhd.	Megalitres	121.95	105.79	99.59	111.70		-	
		Southern Power Generation (SPG)	Megalitres	N/A	N/A	184.83	426.67		-	

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark		
WATER										
GRI 303-3	Bursa C9(a) [Water]	Water withdrawal breakdown by power plant								
		SSJ Sultan Mahmud, Kenyir	Megalitres	4.53	4.76	4.73	2.52	For TNB operations in Peninsular Malaysia.	-	✔
		SSJ Sg. Perak	Megalitres	104.66	31.20	26.05	20.97		-	
		Water withdrawal breakdown by other buildings								
		TNB Grid Substation	Megalitres	4.57	266.11	223.23	165.16	For TNB operations in Peninsular Malaysia.	-	✔
		TNB Grid Building	Megalitres	7.95	44.42	11.13	40.97		-	
		TNB Distribution Substation	Megalitres	115.04	82.67	139.54	97.17		-	
		TNB Distribution Building	Megalitres	814.10	811.03	698.65	700.90		-	
		TNB Corporate	Megalitres	428.98	311.77	238.92	458.12		-	
		SESB Water Withdrawal	Megalitres	784.90	724.65	659.82	709.00	For SESB operations in Sabah.	-	
		Total water withdrawal								
		Total Water Withdrawal	Megalitres	8,054.15	7,789.99	8,430.91	10,530.89	For TNB operations in Peninsular Malaysia and Sabah.	-	✔
EMISSIONS										
GRI 305-1	Bursa C11(a) [Emissions Management]	Direct (Scope 1) GHG emissions								
		Total direct GHG emissions (Scope 1)	million tCO ₂ e	33.79	39.04	39.77	38.58	• GHG emissions methodologies applied were 2006 IPCC Guidelines for National Greenhouse Gas Inventories, GHG Protocol, and Clean Development Mechanism (CDM). • Consolidation of data was based on equity share approach. • GHG emissions are assessed annually for TNB operations in Peninsular Malaysia only.	Data restated for FY2021 after third party verification.	✔
		Hydrofluorocarbons (HFCs)	tCO ₂ eq/year	2,122	21,237	4,115	2,847			
		Sulphur hexafluoride (SF ₆)	tCO ₂ eq/year	140,979	337,828	129,842	53,968			
GRI 305-2	Bursa C11(b) [Emissions Management]	Energy indirect (Scope 2) GHG emissions								
		Indirect Emissions	tCO ₂ e	240,761	224,208	283,398	317,048		✔	
GRI 305-4	N/A	Greenhouse gas emission intensity								
		Intensity of CO ₂ emissions	tCO ₂ e/MWh	0.56	0.57	0.54	0.55		✔	

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark			
EMISSIONS											
GRI 305-5	N/A	Reduction of greenhouse gas emissions								<div>✔</div>	
		Total avoided emission	million tCO ₂ e	5.39	5.99	7.96	7.30	-	-		
GRI 305-7	Bursa S4(a) [Emissions - Air Quality/ Pollution]	Other atmospheric emissions									
		Nitrogen Oxides (NOx)	metric tonne/year	63,211.16	77,839.35	35,509.17	31,024.14	• Applied emission factor from EMEP/EEA (Tier 1) or facility level (Tier 3). • Flue gas measured using continuous emission monitoring system. • Reported data is for TNB wholly-owned and partly owned power plants in Peninsular Malaysia, excluding Jimah East Power (JEP) due to unavailable data and TNB is currently assessing the JEP data for future disclosure.	-		
		Sulfur Oxides (SOx)	metric tonne/year	48,920.17	88,461.03	32,342.10	27,412.40		-		
		Particulate matter (PM)	metric tonne/year	5,318.13	7,347.16	2,568.20	1,880.70		-		
		Carbon Monoxide (CO)	metric tonne/year	24,134.75	28,609.66	5,974.08	8,180.10		-		
GRI 306-3	Bursa C10(a) [Waste Management]	Scheduled waste generated									<div>✔</div>
		Total weight of scheduled waste generated	metric tons	34,783.00	23,576.00	47,829.26	74,149.84	• Data has been extracted from the DOE's Electronic Scheduled Waste Information System (eSWIS). • For TNB operations in Peninsular Malaysia.	-		
N/A	N/A	Significant spills									<div>✔</div>
		Total number of recorded significant spills	Number	3	7	2	5	-	-		
		Total volume of recorded significant spills	m³	0.57	6.10	135.00	0.97	-	-		
ENVIRONMENTAL MANAGEMENT											
GRI 2-27	N/A	Non-compliance with environmental laws and regulations								<div>✔</div>	
		Total monetary value of significant fines	RM	1,000.00	10,000.00	19,000.00	20,000.00	-	-		
		Total number of non-monetary sanctions	Number	5	6	11	5	-	-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
LABOUR PRACTICES AND DECENT WORK										
EMPLOYMENT CULTURE										
GRI 2-7	N/A	Total size of workforce								
		Grid	Number	2,549	2,392	2,436	2,441	-	-	✔
		Distribution Network	Number	11,274	10,956	10,832	10,668		-	
		Retail	Number	4,604	4,504	4,482	4,506		-	
		Support/Others	Number	9,393	10,105	9,673	9,375		-	
		Total TNB Company	Number	27,820	27,957	27,423	26,990		-	
		Generation	Number	1,005	1,440	1,415	1,505		-	✔
		Other Subsidiaries	Number	7,482	6,179	6,100	6,204	-		
		Total TNB Group	Number	36,307	35,576	34,938	34,699	-		
		Workforce by geographic area								
		Peninsular Malaysia - East	Number	4,578	4,330	4,580	4,228	-	-	✔
		Peninsular Malaysia - North	Number	6,752	6,639	6,417	6,351	-	-	
		Peninsular Malaysia - South	Number	5,538	5,316	5,245	5,132	-	-	
		Peninsular Malaysia - Central	Number	16,087	15,994	15,467	15,647	-	-	
		Malaysia East - Sabah	Number	3,229	3,174	3,226	3,338	-	-	
		Malaysia East - Sarawak	Number	0	2	1	1	-	-	
		Others	Number	123	121	2	2	-	-	
		Total	Number	36,307	35,576	34,938	34,699	-	-	
		Bursa C3(a) [Labour practices and standards]	Workforce by contract type and geographic area							
	Permanent employees									
	Peninsular Malaysia - East		Number	4,091	3,859	4,140	3,922	-	-	✔
	Peninsular Malaysia - North		Number	5,994	5,906	5,750	5,878	-	-	
	Peninsular Malaysia - South		Number	4,627	4,585	4,568	4,629	-	-	
	Peninsular Malaysia - Central		Number	14,074	13,846	13,675	14,024	-	-	
	Malaysia East - Sabah		Number	2,947	2,878	2,799	2,691	-	-	
	Malaysia East - Sarawak		Number	0	2	1	1	-	-	
	Others		Number	121	117	0	0	-	-	
	Total (Permanent)		Number	31,854	31,193	30,933	31,145	-	-	
	Contract employees (non-permanent)									
	Peninsular Malaysia - East		Number	487	470	440	306	-	-	✔
Peninsular Malaysia - North	Number		758	733	667	473	-	-		
Peninsular Malaysia - South	Number		911	732	677	503	-	-		
Peninsular Malaysia - Central	Number		2,013	2,148	1,792	1,623	-	-		
Malaysia East - Sabah	Number		282	296	427	647	-	-		
Others	Number		2	4	2	2	-	-		
Total (Contract)	Number		4,453	4,383	4,005	3,554	-	-		
Total	Number		36,307	35,576	34,938	34,699	-	-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
LABOUR PRACTICES AND DECENT WORK											
EMPLOYMENT CULTURE											
GRI 2-7	Bursa C3(a) [Labour practices and standards]	Workforce by gender									
		Male	Number	28,687	28,063	27,220	27,258	-	-	✔	
			%	79.0	78.9	77.9	78.6	-	-		
		Female	Number	7,620	7,513	7,718	7,441	-	-		
			%	21.0	21.1	22.1	21.4	-	-		
		Total	Number	36,307	35,576	34,938	34,699	-	-		
		Workforce by contract type and gender									
		Permanent employees									
		Male	Number	24,819	24,265	23,861	24,197	-	-	✔	
		Female	Number	7,035	6,912	6,977	6,933	-	-		
		Total	Number	31,854	31,177	30,838	31,130	-	-		
		Contract employees (non-permanent)									
		Male	Number	3,865	3,796	3,603	3,061	-	-	✔	
		Female	Number	588	603	497	508	-	-		
		Total	Number	4,453	4,399	4,100	3,569	-	-		
		Workforce by contract type and geographical area									
		Permanent employees									
		Peninsular Malaysia - East	Number	4,091	3,859	4,140	3,922	-	-	✔	
		Peninsular Malaysia - North	Number	5,994	5,906	5,750	5,878	-	-		
		Peninsular Malaysia - South	Number	4,627	4,585	4,568	4,629	-	-		
		Peninsular Malaysia - Central	Number	14,074	13,846	13,675	14,024	-	-		
		East Malaysia - Sabah	Number	2,947	2,878	2,799	2,691	-	-		
		East Malaysia - Sarawak	Number	0	2	1	1	-	-		
		Others	Number	121	117	0	0	-	-		
		Total	Number	31,854	31,193	30,933	31,145	-	-		
		Contract employees (non-permanent)									
		Peninsular Malaysia - East	Number	487	470	440	306	-	-	✔	
		Peninsular Malaysia - North	Number	758	733	667	473	-	-		
		Peninsular Malaysia - South	Number	911	732	677	503	-	-		
		Peninsular Malaysia - Central	Number	2,013	2,148	1,792	1,623	-	-		
		East Malaysia - Sabah	Number	282	296	427	647	-	-		
		East Malaysia - Sarawak	Number	0	0	0	0	-	-		
		Others	Number	2	4	2	2	-	-		
		Total	Number	4,453	4,383	4,005	3,554	-	-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
LABOUR PRACTICES AND DECENT WORK										
EMPLOYMENT CULTURE										
GRI 2-7	Bursa C3(a) [Labour practices and standards]	Workforce by contract type and gender								
		Full-time employees								
		Male	Number	28,682	28,063	24,709	27,250	-	-	✔
		Female	Number	7,625	7,513	10,229	7,449	-	-	
		Total	Number	36,307	35,576	34,938	34,699	-	-	
GRI 405-1	Bursa C3(a) [Diversity]	Workforce by level and gender								
		Board Members								
		Male	Number	16	47	31	25	-	-	✔
		Female	Number	7	12	6	5	-	-	
		Total	Number	23	59	37	30	-	-	
		Male	%	69.57	79.66	83.78	83.33	-	-	✔
		Female	%	30.43	20.34	16.22	16.67	-	-	
		Senior management								
		Male	Number	338	342	333	321	-	-	✔
		Female	Number	83	95	100	103	-	-	
		Total	Number	421	437	433	424	-	-	
		Male	%	80.29	78.26	76.91	75.71	-	-	✔
		Female	%	19.71	21.74	23.09	24.29	-	-	
		Executive								
		Male	Number	5,317	5,325	5,315	5,312	-	-	✔
		Female	Number	3,400	3,442	3,515	3,588	-	-	
		Total	Number	8,717	8,767	8,830	8,900	-	-	
		Male	%	61.00	60.74	60.19	59.69	-	-	✔
		Female	%	39.00	39.26	39.81	40.31	-	-	
		Non-executive								
		Male	Number	23,033	22,396	21,816	21,623	-	-	✔
		Female	Number	4,136	3,976	3,859	3,752	-	-	
		Total	Number	27,169	26,372	25,675	25,375	-	-	
		Male	%	84.78	84.92	84.97	85.21	-	-	✔
		Female	%	15.22	15.08	15.03	14.79	-	-	
		Total (excluding Board Members)	Number	36,307	35,576	34,938	34,699	-	-	

