# SUSTAINABILITY STATEMENT

This Sustainability Statement shares our sustainability strategies, initiatives and performance for the financial year ending 31 December 2024. 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 (ESG).

The scope and basis of the Statement for 2024 encompass the activities of the TNB Company and its subsidiaries (TNB Group) in accordance with the TNB corporate structure. This Statement provides information on active subsidiaries with effective holding. This Statement excludes joint ventures and vendor activities unless explicitly stated otherwise.

We endeavour to be transparent and balanced in disclosing matters deemed material. Relevant targets and three (3) years of historical key performance indicators have been established, tracked and disclosed to the best of our ability.

This Statement adheres to the Bursa Malaysia Main Market Listing Requirements (MMLR) and the following:

In accordance with:

Bursa Malaysia Sustainability Reporting Guide (3rd Edition)

With reference to:

Global Reporting Initiative (GRI) Standards and GRI Electric utilities Sector Disclosures

In alignment to:

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

In contribution to:

United Nations Sustainable Development Goals (UN SDGs)

We acknowledge the global development of sustainability reporting standards, such as the Malaysia National Sustainability Reporting Framework (NSRF) that adopts standards by the International Sustainability Standards Board (ISSB).

## INTERNAL ASSURANCE

This Statement has been reviewed internally by the Group Internal Audit (see page 153).

# Our Sustainability Journey

As a leading provider of energy solutions, we are committed to steering towards sustainability locally and internationally. With our eyes set on the TNB Sustainability Pathway, we are driving towards becoming a Net Zero company by 2050, propelling ourselves towards ESG excellence.

In light of the pressing need for environmental action, it has become more evident than ever that adopting sustainable practices is crucial. TNB acknowledges this imperative and is taking proactive measures to tackle these challenges head-on, guided by the TNB Sustainability Framework and Policy, which were approved by TNB Board of Directors (BOD) in 2024.

The TNB Sustainability Policy is driven by a commitment to ethical, responsible, and sustainable practices. This policy sets a course for environmental, social, and governance excellence, aligning with legal requirements and international standards. Our aim is to drive positive change in the communities we serve, ensuring that our actions are sustainable and have a positive impact through fourteen (14) key focus areas in the Environmental, Social and Governance pillars in the TNB Sustainability Framework.

## TNB SUSTAINABILITY FRAMEWORK

**To Be a Leading Provider of Sustainable Energy Solutions in Malaysia and Internationally**

**TNB Sustainability Policy**
**(Strategic Policy)**

**TNB Sustainability Disclosures**
are aligned with

Standards

- Bursa Malaysia Sustainability Reporting Guide (3rd Edition)
- Global Reporting Initiative (GRI) Standards and GRI Electric Utilities Sector Disclosures
- Task Force on Climate-related Financial Disclosures (TCFD) Framework
- United Nations Sustainable Development Goals (UN SDGs)

Guides

(i) TNB Materiality Matrix
(ii) Financial Times Stock Exchange-4Good Bursa Malaysia Index (FTSE4GBM)
(iii) Morgan Stanley Capital International (MSCI) ESG Rating

**TNB Sustainability Pillars**
**(Operational Policy Statements, Procedures & Guidelines on ESG focus area)**

**Environmental (E)**

1. Carbon Emissions
2. Water Stress
3. Biodiversity & Land Use
4. Opportunities in Renewable Energy
5. Toxic Emissions & Waste

**Social (S)**

6. Human Capital Development
7. Health & Safety
8. Labour Rights
9. Privacy & Data Security
10. Supply Chain Management
11. Community Relations

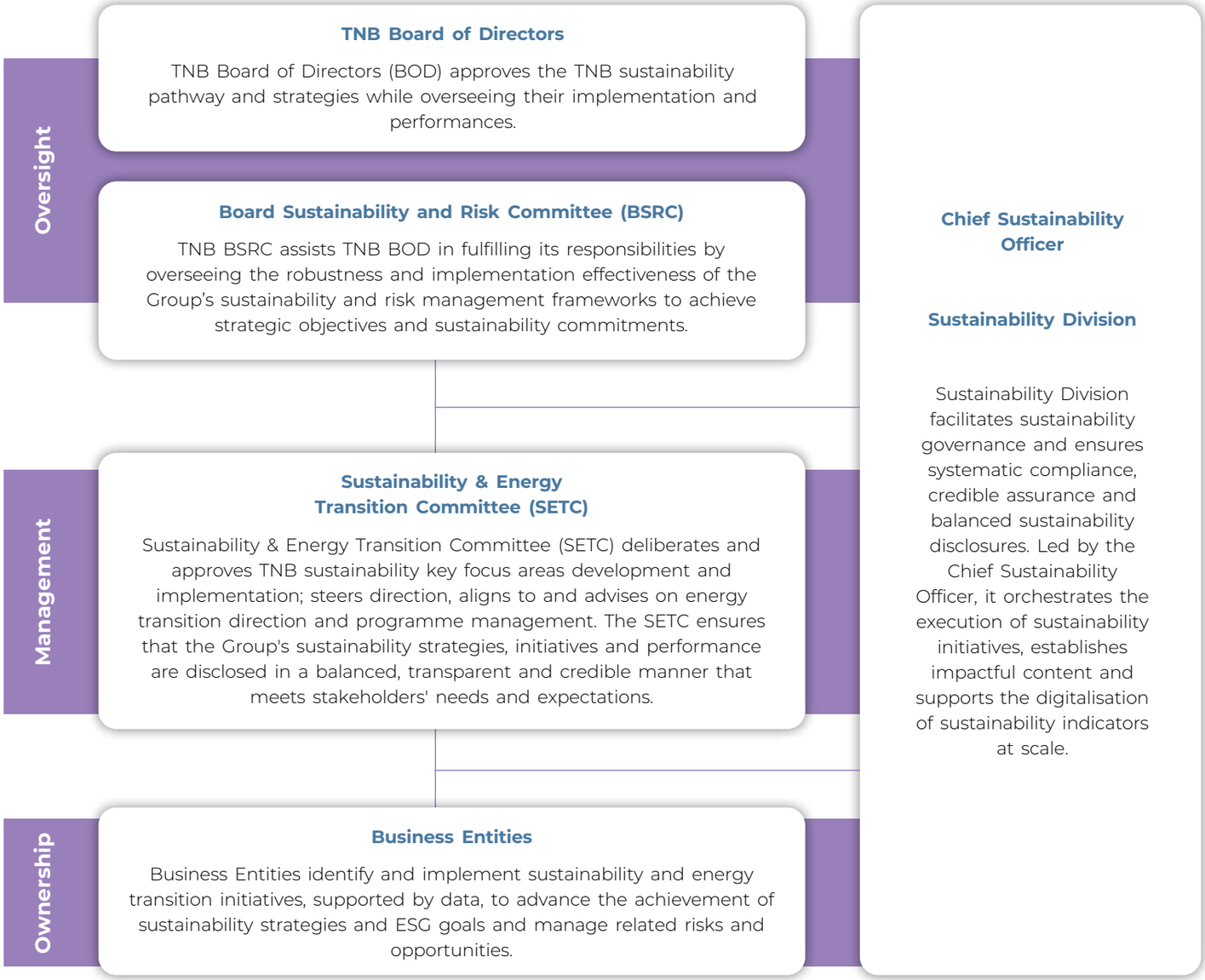
**Governance (G)**

12. Corporate Governance
13. Corporate Behaviour
14. Risk Management

# Strengthening Our Sustainability Governance

A strong sustainability governance and leadership structure is vital to spearhead our sustainability agenda and to provide clear and definitive guidance to achieve our Net Zero aspirations. Our sustainability governance forms a part of the TNB Governance Framework that is aligned with the principles of the Malaysian Code on Corporate Governance (MCCG). The TNB Sustainability Governance Structure is in place to facilitate oversight, strategic management, and implementation of sustainability strategies and initiatives at all levels.

## TNB Sustainability Governance Structure




*For more information on BSRC, refer to the BSRC Report in page 203.*

In 2024, the Terms of Reference for SETC have been enhanced with approving authority to drive the implementation of sustainability initiatives across the Group. Notably in the year, the SETC has approved the TNB Carbon Management Strategy and Carbon Emissions Intensity Reduction Target, TNB Labour Rights Policy Statement, TNB Biodiversity Framework and TNB Sustainability Procurement Code of Conduct for the Group-wide implementation.

*Note:*
*In FY2024, SETC was revised from a council to committee which has the approving authority, aiming to empower decision-making in delivering TNB's business objectives and sustainability agenda.*

# Committed to Reaching Overall ESG-Related Targets with Enhanced ESG Key Performance Indicators (KPIs)

In 2024, sustainability-related Key Performance Indicators (KPIs) were further enhanced and embedded within the Board and senior management's performance evaluation scorecard to drive Group-wide accountability in steering our sustainability performance. Sustainability performance objectives relating to the ESG pillars are tied to the President/CEO and top management KPIs, as shown below. TNB ESG rating score includes performance and management for environmental, social, and governance including carbon emissions, water, capability development, and anti-corruption.

| | KPI | Senior Managements | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CEO | MD Genco | CGO | CDNO | CReO | CNEO | CFO | CSVO | CRSMO | CPeO | CPO | CIO | CGBSO | CSO | CoSec | CRO | CIA | CIDO |
| | TNB ESG Rating Score | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Environment | Renewable Energy Growth | ✓ | | | | | ✓ | | | | | | | | | | | | |
| Environment | Carbon Emissions Rating/ Score | | ✓ | | | | | | | | | | | | | | | | |
| Environment | National Energy Transition Projects | | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | |
| Environment | Battery Storage (Grid-connected) | | | ✓ | | | | | | | | | | | | | | | |
| Environment | Data Centre Power Usage Effectiveness | | | | | | | | | | | | ✓ | | | | | | |
| Social | Lost-Time Injury Frequency Rate (LTIFR) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Social | Energy Literacy | | | | | | | | | ✓ | | | | | | | | | |
| Social | Human Capital Development Rating/Score | | | | | | | | | | ✓ | | | | | | | | |
| Governance | Integrity Health Index | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Governance | Corporate Governance Rating/Score | | | | | | | | | | | | | | | ✓ | | ✓ | |
| Governance | Corporate Bahaviour Rating/Score | | | | | | | | | | | ✓ | | | | | | | |

*The TNB monopole tower, rising beside the iconic Penang Bridge, reflects engineering excellence and a commitment to sustainability.*

# Focus on what matters to our Stakeholders with our Sustainability Agenda

TNB has an extensive network of stakeholders that contribute to our business, as well as those who are impacted by our operations. We highly value all our stakeholders and seek to create better relationships with them through continuous engagement, dialogues and transparent communication in our dealings. The ultimate objective is to create value for each stakeholder group, building trust and credibility whilst ensuring our actions are aligned with their needs and expectations.