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary			
LABOUR PRACTICES AND DECENT WORK													
EMPLOYMENT CULTURE													
GRI 2-7	N/A	Workforce by non-guaranteed hours employees by gender											
		Male	Number	-	-	-	101	Data monitoring start in 2022.	-				
		Female	Number	-	-	-	63		-				
		Total	Number	-	-	-	164		-				
		Workforce by non-guaranteed hours employees by geographical area											
		Peninsular Malaysia - East	Number	-	-	-	0	Data monitoring start in 2022.	-				
		Peninsular Malaysia - North	Number	-	-	-	2		-				
		Peninsular Malaysia - South	Number	-	-	-	2		-				
		Peninsular Malaysia - Central	Number	-	-	-	160		-				
		East Malaysia - Sabah	Number	-	-	-	0		-				
		East Malaysia - Sarawak	Number	-	-	-	0		-				
		Others	Number	-	-	-	0		-				
		Total	Number	-	-	-	164		-				
GRI 405-1	N/A	Workforce by age group											
		<35	Number	17,853	16,033	14,139	12,692	-	-				
			%	49.2	45.1	40.5	36.6	-	-				
		35 - 50	Number	13,277	14,689	16,249	17,689	-	-				
			%	36.6	41.3	46.5	51.0	-	-				
		>50	Number	5,177	4,854	4,550	4,318	-	-				
			%	14.3	13.6	13.0	12.4	-	-				
		Total	Number	36,307	35,576	34,938	34,699	-	-				
	Bursa C3(a) [Diversity]	Workforce by level and age group											
		Board Members											
		< 35	Number	1	0	0	0	-	-				
		35 - 50	Number	11	12	7	7	-	-				
		> 50	Number	25	47	30	23	-	-				
		Total	Number	37	59	37	30	-	-				
		Senior management											
		< 35	Number	6	1	4	2	-	-				
		35 - 50	Number	165	164	185	202	-	-				
		> 50	Number	282	272	244	220	-	-				
		Total	Number	453	437	433	424	-	-				
		Executive											
		< 35	Number	3,938	3,615	3,329	3,182	-	-				
		35 - 50	Number	3,950	4,359	4,736	4,956	-	-				
		> 50	Number	800	793	765	762	-	-				
		Total	Number	8,688	8,767	8,830	8,900	-	-				

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
LABOUR PRACTICES AND DECENT WORK										
EMPLOYMENT CULTURE										
GRI 405-1	Bursa C3(a) [Diversity]	Workforce by level and age group								
		Non-executive								
		< 35	Number	13,909	12,411	10,803	9,512	-	-	✔
		35 - 50	Number	9,162	10,167	11,331	12,521	-	-	
		> 50	Number	4,095	3,794	3,541	3,342	-	-	
		Total	Number	27,166	26,372	25,675	25,375	-	-	
		Total (excluding Board Members)	Number	36,307	35,576	34,938	34,699	-	-	
GRI 405-1	N/A	Employees with disability by gender								
		Male	Number	23	21	24	23	-	-	✔
		Female	Number	4	3	3	2	-	-	
		Total	Number	27	24	27	25	-	-	
		Women in Senior Management								
		Female	Number	83	95	100	103	-	-	✔
		%	19.7	21.7	23.1	24.3	-	-		
GRI 2-30	N/A	Collective Bargaining								
		Total number of employees under collective bargaining agreements	Number	23,406	22,546	22,678	23,098	-	-	✔
		Percentage of employees under collective bargaining agreements out of total workforce	%	81.2	81.8	83.7	86.5	-	-	
		Total number of grievances against labour practices filed in the year	Number	14	15	6	0	-	-	
		Total number of grievances against labour practices resolved in the year	Number	12	18	5	0	-	-	
GRI 401-1	N/A	Number of new hires by gender								
		Male	Number	1,589	424	649	924	-	-	✔
		Female	Number	410	144	197	228	-	-	
		Total	Number	1,999	568	846	1,152	-	-	
		Percentage of new hires by gender								
		Male	%	79.49	74.65	76.71	80.21	-	-	✔
	Female	%	20.51	25.35	23.29	19.79	-	-		
	Bursa C6(c) [Labour practices and standards]	New hires by level								
		Board Members	Number	-	-	-	4	Data monitoring start in 2022.	-	✔
		Senior Management	Number	-	-	-	15		-	
Executives		Number	-	-	-	418	-			
Non-executives		Number	-	-	-	719	-			
Total		Number	-	-	-	1,152	-			

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary
LABOUR PRACTICES AND DECENT WORK										
EMPLOYMENT CULTURE										
GRI 401-1	N/A	Number of new hires by age group								
		< 35	Number	1,910	480	778	1,077	-	-	
		35 - 50	Number	70	63	51	47	-	-	
		> 50	Number	19	25	17	28	-	-	
		Total	Number	1,999	568	846	1,152	-	-	
		Percentage of new hires by age group								
		< 35	%	95.55	84.51	91.96	93.49	-	-	
		35 - 50	%	3.50	11.09	6.03	4.08	-	-	
		> 50	%	0.95	4.40	2.01	2.43	-	-	
		Number of new hires by region								
		Peninsular Malaysia - East	Number	177	17	59	82	-	-	
		Peninsular Malaysia - North	Number	281	23	69	130	-	-	
		Peninsular Malaysia - South	Number	380	23	119	137	-	-	
		Peninsular Malaysia - Central	Number	1,053	464	427	539	-	-	
		Malaysia East - Sabah	Number	104	41	172	264	-	-	
		Others	Number	4	0	0	0	-	-	
		Total	Number	1,999	568	846	1,152	-	-	
		Percentage of new hires by region								
		Peninsular Malaysia - East	%	8.85	2.99	6.97	7.12	-	-	
		Peninsular Malaysia - North	%	14.06	4.05	8.16	11.28	-	-	
		Peninsular Malaysia - South	%	19.01	4.05	14.07	11.89	-	-	
	Peninsular Malaysia - Central	%	52.68	81.69	50.47	46.79	-	-		
	Malaysia East - Sabah	%	5.20	7.22	20.33	22.92	-	-		
	Others	%	0.20	0.00	0.00	0.00	-	-		
	Employee turnover by gender									
	Male	Number	1,213	1,054	1,078	1,113	-	-		
	Female	Number	231	251	236	250	-	-		
Total	Number	1,444	1,305	1,314	1,363	-	-			
Employee turnover rate by gender										
Male	%	84.00	80.80	82.00	81.70	-	-			
Female	%	16.00	19.20	18.00	18.30	-	-			
Bursa C6(c) [Labour practices and standards]	Employee turnover by level									
	Board Members	Number	-	-	-	1	-	-		
	Senior Management	Number	-	-	-	61	-	-		
	Executives	Number	-	-	-	369	-	-		
	Non-executives	Number	-	-	-	933	-	-		
	Total	Number	-	-	-	1,363	-	-		






Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary
LABOUR PRACTICES AND DECENT WORK										
EMPLOYMENT CULTURE										
GRI 401-1	N/A	Employees turnover by age group								
		< 35	Number	457	332	329	400	-	-	✔
		35 - 50	Number	111	100	152	196	-	-	
		> 50	Number	876	873	833	767	-	-	
		Total	Number	1,444	1,305	1,314	1,363	-	-	
		Employee turnover rate by age group								
		< 35	%	31.65	25.44	25.04	29.35	-	-	✔
		35 - 50	%	7.69	7.66	11.57	14.38	-	-	
		> 50	%	16.92	17.99	18.31	56.27	-	-	
		Employee turnover by region								
		Peninsular Malaysia - East	Number	176	172	154	165	-	-	✔
		Peninsular Malaysia - North	Number	279	231	212	219	-	-	
		Peninsular Malaysia - South	Number	231	208	202	173	-	-	
		Peninsular Malaysia - Central	Number	677	615	622	655	-	-	
		Malaysia East - Sabah	Number	80	77	123	151	-	-	
		Others	Number	1	2	1	0	-	-	
		Total	Number	1,444	1,305	1,314	1,363	-	-	
		Employee turnover rate by region								
		Peninsular Malaysia - East	%	12.19	13.18	11.72	12.11	-	-	✔
		Peninsular Malaysia - North	%	19.32	17.70	16.13	16.07	-	-	
		Peninsular Malaysia - South	%	16.00	15.94	15.37	12.69	-	-	
		Peninsular Malaysia - Central	%	46.88	47.13	47.34	48.06	-	-	
		Malaysia East - Sabah	%	5.54	5.90	9.36	11.08	-	-	
		Others	%	0.07	0.15	0.08	0.00	-	-	
		Changes to size of workforce								
		Total	Number	467	360	359	660	• Includes resignation, early retirement & Skim Persaraan Awal Secara Sukarela (SPASS). • TNB Group for FY2022 data and TNB Company for FY2019, FY2020, FY2021 data.	-	✔
		Total	%	1.29	1.01	1.03	1.90		-	
		Employee Engagement Survey								
		Employee Engagement Score (EES)	%	-	89.00	85.00	86.60	EES is conducted biennially.	-	✔
CAPABILITY DEVELOPMENT										
GRI 404-1	Bursa C6(a) [Labour practices and Standards]	Training hours								
		Training hours (inc. general and leadership training)	Hours	1,085,160	490,000	639,040	1,045,393	-	-	✔
		Average training hours	Man-days per employee	6	2	4	5	-	-	
		Average hours of training by gender								
		Male	Hours	48	19	29	29	-	-	✔
		Female	Hours	24	15	27	40	-	-	