**Engagement Frequency**

DY Daily MO Monthly B Biannually AN As needed QT Quarterly O Ongoing AL Annually ATT All the time

## CUSTOMERS

Residential and non-residential customer segments encompassing the commercial and industrial sectors, such as Government, Large Businesses, and Micro, Small, and Medium Enterprises (MSMEs).

| Engagement Platform | Engagement Frequency |
|---|---|
| One-Stop Centres (Kedai Tenaga) | ATT |
| Call centre | ATT |
| myTNB mobile application and online portal | ATT |
| Customer surveys | ATT |
| Social platform activities | ATT |
| Roadshows | AN |
| Campaigns | AN |
| One-to-one engagements | AN |
| E-mail | AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • New technologies such as the implementation of smart meters and their offerings, smart solutions, solar solutions and platform solutions<br>• Enhanced customer experience and service delivery<br>• Accessible, affordable and reliable supply of electricity<br>• Regulated and non-regulated innovative solutions<br>• Energy solutions and green products<br>• Take-up rates on green/sustainable solutions<br>• Matters related to Personal Data Protection Act (PDPA) compliance | • Customer Experience & Satisfaction, pages 120-124<br>• Reliable Energy and Fair Tariffs, pages 95-98<br>• Energy Transition & Innovation, pages 75-83<br>• Cybersecurity Management, pages 134-136 |

## EMPLOYEES

A total of 34,938 full-time employees (contractors excluded) in TNB Group.

| Engagement Platform | Engagement Frequency |
|---|---|
| Townhall sessions | AL |
| Turun Padang, Sesi Sampai & Santai, Sesi FB Live, brown-bag sessions and other outreach programmes | O |
| Online portal (intranet), newsletters, emails and digital boards | ATT |
| People Experience Survey | AL |
| One-to-one engagements | AN |
| Social platform activities | AN |
| Corporate Social Responsibility (CSR) | AN |
| Webinars | AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Performance, rewards and benefits<br>• Health and safety<br>• Employee well-being and workplace culture<br>• Talent and skills development<br>• Employee satisfaction<br>• TNB strategies and initiatives | • Labour Rights & Employment Culture, pages 137-144<br>• Safety, Health and Well-Being, pages 99-104<br>• Community Development and Social Impact, pages 125-129 |

# Focus on What Matters to our Stakeholders with our Sustainability Agenda

**Engagement Frequency**

DY Daily MO Monthly B Biannually AN As needed QT Quarterly O Ongoing AL Annually ATT All the time

## GOVERNMENT AND REGULATORS

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

| Engagement Platform | Engagement Frequency |
|---|---|
| Meetings and briefings | O |
| Site visits | AN |
| Round-table sessions | AN |
| One-to-one engagements | O |
| Outreach programmes | O |
| Summits/conferences | AL |
| Feedback sessions | AL AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Regulatory and operational compliance<br>• Changes in the regulatory framework and electricity supply industry<br>• Disaster management and cybersecurity management<br>• Nation-building initiatives that stimulate economic growth through green energy and job opportunities, and benefit the rakyat's well-being<br>• Energy trilemma (Security, Affordability, Sustainability)<br>• ESG and Energy Transition initiatives<br>• Development programmes for local Bumiputera vendors<br>• Rural development initiatives | • Responsible Business and Financial Performance, pages 69-74<br>• Reliable Energy and Fair Tariffs, pages 95-98<br>• Cybersecurity Management, pages 134-136<br>• Climate Change and Emission, pages 84-94<br>• Energy Transition and Innovation, pages 75-83<br>• Community Development and Social Impact, pages 125-129 |

## INVESTORS

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

| Engagement Platform | Engagement Frequency |
|---|---|
| Quarterly and Full Year Financial Results disclosures | QT AL |
| One-to-one engagement/group meetings with the investment community | O |
| Investor conferences and Non-Deal Roadshows | AL |
| Annual General Meeting | AL |
| TNB corporate website's Investor Relations section | AN |
| Bursa filings and Press Releases | AN |
| Integrated Annual Report and Sustainability Reports | AL |
| Email updates to the investment community | AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Business strategy and performance such as overall electricity demand growth and grid readiness<br>• National Energy Transition Roadmap (NETR) Flagship catalyst projects, Market Aggregator (ENEGEM) and Third-Party Access (TPA) and tariff reforms<br>• Regulatory framework (Incentive Based Regulation, Regulatory Period 4 and Imbalance Cost Pass-Through mechanism)<br>• Energy Transition (ET) Plan initiatives and progress such as decarbonisation strategy, Renewable Energy growth opportunities and capital expenditure plan for ET<br>• Financial management including key areas such as financial sustainability, returns, fuel margins, working capital management initiatives, gearing, financial position (analysis), and dividend | • All – with reference to TNB Material Matters, pages 69-144 |

**Engagement Frequency**

DY Daily MO Monthly B Biannually AN As needed QT Quarterly O Ongoing AL Annually ATT All the time