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark			
LABOUR PRACTICES AND DECENT WORK											
CAPABILITY DEVELOPMENT											
GRI 404-1	Bursa C6(a) [Labour practices and Standards]	Average hours of training by level									
		Senior management	Hours	24	15	34	31	-	-	✔	
		Executive	Hours	53	29	43	46	-	-		
		Non-executive	Hours	36	15	23	35	-	-		
		General training									✔
		Total general training hours	Hours	1,047,160	478,000	554,662	943,112	-	-		
		Average general training hours	Hours	37	17	7	34	-	-		
		Programme for skills management and lifelong learning									
		Leadership training									✔
		Total leadership training hours	Hours	38,000	12,000	84,378	93,016	-	-		
		Average leadership training hours (man-days per employee)	Hours	8	0.4	10	3	-	-		
		Total spending on training for all employees, including senior management team	RM	183,103,278	76,513,752	65,533,459	129,424,514	-	-	✔	
GRI 404-3	N/A	Number of employees receiving regular performance and career development reviews by gender									
		Male	Number	22,918	N/A	27,220	27,258	• TNB Group for FY2022 and FY2021. • TNB Company for FY2019 and FY2020.	-	✔	
		Female	Number	5,907	N/A	7,718	7,441		-		
		Total	Number	28,825	27,957	34,938	34,699		-		
		Percentage of employees receiving regular performance and career development reviews by gender									✔
		Male	%	79.50	N/A	77.90	78.60	• TNB Group for FY2022 and FY2021. • TNB Company for FY2019 and FY2020.	-		
		Female	%	20.50	N/A	22.10	21.40		-		
		Total	%	79.40	78.60	100.00	100.00		-		
		OCCUPATIONAL HEALTH AND SAFETY									
NUMBER AND FREQUENCY OF INJURY											
GRI 403-9	Bursa C5(a) [Health and Safety]	Number of fatalities									
		Employees (Electrical)	Number	2	0	1	0	-	-	✔	
		Employees (Non-Electrical)	Number	0	1	1	0	-	-		
		Total (Company)	Number	2	1	2	0	-	-		
		Contractors (Electrical)	Number	1	0	2	2	-	-		
		Contractors (Non-Electrical)	Number	5	3	4	0	-	-		
		Total (Contractors)	Number	6	3	6	2	-	-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary	
OCCUPATIONAL HEALTH AND SAFETY											
NUMBER AND FREQUENCY OF INJURY											
GRI 403-9	Bursa C5(a) [Health and Safety]	Fatality rate									
		Employees (Electrical)	per 1,000	0.06	0.00	0.03	0.00	-	Data restated for Contractors (Electrical) fatality rate in FY2021 after verification.		
		Employees (Non-Electrical)	per 1,000	0.00	0.03	0.03	0.00	-			
		Contractors (Electrical)	per 1,000	0.06	0.00	0.08	0.08	-			
		Contractors (Non-Electrical)	per 1,000	0.29	0.17	0.17	0.00	-			
		Number of high-consequence work-related injuries (excluding fatalities)									
		Employees (Electrical)	Number	8	5	2	5	-	-		
		Employees (Non-Electrical)	Number	106	117	94	74	-	-		
		Total (Company)	Number	114	122	96	79	-	-		
		Contractors (Electrical)	Number	N/A	N/A	4	5	-	-		
		Contractors (Non-Electrical)	Number	N/A	N/A	16	22	-	-		
		Total (Contractors)	Number	N/A	N/A	20	27	-	-		
		Rate of high-consequence work-related injuries (excluding fatalities)									
		Employees (Electrical)	Per million man-hours	0.08	0.05	0.02	0.05	-	-		
		Employees (Non-Electrical)	Per million man-hours	1.09	1.24	0.99	0.77	-	-		
		Contractors (Electrical)	Per million man-hours	N/A	N/A	0.06	0.07	-	-		
		Contractors (Non-Electrical)	Per million man-hours	N/A	N/A	0.23	0.31	-	-		
		Number of recordable work-related injuries									
		Employees (Electrical)	Number	0	0	0	0	-	-		
		Employees (Non-Electrical)	Number	0	44	47	41	-	-		
		Total (Company)	Number	0	44	47	41	-	-		
		Contractors (Electrical)	Number	N/A	N/A	2	0	-	-		
		Contractors (Non-Electrical)	Number	N/A	N/A	6	7	-	-		
		Total (Contractors)	Number	N/A	N/A	8	7	-	-		
		Rate of recordable work-related injuries									
		Employees (Electrical)	Per million man-hours	0.00	0.00	0.00	0.00	-	-		
		Employees (Non-Electrical)	Per million man-hours	0.00	0.47	0.50	0.43	-	-		
		Contractors (Electrical)	Per million man-hours	N/A	N/A	0.03	0.00	-	-		
		Contractors (Non-Electrical)	Per million man-hours	N/A	N/A	0.09	0.10	-	-		

Performance Table

									Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark			
OCCUPATIONAL HEALTH AND SAFETY											
NUMBER AND FREQUENCY OF INJURY											
GRI 403-9	Bursa C5(a) [Health and Safety]	Number of hours worked									
		Employees (Electrical)	Number	N/A	N/A	N/A	N/A	-	-	✔	
		Employees (Non-Electrical)	Number	N/A	N/A	N/A	N/A	-	-		
		Total (Company)	Number	97,287,738	94,507,761	94,692,443	96,203,904	-	-		
		Contractors (Electrical)	Number	N/A	N/A	N/A	N/A	-	-		
		Contractors (Non-Electrical)	Number	N/A	N/A	N/A	N/A	-	-		
		Total (Contractors)	Number	53,452,659	58,289,918	68,250,355	71,240,838	-	-		
	Bursa C5(b) [Health and Safety]	Lost-Time Injuries Frequency (LTIF)									
		Generation	Number	1	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔	
		Grid	Number	4	6	4	5	-	-		
		Distribution Network	Number	43	35	22	30	-	-		
		Retail	Number	42	48	48	24	-	-		
		Others-Non Core Division	Number	24	10	10	2	-	-		
		Total (TNB Company)	Number	114	99	84	61	-	-		
		GenCo (after Restructuring)	Number	N/A	7	5	4	TNB GenCo restructured start in 2020.	-	✔	
		RetailCo (after Restructuring)	Number	N/A	N/A	0	0	TNB RetailCo established in 2021.	-		
		Other Subsidiaries	Number	24	16	9	14	-	-		
		Total (TNB Group)	Number	138	122	98	79	-	-		
		Lost-Time Injuries Frequency Rate (LTIFR)									
		Generation	Per million man-hours	0.42	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔	
		Grid	Per million man-hours	0.66	1.05	0.69	0.87	-	-		
		Distribution Network	Per million man-hours	1.12	0.96	0.62	0.83	-	-		
		Retail	Per million man-hours	3.72	4.36	4.25	2.12	-	-		
		Others-Non Core Division	Per million man-hours	1.25	0.51	0.58	0.12	-	-		
		Total (TNB Company)	Per million man-hours	1.47	1.36	1.20	0.87	-	-		
		GenCo (after Restructuring)	Per million man-hours	N/A	0.75	0.54	0.44	TNB GenCo restructured start in 2020.	-	✔	
		RetailCo (after Restructuring)	Per million man-hours	N/A	N/A	0.00	0.00	TNB RetailCo established in 2021.	-		
		Other Subsidiaries	Per million man-hours	1.20	1.30	0.56	0.84	-	-		
		Total (TNB Group)	Per million man-hours	1.42	1.29	1.03	0.82	-	-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/ Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
OCCUPATIONAL HEALTH AND SAFETY										
NUMBER AND FREQUENCY OF INJURY										
GRI 403-9	Bursa C5(b) [Health and Safety]	Lost days of employees								
		Generation	Number	19	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Number	197	90	6,058	186	-	-	
		Distribution Network	Number	958	1,155	669	662	-	-	
		Retail	Number	1,019	7,011	780	445	-	-	
		Others-Non Core Division	Number	372	352	465	81	-	-	
		Total (TNB Company)	Number	2,565	8,608	7,972	1,374	-	-	
		GenCo (after Restructuring)	Number	N/A	98	155	62	TNB GenCo restructured start in 2020.	-	✔
		RetailCo (after Restructuring)	Number	N/A	N/A	N/A	0	TNB RetailCo established in 2021.	-	
		Other Subsidiaries	Number	12,334	92	123	170	-	-	
		Total (TNB Group)	Number	14,899	8,798	8,250	1,606	-	-	
		Lost days severity rate of employees								
		Generation	Per million man-hours	7.99	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Per million man-hours	32.57	15.77	1,050.33	32.41	-	-	
		Distribution Network	Per million man-hours	24.89	31.67	18.82	18.31	-	-	
		Retail	Per million man-hours	90.24	637.06	69.01	39.25	-	-	
		Others-Non Core Division	Per million man-hours	17.29	17.91	27.08	4.76	-	-	
		Total (TNB Company)	Per million man-hours	33.16	118.18	114.22	19.56	-	-	
		GenCo (after Restructuring)	Per million man-hours	N/A	10.45	16.78	6.80	TNB GenCo restructured start in 2020.	-	✔
		RetailCo (after Restructuring)	Per million man-hours	N/A	N/A	0.00	0.00	TNB RetailCo established in 2021.	-	
		Other Subsidiaries	Per million man-hours	618.5	7.49	7.69	10.10	-	-	
		Total (TNB Group)	Per million man-hours	153.14	93.09	87.12	16.69	-	-	