## TRADE UNIONS AND ASSOCIATIONS

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

| Engagement Platform | Engagement Frequency |
|---|---|
| Joint Consultative Council (JCC) at corporate, business entity and local levels | O |
| Negotiations for Collective Agreements (CA) | AN |
| Syndication and engagements | AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Mitigation and resolution of issues<br>• Employee health and well-being<br>• Company strategies and initiatives<br>• Impact of new policies or policy revision to employees | • Safety, Health and Well-Being, pages 99-104<br>• Labour Rights & Employment Culture, pages 137-144 |

## COMMUNITIES

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

| Engagement Platform | Engagement Frequency |
|---|---|
| Outreach programmes | MO |
| CSR programmes | MO |
| Townhall sessions | QT |
| Dialogue sessions | AN |
| Sporting Events | DY |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Public facilities and basic infrastructure<br>• Compliance with legal and regulatory requirements<br>• Accessible and reliable supply of electricity<br>• Energy literacy<br>• Development of National Sport - Hockey | • Community Development and Social Impact, pages 125-129<br>• Reliable Energy and Fair Tariffs, pages 95-98 |

# Focus on What Matters to our Stakeholders with our Sustainability Agenda

**Engagement Frequency**

DY Daily MO Monthly B Biannually AN As needed QT Quarterly O Ongoing AL Annually ATT All the time

## NON-GOVERNMENTAL ORGANISATIONS (NGO) & 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 | AL AN |
| Outreach programmes | AN |
| Seminars | AN |
| Collaboration sessions | AN |
| Social media | AN |
| Meetings and knowledge-sharing sessions | B |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Affordable tariff<br>• Innovation in technology and RE<br>• Quality of service<br>• Supply reliability<br>• Current and planned ESG efforts<br>• Energy literacy<br>• Environment and occupational safety and health<br>• Compliance with legal and regulatory requirements | • Reliable Energy and Fair Tariffs, pages 95-98<br>• Energy Transition and Innovation, pages 75-83<br>• Biodiversity & Environmental Management, pages 105-119<br>• Safety, Health and Well-Being, pages 99-104 |

## VENDORS

A total of 3,848 active vendors.

| Engagement Platform | Engagement Frequency |
|---|---|
| Engagement sessions | AN |
| Road Tour Dialogues | AN |
| Vendor training and awareness | AN |
| Joint Operations Centre | AN |

| Areas of Interest or Concern | Our Response |
|---|---|
| • Industry support for business growth through technology and solutions<br>• New business opportunities and future developments<br>• Training and capability development<br>• Health and safety<br>• Procurement processes<br>• Fraud and bribery awareness | • Sustainable and Responsible Supply Chain, pages 130-133<br>• Responsible Business and Financial Performance, pages 69-74<br>• Safety, Health and Well-Being, pages 99-104 |

# TNB Materiality Assessment

Our sustainability agenda is centred around material ESG matters as outlined in our materiality matrix. To ensure our approach remains relevant and responsive to evolving trends and stakeholder expectations, we conduct a comprehensive materiality assessment every two years. In 2024, we conducted a comprehensive materiality assessment, adhering to the guidelines of the Bursa Sustainability Reporting Guide (3rd Edition) which comprises of three (3) phases.

## **PHASE 1:** IDENTIFICATION OF STAKEHOLDERS & MATERIAL SUSTAINABILITY MATTERS

Our material sustainability matters are aligned with our strategic goals, which are the Reimagining TNB (RT) 2.0 and achieving Net Zero by 2050. We also incorporate insights from our eight key stakeholder groups to ensure that our sustainability efforts are aligned with their priorities and expectations. We also benchmark identified material sustainability matters against leading global power utilities and Government-Linked Companies.

To prioritise these material sustainability matters, weightages are accorded to each stakeholder group, reflecting their priorities and importance to TNB.

## **PHASE 2:** PRIORITISATION OF MATERIAL SUSTAINABILITY MATTERS

The relative importance of material matters is assessed based on two considerations:

(i) significance/magnitude of the impact of the material matter to the Company; and
(ii) influence on the assessment and decisions of stakeholders.

To prioritise the identified material sustainability matters, we engaged in focus group discussions with employees who regularly interact with stakeholders and analysed data and feedback from engagement sessions with stakeholder groups that were conducted throughout the year.

As a result, a materiality matrix that prioritises the relative importance of each material matter to the Company and stakeholders is derived.

## **PHASE 3:** REVIEW AND VALIDATION OF OUTCOMES

The materiality matrix is deliberated, reviewed, validated and approved by the following levels of authority:

| Committee | Action |
|---|---|
| Sustainability Division Management | Deliberate |
| Sustainability & Energy Transition Committee (SETC) | Review |
| Board Sustainability & Risk Committee (BSRC) | Validate |
| Board of Directors | Approve |