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/Remark	Restatement of published data	Boundary	
OCCUPATIONAL HEALTH AND SAFETY											
NUMBER AND FREQUENCY OF INJURY											
GRI 403-9	N/A	Total recordable incident case									
		Generation (before Sept 2020)	Number	N/A	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-		
		Grid	Number	N/A	10	5	7	-	-		
		Distribution Network	Number	N/A	43	31	38	-	-		
		Retail	Number	N/A	62	73	44	-	-		
		Others	Number	N/A	18	10	6	-	-		
		TNB Company	Number	164	133	119	95	-	-		
		GenCo (after Sept 2020)	Number	N/A	6	7	9	TNB GenCo restructured start in 2020.	-		
		RetailCo (after Jan 2021)	Number	N/A	N/A	0	0	TNB RetailCo established in 2021.	-		
		Other Subsidiaries	Number	N/A	25	13	17	-	-		
		TNB Group	Number	N/A	164	139	121	-	-		
		Total recordable incident rate (TRIR)									
		Generation (before Sept 2020)	Per million man-hours	0	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-		
		Grid	Per million man-hours	0	1.75	0.87	1.22	-	-		
		Distribution Network	Per million man-hours	0	1.18	0.87	1.05	-	-		
		Retail	Per million man-hours	0	5.63	6.46	3.88	-	-		
		Others	Per million man-hours	0	0.92	0.58	0.22	-	-		
		TNB Company	Per million man-hours	2.12	1.83	1.70	1.35	-	-		
		GenCo (after Sept 2020)	Per million man-hours	N/A	0.64	0.76	0.99	TNB GenCo restructured start in 2020.	-		
		RetailCo (after Jan 2021)	Per million man-hours	N/A	N/A	0.00	0.00	TNB RetailCo established in 2021.	-		
		Other Subsidiaries	Per million man-hours	N/A	2.03	0.82	1.01	-	-		
		TNB Group	Per million man-hours	N/A	1.74	1.47	1.26	-	-		
		Number of near misses									
		Generation (before Sept 2020)	Number	N/A	N/A	N/A	N/A	<div>• Data monitoring start in 2022.</div> <div>• TNB GenCo restructured start in 2020.</div> <div>• TNB RetailCo established in 2021.</div>	-		
		Grid	Number	N/A	N/A	N/A	3		-		
		Distribution Network	Number	N/A	N/A	N/A	2		-		
		Retail	Number	N/A	N/A	N/A	0		-		
		Others	Number	N/A	N/A	N/A	4		-		
		TNB Company	Number	N/A	N/A	N/A	9		-		

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/ Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
OCCUPATIONAL HEALTH AND SAFETY										
NUMBER AND FREQUENCY OF INJURY										
GRI 403-9	N/A	Number of near misses								
		GenCo (after Sept 2020)	Number	N/A	N/A	N/A	4		-	✔
		RetailCo (after Jan 2021)	Number	N/A	N/A	N/A	0		-	
		Other Subsidiaries	Number	N/A	N/A	N/A	3		-	
		TNB Group	Number	N/A	N/A	N/A	16		-	
		Near miss frequency rate (NMFR)								
		Generation (before Sept 2020)	Per million man-hours	N/A	N/A	N/A	N/A	• Data monitoring start in 2022. • TNB GenCo restructured start in 2020. • TNB RetailCo established in 2021.	-	✔
		Grid	Per million man-hours	N/A	N/A	N/A	0.52		-	
		Distribution Network	Per million man-hours	N/A	N/A	N/A	0.06		-	
		Retail	Per million man-hours	N/A	N/A	N/A	0.00		-	
		Others	Per million man-hours	N/A	N/A	N/A	0.23		-	
		TNB Company	Per million man-hours	N/A	N/A	N/A	0.13		-	
		GenCo (after Sept 2020)	Per million man-hours	N/A	N/A	N/A	0.44		-	✔
		RetailCo (after Jan 2021)	Per million man-hours	N/A	N/A	N/A	0.00		-	
		Other Subsidiaries	Per million man-hours	N/A	N/A	N/A	0.18		-	
		TNB Group	Per million man-hours	N/A	N/A	N/A	0.17		-	
GRI 403-8	N/A	Number of employees who are covered by occupational health and safety management system								
		Generation (before Sept 2020)	Number	973	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Number	2,549	2,392	2,436	2,441	-	-	
		Distribution Network	Number	11,273	10,956	10,832	10,676	-	-	
		Retail	Number	4,604	4,468	4,535	4,505	-	-	
		Others	Number	7,738	7,340	6,983	6,857	-	-	
		TNB Company	Number	27,137	25,156	24,786	24,479	-	-	✔
		GenCo (after Sept 2020)	Number	N/A	3,867	3,726	3,421	TNB GenCo restructured start in 2020.	-	
		RetailCo (after Jan 2021)	Number	N/A	N/A	37	37	TNB RetailCo established in 2021.	-	
		Other Subsidiaries	Number	8,316	6,407	6,396	6,768	-	-	
		TNB Group	Number	35,453	35,430	34,945	34,705	-	-	

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/ Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group
WORKERS COVERED BY OHS MANAGEMENT SYSTEM										
GRI 403-8	N/A	Number of contractors who are covered by occupational health and safety management system								
		Generation (before Sept 2020)	Number	1,480	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Number	3,615	4,325	4,237	4,611	-	-	
		Distribution Network	Number	4,751	4,751	4,751	4,751	-	-	
		Retail	Number	N/A	411	411	411	-	-	
		Others	Number	N/A	N/A	3,547	7,050	-	-	
		TNB Company	Number	9,846	9,487	12,946	16,823	-	-	
		GenCo (after Sept 2020)	Number	N/A	4,589	4,791	4,064	TNB GenCo restructured start in 2020.	-	✔
		RetailCo (after Jan 2021)	Number	N/A	N/A	102	102	TNB RetailCo established in 2021.	-	
		Other Subsidiaries	Number	4,199	6,614	7,574	4,193	-	-	
		TNB Group	Number	14,045	20,690	25,413	25,182	-	-	
		Percentage of contractors who are covered by occupational health and safety management system								
		TNB Group	%	100	100	100	100	All contractors are covered under OSH management system.	-	✔
WORK-RELATED ILL HEALTH										
GRI 403-10	N/A	The number of fatalities as a result of work-related ill health for employees								
		Generation	Number	0	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Number	0	0	0	0	-	-	
		Distribution Network	Number	0	0	0	0	-	-	
		Retail	Number	0	0	0	0	-	-	
		Others	Number	0	0	0	0	-	-	
		TNB Company	Number	0	0	0	0	-	-	
		GenCo (after Sept 2020)	Number	N/A	0	0	0	TNB GenCo restructured start in 2020.	-	✔
		Other Subsidiaries	Number	0	0	0	0	-	-	
		TNB Group	Number	0	0	0	0	-	-	
		The number of cases of recordable work-related ill health for employees								
		Generation (before Sept 2020)	Number	2	N/A	N/A	N/A	Restructured to TNB GenCo in 2020.	-	✔
		Grid	Number	0	0	4	1	-	-	
		Distribution Network	Number	4	5	4	1	-	-	
		Retail	Number	1	0	0	0	-	Data restated for FY2019 due to case assessment and investigation process.	