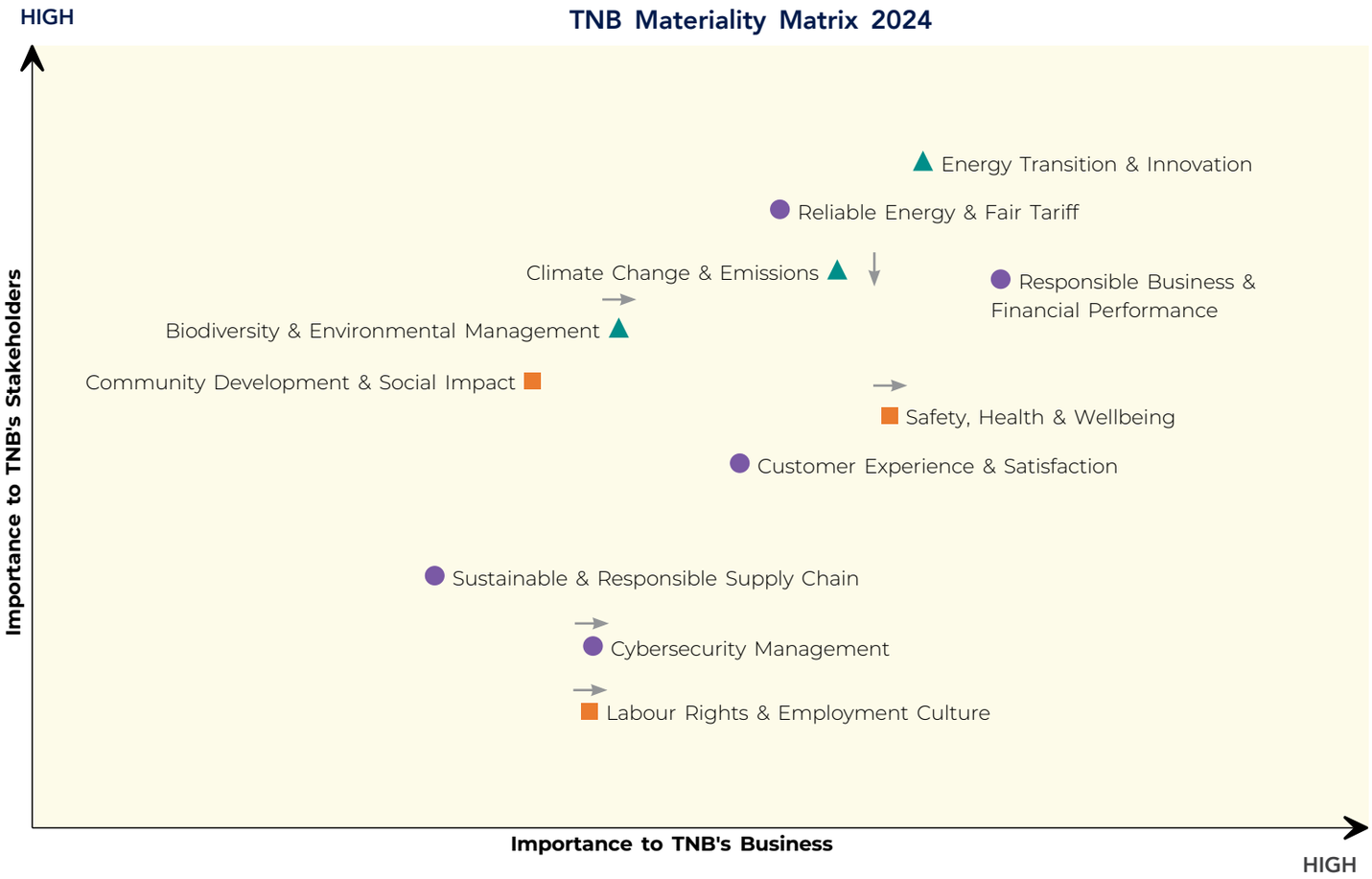
*Harnessing the winds of change: Advancing towards a sustainable future through international renewable energy ventures.*

# TNB MATERIALITY ASSESSMENT

## MATERIALITY MATRIX

Our Materiality Matrix 2024 renews our focus on matters that are material to the Group, which sets the basis of our Sustainability Statement, including disclosure of relevant indicators measuring our sustainability performance.

Eleven (11) material matters are depicted in the matrix below with shifts in priority for four (4) matters and refinement of two (2) matters compared to the previous year.




- "Responsible Business & Financial Performance", "Energy Transition & Innovation" and "Reliable Energy & Fair Tariff" remain key priorities to TNB and stakeholders.
- "Climate Change and Emissions" has lowered in priority from stakeholders' perspective, reflecting enhanced stakeholders' confidence in our journey towards achieving our carbon emissions goals in view of the government's commitment to the NETR projects and progress of initiatives in the TNB Energy Transition Plan.
- "Safety, Health & Wellbeing" has shifted to a higher priority for TNB with our commitment towards enhanced data analytics and focused strategies in ensuring the safety and wellbeing of our employees, contractors and the public.
- The material matter related to "Environmental Management" has been refined to "Biodiversity & Environmental Management" and has increased in priority to TNB, reflecting our elevated attention on environmental management, particularly in biodiversity from a project-specific focus to company-wide principles and practices.
- "Cybersecurity Management" has shifted to a higher priority for TNB, reflecting our commitment to continually safeguard and strengthen the resiliency of national critical infrastructure.
- The material matter related to our employees has been refined to "Labour Rights and Employment Culture" and has increased in priority reflecting the importance we place in safeguarding our labour force and improving employee experience.
- The material matter related to community development has been refined to "Community Development and Social Impact" reflecting the importance we place in ensuring our community-focused initiatives benefit or uplift societies impacted by our operations.

# Sustainability Disclosures on Material Matters




# Responsible Business and Financial Performance

We are committed to upholding responsible business practices while maintaining solid financial performance. Our strategy aims to foster long-term resilience by leveraging our core activities and exploring new growth opportunities sustainably, while delivering values to our shareholders. Our corporate governance structure complies with the Malaysian Code on Corporate Governance (MCCG) and aligns with international best practices and standards in the areas of good governance, compliance and transparency to effectively facilitate our business operations and growth.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM1: Responsible Business and Financial Performance

With a strong governance structure, the TNB BOD and Management play active roles in making strategic decisions to support TNB's position as a leader in the energy sector, enhancing value for stakeholders and providing stable financial returns to our shareholders. We remain committed to our dividend policy which aims to provide stable and sustainable dividends, while maintaining an effective capital structure that supports our growth and expansion strategies. As a result of a solid corporate governance system that defines roles and responsibilities, the BSRC and Management oversee the main climate-related decisions aimed at creating value for shareholders over the long term, in cognisant of the environmental and social impacts.

## MANAGEMENT APPROACH

Our governance structure reflects our commitment for strong financial performance while ensuring excellence in corporate governance. Key elements of our governance structure include clear roles and responsibilities of TNB BOD and sub-Boards. TNB BOD places high importance on responsible business with integrity, by establishing the Board Integrity Committee (BIC) in 2015.

*See page 185 in the IAR for the TNB BIC roles and responsibilities. See page 183 in the IAR for the TNB Corporate Governance Statement and the Statement of Risk Management and Internal Control (SORMIC) and page 219 for our financial performance.*

### TNB CODE OF BUSINESS ETHICS (COBE)

We have established a comprehensive TNB Code of Business Ethics (COBE), approved by TNB BOD, which applies to all directors and employees at all levels. It outlines the ethical principles and expected behaviours in engagements with our stakeholders including shareholders, customers, vendors, and the communities in which we operate.

The COBE includes guidelines on conflicts of interest, giving and accepting business courtesies and the use of company assets and resources with care. It governs our decision-making and conduct, reinforcing our commitment to integrity. The TNB COBE is reviewed every two years.

The BIC oversees the effective implementation of TNB COBE to ensure compliance with relevant laws and regulations, sound employment practices, confidentiality and privacy.

### ANTI-MONEY LAUNDERING AND ANTI-TERRORISM FINANCING

We strictly prohibit money laundering or terrorism financing offences in our business operations. Any suspicious, irrelevant or unusual transactions are immediately reported to the Management and TNB BOD, for necessary actions.

### TNB CORPORATE INTEGRITY MANAGEMENT SYSTEM (TCIMS)

We are committed to adhering with guidelines required by the Malaysian Anti-Corruption Commission (MACC). The TCIMS is designed to foster an integrity-based culture across the TNB Group by mitigating the risk of misconduct and corruption in compliance with international anti-bribery standards. The TCIMS allows both TNB personnel and external parties to report misconduct or illegal activities via the TNB Whistle Blowing Information System (WBIS), whereby all concerns are independently investigated with actions taken accordingly.

The TCIMS consists of the following four (4) policies:

### Anti-Corruption through TNB Anti-Bribery Policy

TNB upholds a zero tolerance approach to bribery and corruption where we explicitly state that bribery and corruption are strictly prohibited in all forms, including offering, giving, soliciting or accepting bribes. This policy applies equally to all our business dealings with commercial business associates (vendors, consultants, joint venture partners, consortium partners, advisors, agents), government entities and countries worldwide without exception.

### Conflict of Interest (COI) Policy

This policy requires TNB BOD and all employees to declare any potential, perceived, or actual conflicts of interest promptly, using established mechanisms. All employees, including directors and top management sign an Integrity Pledge, declare COI annually, and disclose their interests particularly in competing businesses to ensure transparent and ethical decision-making.

In 2024, we enhanced this policy by emphasising the roles and responsibilities of TNB BOD and key senior management, including subsidiaries, in alignment with the MMLR. In addition, the guideline on COI Management for BOD and key senior management was established to facilitate conflict of interest management process. The enhanced COI Policy and guideline were reviewed by an independent third party, endorsed and approved by the BIC and TNB BOD.

### Gifts, Hospitality, and Related Benefits Policy

This policy outlines strict guidelines on the acceptance of gifts and hospitality, aiming to ensure transparency in all interactions with external parties. It includes provisions for political donations which are strictly overseen by the BIC. In 2024, no political contributions were made.

### Whistleblowing Policy

This policy supports an open working environment where unethical or unlawful conduct can be reported confidentially and without fear of reprisal. TNB provides multiple channels for reporting including an online system and a toll-free number, ensuring all concerns are investigated independently and feedback is provided to the complainants. In 2024, the whistleblowing management process was reviewed by an independent third party with positive observations.

## CORRUPTION RISK ASSESSMENT & ETHICAL AUDITS

Corruption risk exposures are continually assessed across all business operations to identify exposures in areas such as bribery, fraud, abuse of power, theft, false claims, cheating and disciplinary issues. A total of 1,458 causes related to business ethics identified in the business processes are registered and monitored in TNB Risk Information System (TRIS) and risk controls are implemented by respective business entities. The Organisational Anti-Corruption Plan (OACP) outlines anti-corruption initiatives to prevent corruption and integrity violations, as well as to elevate transparency and accountability.