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/ Remark	Restatement of published data	Boundary ✓ TNB Company ✓ TNB Group
WORK-RELATED ILL HEALTH										
GRI 403-10	N/A	The number of cases of recordable work-related ill health for employees								
		Others	Number	4	0	0	0	-	Data restated for FY2019 due to case assessment and investigation process.	✓
		TNB Company	Number	11	5	8	2	-	Data restated for FY2019 due to case assessment and investigation process.	
		GenCo (after Sept 2020)	Number	N/A	5	0	8	TNB GenCo restructured start in 2020.	-	✓
		Other Subsidiaries	Number	0	0	0	0	-	-	
		TNB Group	Number	11	10	8	10	-	Data restated for FY2019 due to case assessment and investigation process.	✓
HEALTH AND SAFETY TRAINING										
GRI 403-5	Bursa C5(c) [Health and Safety]	HSE training								
		Number of employees undergoing HSE trainings	Number	4,539	1,027	5,943	18,986	-	Data restated for FY2022 from TNB IAR 2022 to reflect August to December 2022 updated data.	✓
		Percentage of employees undergoing HSE trainings	%	15.75	3.67	21.67	55.00	-		
		Training hours	Hours	69,190	16,813	103,225	112,671	-		
COMMUNITY DEVELOPMENT AND EDUCATION										
GRI 203-2	N/A	Yayasan Tenaga Nasional (YTN)								
		Total spend on YTN scholarships	RM million	38.7	37.10	42.80	38.20	-	-	✓
		YTN scholarships awarded	Number	831	678	655	616	Number of students refer to onload/active students.	-	
		Total spend on YTN convertible loans	RM million	27	22	23	17	-	-	
		Students awarded YTN convertible loans	Number	1,248	1,057	1,016	783	Number of students refer to onload/active students.	-	
	Bursa C2(a) [Community/Society]	Total spend on MyBF scholarships	RM million	21.2	40.4	53.3	45.9	-	-	✓
	Bursa C2(b) [Community/Society]	Students awarded MyBF scholarships	Number	3,592	5,268	6,600	4,354	Number of students refer to onload/active students.	-	
	N/A	Number of local students enrolled	Number	6,314	6,360	5,862	5,257	-	-	
		Number of international students enrolled	Number	621	628	819	922	-	-	
		Total	Number	6,935	6,988	6,681	6,179	-	-	✓

Performance Table

GRI	Bursa	Indicator	Units	FY2019	FY2020	FY2021	FY2022	Scope/ Remark	Restatement of published data	Boundary ✔ TNB Company ✔ TNB Group	
COMMUNITY DEVELOPMENT AND EDUCATION											
GRI 203-2	N/A	UNITEN									
		Students in undergraduate programmes	Number	1,944	1,511	1,556	1,454	-	-	✔	
		Students in postgraduate programmes	Number	92	140	142	116	-	-		
		Total	Number	2,036	1,651	1,698	1,570	-	-		
	Employability rate within 6 months	%	94.00	93.00	94.50	96.78	-	-			
	Bursa C2(a) [Community/ Society]	Total financial assistance awarded from UNITEN	RM million	7,219,137.42	8,093,325.96	6,895,311.79	6,423,668.79	-	-	✔	
	Bursa C2(b) [Community/ Society]	Number of individuals awarded financial assistance	Number	2,250	2,416	1,766	1,361	-	-		
	Bursa C6(a) [Labour practices and Standards]	ILSAS									
		Total number of individuals trained	Number	61,067	7,198	7,377	50,912	-	-	✔	
	N/A	Number of TNB employees trained	Number	50,359	13,738	29,430	50,451	-	-		
		Revenue	RM million	120	55	57	95	-	-		
		Number of ILSAS employees	Number	314	315	299	288	-	-		
	Bursa C2(a) [Community/ Society]	Number of trainers	Number	148	199	188	133	-	-	✔	
		Development and impact to communities									
		Contributions to community in charitable donations	RM million	15.5	43.65	18.19	10.07	-	-	✔	
		Spend on community programmes by area									✔
		Education	RM million	11.73	9.90	11.11	2.27	-	-		
Environmental		RM million	6.13	1.36	0.24	0.48	-	-			
Social		RM million	15.68	49.22	22.79	4.27	-	-			
Sports	RM million	6.71	2.45	5.43	5.18	-	-				
Total	RM million	40.25	62.93	39.57	12.20	-	-				

Bursa Malaysia Sustainability Reporting Content Index

Bursa Sustainability Matters		Bursa indicators	Page
COMMON SUSTAINABILITY MATTERS			
Anti-corruption	C1(a)	Percentage of employees who have received training on anti-corruption by employee category	To be disclosed starting FY2023.
	C1(b)	Percentage of operations assessed for corruption-related risks	114
	C1(c)	Confirmed incidents of corruption and action taken	To be disclosed starting FY2023.
Community/Society	C2(a)	Total amount invested in the community where the target beneficiaries are external to the listed issuer	98, 132
	C2(b)	Total number of beneficiaries of the investment in communities	99-109 We report the beneficiaries for each of the community projects.
Diversity	C3(a)	Percentage of employees by gender and age group, for each employee category	87-88, 119-121
	C3(b)	Percentage of directors by gender and age group	119-121
Energy management	C4(a)	Total energy consumption	72, 115
Health and safety	C5(a)	Number of work-related fatalities	3, 90, 94, 124-125
	C5(b)	Lost time incident rate	94, 128
	C5(c)	Number of employees trained on health and safety standards	95, 131
Labour practices and standards	C6(a)	Total hours of training by employee category	83, 123-124
	C6(b)	Percentage of employees that are contractors or temporary staff	88, 117
	C6(c)	Total number of employee turnover by employee category	88, 122-123
	C6(d)	Number of substantiated complaints concerning human rights violations	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
Supply chain management	C7(a)	Proportion of spending on local suppliers	47, 113
Data privacy and security	C8(a)	Number of substantiated complaints concerning breaches of customer privacy and losses of customer data	113
Water	C9(a)	Total volume of water used	71, 114-115
Waste management	C10(a)	Total waste generated, and a breakdown of the following: (i) total waste diverted from disposal (ii) total waste directed to disposal	72, 116
Emissions management	C11(a)	Scope 1 emissions in tonnes of CO ₂ e	61, 115
	C11(b)	Scope 2 emissions in tonnes of CO ₂ e	61, 115
	C11(c)	Scope 3 emissions in tonnes of CO ₂ e (at least for the categories of business travel and employee commuting)	Information unavailable. TNB will commence Scope 3 emission disclosure in FY2023.
SECTOR SPECIFIC SUSTAINABILITY MATTERS			
Biodiversity	S1(a)	Percentage of existing operations or projects assessed for biodiversity risks	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
	S1(b)	Size and location of all habitat areas protected or restored	74-77
	S1(c)	Total number of International Union for Conservation of Nature (IUCN) Red List of Threatened Species and national conservation list species with habitats in areas affected by the operations of the company	73
Community/Society	S2(a)	Average retail electric or water rate	Information is available at TNB website.
Emissions - Air Quality/Pollution	S4(a)	Amount of air emissions of pollutants and particulate matter	62, 116
Materials	S5(a)	Total weight or volume of materials that are used to produce and package products and services	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
Supply Chain (Environmental) / Supplier Environmental Assessment	S6(a)	Percentage of new suppliers that were screened using environmental criteria	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
	S6(b)	Number of suppliers assessed for environmental impacts	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
Supply Chain (Social) / Supplier Social Assessment	S7(a)	Percentage of new suppliers that were screened using social criteria	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
	S7(b)	Number of suppliers assessed for social impacts	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
Effluents	S8(a)	Total volume of water (effluent) discharge over the reporting period	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.

GRI Standards Content Index

Statement of use	Tenaga Nasional Berhad (TNB) has been prepared with reference to the GRI Standards for the financial year period 1 January 2022 - 31 December 2022
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard	G4 Electric Utilities Disclosure 2013

GRI Standard	GRI Indicator		Page reference and reasons for omissions, if applicable
GRI 2: GENERAL DISCLOSURES			
GRI 2: General Disclosures 2021	THE ORGANIZATION AND ITS REPORTING PRACTICES		
	2-1	Organizational details	7, TNB IAR2022: 235, 389-392
	2-2	Entities included in the organization’s sustainability reporting	2, TNB IAR2022: 22-23
	2-3	Reporting period, frequency and contact point	2
	2-4	Restatements of information	43, 95, 110, 112, 115, 125, 130, 131
	2-5	External assurance (under progress)	2
	ACTIVITIES AND WORKERS		
	2-6	Activities, value chain and other business relationships	7-11
	2-7	Employees	87-88, 117-121
	2-8	Workers who are not employees	Not applicable
	GOVERNANCE		
	2-9	Governance structure and composition	14
	2-10	Nomination and selection of the highest governance body	TNB IAR2022: 137, 160-161
	2-11	Chair of the highest governance body	14
	2-12	Role of the highest governance body in overseeing the management of impacts	14
	2-13	Delegation of responsibility for managing impacts	14
	2-14	Role of the highest governance body in sustainability reporting	14
	2-15	Conflicts of Interest	17-18
	2-16	Communication of critical concerns	17
	2-17	Collective knowledge of the highest governance body	16, 85
	2-18	Evaluation of the performance of the highest governance body	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
	2-19	Remuneration policies	15
	2-20	Process to determine remuneration	15
	2-21	Annual total compensation ratio	TNB upholds the principle of performance-related compensation for employees. Remuneration data is regarded confidential and not reported.
	STRATEGY, POLICIES AND PRACTICES		
	2-22	Statement on sustainable development strategy	4-6
	2-23	Policy commitments	15
	2-24	Embedding policy commitments	15-18
	2-25	Processes to remediate negative impacts	Information unavailable. Steps are being taken to obtain the information to be included in future reporting.
	2-26	Mechanisms for seeking advice and raising concerns	86
	2-27	Compliance with laws and regulations	70, 116
	2-28	Membership associations	31
	STAKEHOLDER ENGAGEMENT		
2-29	Approach to stakeholder engagement	19-21	
2-30	Collective bargaining agreements	121	
GRI 3: MATERIAL TOPICS			
GRI 3: Material Topics 2021	3-1	Process to determine material topics	22-23
	3-2	List of material topics	23, 24
	3-3	Management of material topics	24

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SPECIFIC MATERIAL TOPICS: ECONOMIC			
GRI Standard	GRI Indicator		Page reference and reasons for omissions, if applicable
ECONOMIC PERFORMANCE			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	111
	201-2	Financial implications and other risks and opportunities due to climate change	50-53
INDIRECT ECONOMIC IMPACTS			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 203: Indirect Economic Impacts 2016	203-2	Investments in infrastructure and supported services	98-109, 131-132
PROCUREMENT PRACTICE			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	47, 113
ANTI-CORRUPTION			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 205: Anti-corruption 2016	205-2	Communication and training about anti-corruption policies and procedures	17-18, 114
	205-3	Confirmed incidents of corruption and actions taken	114
CUSTOMER PRIVACY			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 418: Customer Privacy 2016	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	113
SPECIFIC MATERIAL TOPICS: ENVIRONMENT			
GRI Standard	GRI Indicator		Page reference and reasons for omissions, if applicable
ENERGY			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 302: Energy 2016	302-1	Energy consumption within the organization	72, 114
WATER AND EFFLUENTS			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 303: Water and Effluents 2018	303-3	Water withdrawal	71, 114 -115
BIODIVERSITY			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 304: Biodiversity 2016	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	74-77
	304-3	Habitats protected or restored	74-77
	304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	73
EMISSIONS			
GRI 3: Material Topics 2021	3-3	Management of material topics	24

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SPECIFIC MATERIAL TOPICS: ENVIRONMENT			
GRI Standard	GRI Indicator		Page reference and reasons for omissions, if applicable
EMISSIONS			
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	61, 115
	305-2	Energy indirect (Scope 2) GHG emissions	61, 115
	305-4	GHG emissions intensity	61, 115
	305-5	Reduction of GHG emissions	60
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	62, 116
WASTE			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 306: Waste 2020	306-3	Waste generated	72, 116
SPECIFIC MATERIAL TOPICS: SOCIAL			
GRI Standard	GRI Indicator		Page reference and reasons for omissions, if applicable
EMPLOYMENT			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	88, 121-123
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	82
OCCUPATIONAL HEALTH AND SAFETY			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 403: Occupational Health and Safety 2018	403-2	Hazard identification, risk assessment, and incident investigation	91-94
	403-5	Worker training on occupational health and safety	95, 131
	403-8	Workers covered by an occupational health and safety management system	129-130
	403-9	Work-related injuries	94, 124-129
	403-10	Work-related ill health	130-131
TRAINING AND EDUCATION			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	123-124
	404-2	Programs for upgrading employee skills and transition assistance programs	82-85
	404-3	Percentage of employees receiving regular performance and career development reviews	124
DIVERSITY AND EQUAL OPPORTUNITY			
GRI 3: Material Topics 2021	3-3	Management of material topics	24
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	119-121
	405-2	Ratio of basic salary and remuneration	87
COMMUNITY DEVELOPMENT AND HUMAN RIGHTS			
GRI 3: Material Topics 2021	3-3	Management of material topics	24, 86, 109
GRI 410: Security Practices 2016	410-1	Disclosure 410-1 Security personnel trained in human rights policies or procedures	86

Electric Utilities Sector Disclosures

GRI Standard	GRI G4 Indicator		Page Reference
General Standard Disclosures	ORGANISATIONAL PROFILE		
	EU1	Installed capacity, broken down by primary energy source and by regulatory regime	8, 42, 110
	EU3	Number of residential, industrial, institutional and commercial customer accounts	9, 112
	EU4	Length of above and underground transmission and distribution lines by regulatory regime	8-9, 110
Specific Standard Disclosure: Economic	DEMAND-SIDE MANAGEMENT		
	G4-DMA	Demand-side management programs including residential, commercial, institutional and industrial programs	37, 42-43, 45-46
	RESEARCH AND DEVELOPMENT		
	G4-DMA	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development	66-67
	SYSTEM EFFICIENCY		
	EU11	Average generation efficiency of thermal plants by energy source and by regulatory regime	40, 110
Specific Standard Disclosure: Society	EU12	Transmission and distribution losses as a percentage of total energy	110-111
	ACCESS		
	EU28	Power outage frequency	40, 111
	EU29	Average power outage duration	40, 111

GRI Standards Aspect Boundary

Material Matters	GRI Standards	Boundary and Impact	Where the impact occurs
Climate Change and Emission	GRI 305: Emissions GRI 302: Energy	> TNB Group > All stakeholders	Within and outside
Energy Transition and Innovation	GRI 302: Energy EU1 Installed capacity, broken down by primary energy source and by regulatory regime EU12 Transmission and distribution losses as a percentage of total energy EU28 Power outage frequency EU29 Average power outage duration	> TNB Group > Government > Customers	Within and outside
Reliable Energy and Fair Tariffs	EU28 Power outage frequency EU29 Average power outage duration	> TNB Group > Government > Customers	Within and outside
Safety, Health and Well-being	GRI 403: Occupational Health and Safety 2018 DMA Disaster/Emergency Planning and Response	> TNB Group > Employees > Trade Unions > Vendors > Communities	Within and outside
Environmental Management	GRI 2-27: Compliance with laws and regulations GRI 304: Biodiversity 2016 GRI 306: Waste 2020 GRI 301: Materials 2016 GRI 302: Energy 2016 GRI 303: Water and Effluents 2018	> TNB Group > Government > Communities	Within and outside
Responsible Business and Financial Performance	GRI 201 Economic Performance GRI 205: Anti-corruption GRI 207: Tax 2019 EU28 Power outage frequency EU29 Average power outage duration	> TNB Group > All stakeholders	Within and outside
Employment Culture	GRI 401: Employment GRI 405: Diversity and Equal Opportunity GRI 404: Training and Education	> TNB Group > Employees > Trade Unions > Vendors	Within
Community Development and Human Rights	GRI 203: Indirect Economic Impact 2016 GRI 411: Rights Of Indigenous Peoples 2016	> TNB Group > Communities > Non-Governmental Organisations (NGOs) and Associations > Government	Within and outside
Cybersecurity Management	GRI 418: Customer Privacy EU3 Number of residential, industrial, institutional and commercial customer accounts DMA Demand-side Management	> TNB Group > Customers	Within and outside
Sustainable Supply Chain	GRI 204: Procurement Practices 2016	> TNB Group > Vendors	Within and outside

WEF Content Index

The following table provides reference of WEF Stakeholder Capitalism Core Metrics with disclosures in the report.

Pillar	Core Metrics	Key Performance Indicators	Page reference	Response and/or reference and reasons for omissions, if applicable
Principles of Governance	GOVERNING PURPOSE			
	Setting purpose	The company's stated purpose, as the expression of the means by which a business proposes solutions to economic, environmental and social issues. Corporate purpose should create value for all stakeholders, including shareholders.	7	Not applicable
	QUALITY OF GOVERNING BODY			
	Governance body composition	Composition of the highest governance body and its committees by: competencies relating to economic, environmental and social topics; executive or non-executive; independence; tenure on the governance body; number of each individual's other significant positions and commitments, and the nature of the commitments; gender; membership of under-represented social groups; stakeholder representation.	14; TNB IAR2022: 162-165	Not applicable
	STAKEHOLDER ENGAGEMENT			
	Material issues impacting stakeholders	A list of the topics that are material to key stakeholders and the company, how the topics were identified and how the stakeholders were engaged.	19-23	Not applicable
	ETHICAL BEHAVIOUR			
	Anti-corruption	1. Total number of governance body members, employees and business partners who have received training on the organization's anti-corruption policies and procedures, broken down by region. a) Total number and nature of incidents of corruption confirmed during the current year, but related to previous years; and b) Total number and nature of incidents of corruption confirmed during the current year, related to this year.	18, 114	Not applicable
		2. Discussion of initiatives and stakeholder engagement to improve the broader operating environment and culture, in order to combat corruption.	17-18, 114	Not applicable
	Protected ethics advice and reporting mechanisms	A description of internal and external mechanisms for: 1. Seeking advice about ethical and lawful behaviour and organizational integrity; and 2. Reporting concerns about unethical or unlawful behaviour and lack of organizational integrity.	18	Not applicable
	RISK AND OPPORTUNITY OVERSIGHT			
	Integrating risk and opportunity into business process	Company risk factor and opportunity disclosures that clearly identify the principal material risks and opportunities facing the company specifically (as opposed to generic sector risks), the company appetite in respect of these risks, how these risks and opportunities have moved over time and the response to those changes. These opportunities and risks should integrate material economic, environmental and social issues, including climate change and data stewardship.	24	Not applicable

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Pillar	Core Metrics	Key Performance Indicators	Page reference	Response and/or reference and reasons for omissions, if applicable
Planet	CLIMATE CHANGE			
	Greenhouse gas (GHG) emissions	For all relevant greenhouse gases (e.g. carbon dioxide, methane, nitrous oxide, F-gases etc.), report in metric tonnes of carbon dioxide equivalent (tCO ₂ e) GHG Protocol Scope 1 and Scope 2 emissions. Estimate and report material upstream and downstream (GHG Protocol Scope 3) emissions where appropriate.	61, 115	We are assessing Scope 3 value chain emissions in preparation for embarking on a Science Based Targets (SBTi) accreditation. We will commence Scope 3 emission disclosures in FY2023.
	TCFD implementation	Fully implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). If necessary, disclose a timeline of at most three years for full implementation. Disclose whether you have set, or have committed to set, GHG emissions targets that are in line with the goals of the Paris Agreement – to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C – and to achieve net zero emissions before 2050.	49-63	We are enhancing our disclosures based on the TCFD recommendations in phases and intend to align our GHG emissions target with the Paris Agreement goals of 1.5°C and SBTi accreditation in the medium term.
	NATURE LOSS			
	Land use and ecological sensitivity	Report the number and area (in hectares) of sites owned, leased or managed in or adjacent to protected areas and/or key biodiversity areas (KBA).	74-77	Not applicable
	FRESHWATER AVAILABILITY			
	Water consumption and withdrawal in water-stressed areas	Report for operations where material: megalitres of water withdrawn, megalitres of water consumed and the percentage of each in regions with high or extremely high baseline water stress, according to WRI Aqueduct water risk atlas tool. Estimate and report the same information for the full value chain (upstream and downstream) where appropriate.	71, 114 - 115	Based on the classification provided by Aqueduct Water Risk Atlas, the vast majority of the water is withdrawn in areas classified as low risk (<10%).
	AIR POLLUTION			
	Air pollution	Report wherever material along the value chain: Nitrogen oxides (NOx), sulphur oxides (SOx), particulate matter and other significant air emissions. Wherever possible, estimate the proportion of specified emissions that occur in or adjacent to urban/densely populated areas.	62, 115	Not applicable
People	DIGNITY AND EQUALITY			
	Diversity and inclusion (%)	Percentage of employees per employee category, by age group, gender and other indicators of diversity (e.g. ethnicity).	87-88, 118-120	Not applicable
	Pay equality (%)	Ratio of the basic salary and remuneration for each employee category by significant locations of operation for priority areas of equality: women to men, minor to major ethnic groups, and other relevant equality areas.	87	TNB upholds the principle of performance-related compensation regardless of gender. Remuneration data is regarded confidential and not reported.
	Wage level (%)	Ratios of standard entry level wage by gender compared to local minimum wage. Ratio of the annual total compensation of the CEO to the median of the annual total compensation of all its employees, except the CEO.	Not applicable	TNB pursues the principle of performance-related compensation regardless of gender. Remuneration data is regarded confidential and is not reported.
	Risk for incidents of child, forced or compulsory labour	An explanation of the operations and suppliers considered to have significant risk for incidents of child labour, forced or compulsory labour. Such risks could emerge in relation to: a) type of operation (such as manufacturing plant) and type of supplier; and b) countries or geographic areas with operations and suppliers considered at risk.	Not applicable	TNB has zero incidence of child labour.

WEF Content Index

Pillar	Core Metrics	Key Performance Indicators	Page reference	Response and/or reference and reasons for omissions, if applicable
People	HEALTH AND WELL-BEING			
	Health and safety (%)	The number and rate of fatalities as a result of work-related injury; high-consequence work-related injuries (excluding fatalities); recordable work-related injuries; main types of work-related injury; and the number of hours worked. An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided for employees and workers.	94, 124-131	Not applicable
	SKILLS FOR THE FUTURE			
	Training provided (#, \$)	Average hours of training per person that the organization's employees have undertaken during the reporting period, by gender and employee category (total number of hours of training provided to employees divided by the number of employees). Average training and development expenditure per full time employee (total cost of training provided to employees divided by the number of employees).	123-124	Not applicable
Prosperity	EMPLOYMENT AND WEALTH GENERATION			
	Absolute number and rate of employment	1. Total number and rate of new employee hires during the reporting period, by age group, gender, other indicators of diversity and region.	89, 121-122	Not applicable
		2. Total number and rate of employee turnover during the reporting period, by age group, gender, other indicators of diversity and region.	89, 122-123	Not applicable
	Economic contribution	1. Direct economic value generated and distributed (EVG&D), on an accruals basis, covering the basic components for the organization's global operations, ideally split out by: – Revenues – Operating costs – Employee wages and benefits – Payments to providers of capital – Payments to government – Community investment	111-112	Not applicable
		2. Financial assistance received from the government: total monetary value of financial assistance received by the organization from any government during the reporting period.	TNB IAR2022: 231, 316-317	Not applicable
	WEALTH CREATION AND EMPLOYMENT			
	Financial investment contribution	1. Total capital expenditures (CapEx) minus depreciation, supported by narrative to describe the company's investment strategy.	TNB IAR2022: 20, 337	Not applicable
		2. Share buybacks plus dividend payments, supported by narrative to describe the company's strategy for returns of capital to shareholders.	TNB IAR2022: 226, 336	Not applicable
	INNOVATION OF BETTER PRODUCTS AND SERVICES			
	Total R&D expenses (\$)	Total costs related to research and development.	66	Not applicable
	COMMUNITY AND SOCIAL VITALITY			
	Total tax paid	The total global tax borne by the company, including corporate income taxes, property taxes, non-creditable VAT and other sales taxes, employer-paid payroll taxes, and other taxes that constitute costs to the company, by category of taxes.	334-335	Not applicable

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