Annual internal and external audits on our Anti-Bribery Management System (ABMS) are carried out to all identified key business operations which includes Grid, Distribution Network, Retail, New Energy, Regulatory & Stakeholder Management, Single Buyer, Group Corporate Communication, Company Secretary, TNB Global Business Solutions, Group Finance, Group People, Procurement & Supply Chain, Strategy & Ventures, ICT, Sustainability, Group Internal Audit, Legal Services, and Grid System Operator.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM1: Responsible Business and Financial Performance

ABMS audits are to ensure compliance with internal policies and assess effectiveness of risk mitigations on corruption risk exposures including fraud and bribery. These audits are conducted by independent internal and external experts for unbiased evaluations and recommendations. The outcome from the audits are reported to Integrity Committee for management review and to BIC as the governing body. Every year, workshops on fraud and bribery risk are conducted for targeted business operations.

| ABMS Audit and Fraud Risk Assessments | FY2022 | FY2023 | FY2024 |
|---|---|---|---|
| ABMS Certification/Recertification Audits by SIRIM | Nil | 2 | 2 |
| ABMS Internal Audits (Division/Department) | 20 | 21 | 18 |
| ABMS Internal Audits (Subsidiary) | Nil | 5 | 6 |
| Fraud and Bribery Risk Assessments (Division/Department) | 21 | 21 | 23 |
| Fraud and Bribery Risk Assessments (Subsidiary) | 16 | 16 | 95 |

### STRENGTHENING TNB INTEGRITY CULTURE

**Ethical Behaviour Training & Communication**

A comprehensive training plan on ethical behaviour is outlined in our annual Training & Communication Plan (TCP). The TCP is an important component in our strategy to foster a strong integrity culture. This comprehensive plan includes ethical standards training for BOD, employees, contractors, and vendors. The training elements in TCP, among others, include integrity seminars tailored for BOD and top management, Integrity e-learning for all employees, contractors and vendors, and in-person awareness sessions with employees. The TCP also covers communication strategies such as publications of integrity bulletins and e-posters communicated through internal channels. The progress and effectiveness of the TCP is periodically reported to the BIC.

We continuously invest in the competency of our employees in integrity management. In 2024, 41 employees have successfully completed the Certified Integrity Officers (CeIO) programme by the Malaysian Anti-Corruption Academy (MACA).

**Human Governance through the TNB Disciplinary Management Code**

In 2024, the BIC approved improvements to the TNB Disciplinary Management Code with emphasise on human governance practices. With enhanced focus on human governance, our approach to disciplinary actions is rooted in corrective and reinforcement measures instead of punitive responses.

TNB remains steadfast in our commitment to uphold ethical standards and does not tolerate any form of unethical behaviour. In 2024, four (4) corruption cases involving four (4) staff were confirmed and were addressed appropriately according to the Code, which includes disciplinary action with dismissal, reinforcing our commitment to good governance and transparency.

**Integrity Pledge and Conflict of Interest (COI) Declarations**

In 2024, a total of 34,455 employees completed the Integrity Pledge online and COI declarations. Employees declare COI annually and whenever there is any conflict of interest.

**Integrity Pact for Vendors**

Our vendors are required to sign an Integrity Pact, which is a legal agreement for parties to act in accordance with an agreed set of practices to uphold ethical practices during their commercial interactions. Vendors are required to declare compliance with good governance practices, including those related to corruption offences, conflict of interest and confidentiality of information, and to report any offences and actions taken.

**Integrity Health Index**

The Integrity Heath Index (IHI) is measured annually and is a KPI of our top management. It holistically assesses our integrity health status and performance in the dimensions of integrity infrastructure, corporate culture and ethical conduct, integrity learning and development and communication mechanisms. Gaps identified from the assessment are addressed through specific strategies for improvement. In 2024, the overall TNB IHI score was recorded at 91.89%, an improvement from the previous year.

## STRUCTURED POLICIES, PROCEDURES AND GUIDELINES ON TAX MANAGEMENT

TNB has established structured policies, procedures, and guidelines to oversee tax compliance, planning, and risk management. The Chief Financial Officer oversees these activities, and the Board Audit Committee reviews key tax initiatives, including the Tax Corporate Governance Framework, Base Erosion Profit Shifting, and e-invoice implementation. For significant transactions or decisions, BOD approval is sought. TNB's Group Financial Policies and Procedures (GFPP) provide detailed guidelines to streamline tax compliance across the Group, ensuring uniformity and accountability.

TNB values its relationship with tax authorities and actively engages in constructive dialogue to support the development of effective tax systems and legislation. We are committed to transparency and cooperation with tax authorities, including the Inland Revenue Board of Malaysia and the Royal Malaysian Customs Department, during tax audits and information requests.

## TNB TRANSITION FINANCE FRAMEWORK

In September 2024, we established our Transition Finance Framework, becoming the first electricity utility in ASEAN to do so. This framework serves as a set of guidelines to strengthen the connection between TNB's financing and its energy transition strategy, outlining criteria for both existing and new projects to support the energy transition in line with relevant market best practices, including the ASEAN Taxonomy for Sustainable Finance Version 2 and the ASEAN Transition Finance Guidance. This framework has received a Second-Party Opinion from Morningstar Sustainalytics.


## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM1: Responsible Business and Financial Performance

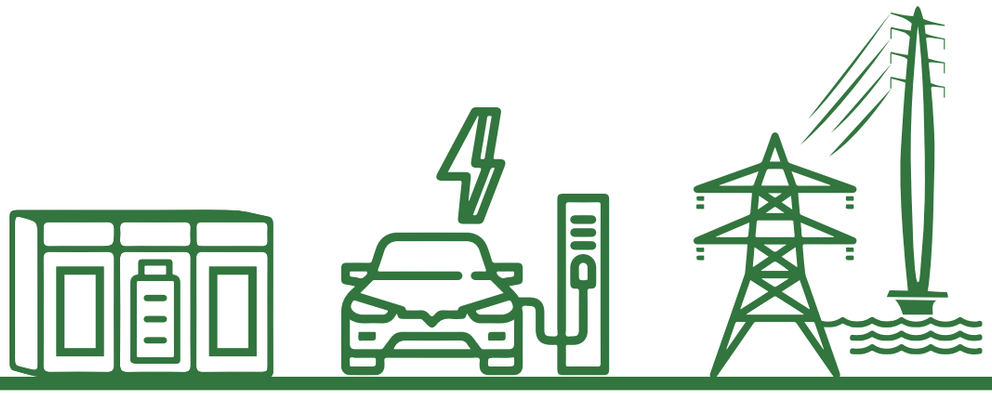
Prior to the establishment of the TNB Transition Finance Framework, TNB had started to embed sustainability financing requirements for project funding. In June 2022, a RM10.0 billion Islamic Medium-Term Note Sukuk Wakalah was raised for TNB Power Generation Sdn. Bhd. (TPGSB). The Sukuk Wakalah Programme was validated by a reputable rating agency to be aligned with our internal Sustainability Sukuk Framework and received multiple awards from various agencies of which portrays clear sign of the Company's credibility as issuer. The Sustainability Sukuk proceeds is being allocated in stages to Project Nenggiri and upcoming Sungai Perak Life Extension Project and other eligible Renewable Energy projects.

TNB is progressing to set up a new Sukuk Programme up to RM10 billion in the year 2025. This will be the first financing initiative under the Transition Finance Framework, enabling TNB to issue Green, Social, and Sustainability (GSS) Sukuk, including Transition-themed Sukuk. Utilisation of the proceeds will focus on funding TNB's CAPEX requirement, including ET projects.

## OUR PERFORMANCE

**PERFORMANCE : Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **Anti-Corruption** | | | | | | | |
| GRI 205-1 | C1(a) | **Percentage of employees that have received training on ethics and anti-corruption by employee category** | | | | | |
| | | Senior Management | % | 1.57 | 1.01 | 1.26 | |
| | | Executive | % | 7.74 | 17.39 | 27.16 | |
| | | Non-Executive | % | 31.72 | 56.09 | 71.58 | |
| | | **Total** | **%** | **41.03** | **74.48** | **100.00** | 100 |
| GRI 205-2 | C1(b) | **Total percentage of operations assessed for risks related to corruption** | | | | | |
| | | Total percentage of operations assessed | % | – | 97 | 100 | 100 |
| GRI 205-3 | C1(c) | **Confirmed incidents of corruption and actions taken** | | | | | |
| | | Total number of confirmed incidents of corruption | Number | 1 | 5 | 4 | Zero Incident |



MM 2

# Energy Transition and Innovation

Malaysia's energy transition efforts to achieve Net Zero by 2050 will shift the nation's generation mix from fossil fuel-driven energy to 70% installed renewable energy capacity. The announcement of ten (10) National Energy Transition Roadmap (NETR) flagship projects by the government has strengthened the nation's commitment. TNB is entrusted to champion three (3) of these NETR projects, including hybrid hydro floating solar PV, solar parks as well as co-firing of hydrogen and ammonia. We remain committed to support other key energy transition projects, such as residential solar, EV charging stations and carbon capture storage projects.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM2: Energy Transition and Innovation

TNB Energy Transition Plan which cuts across the electricity value chain focuses on three pillars, backed by initiatives to shift from fossil fuels to greener sources, aligning with its broader Reimagining TNB 2.0 (RT 2.0) programme. The three (3) pillars are accelerating generation decarbonisation, developing flexible and cross-border grid, and empowering cross-sector electrification and prosumers. TNB Energy Transition Plan continues to support balancing the energy trilemma and Malaysia's Net Zero target by 2050.

TNB continues to allocate resources into high impact projects to innovate and advance electricity value chain. Innovation and strategic partnership are keys to achieving the highest sustainable impact and business growth through advancement in technology, process, and business model.

## MANAGEMENT APPROACH

Our Energy Transition Plan cuts across the energy value chain, which includes transitioning to clean energy sources, developing the energy transition network, and innovative customer solutions that promote efficient energy usage.

### TNB ENERGY TRANSITION PLAN

#### Accelerate generation decarbonisation

1. Decarbonise coal plants while ensuring security of supply
2. Deploy RE at scale (e.g., hydropower plants, floating solar) – Development of 2.5GW HHFS
3. Invest in clean tech at scale (e.g., hydrogen, ammonia co-firing, CCUS)
4. Expand RE generation focus markets (e.g., APAC region, asset development)

#### Develop flexible and cross-border grid

1. Enhance Smart & Autonomous Grid & Distribution Network (e.g., DER integration, self-healing grid)
2. Launch flexible solutions (e.g., grid-scale storage, community storage)
3. Deliver Renewable Energy Zones - Solar Parks 5 x 100MW
4. Catalyse the building of the ASEAN Power Grid

#### Empower cross-sector electrification and prosumers

1. Electrify mobility through grid upgrades and charging station construction
2. Scale industrial electrification solutions
3. Power rapid Data Centre growth
4. Support power-intensive hydrogen economy
5. Unlock energy management solutions for prosumers through:
   - Solar Rooftop
   - Energy Efficiency

*Refer to MM3 Climate Change and Emissions on deliver clean generation, pages 84-94.*

### DEVELOP ENERGY TRANSITION NETWORK

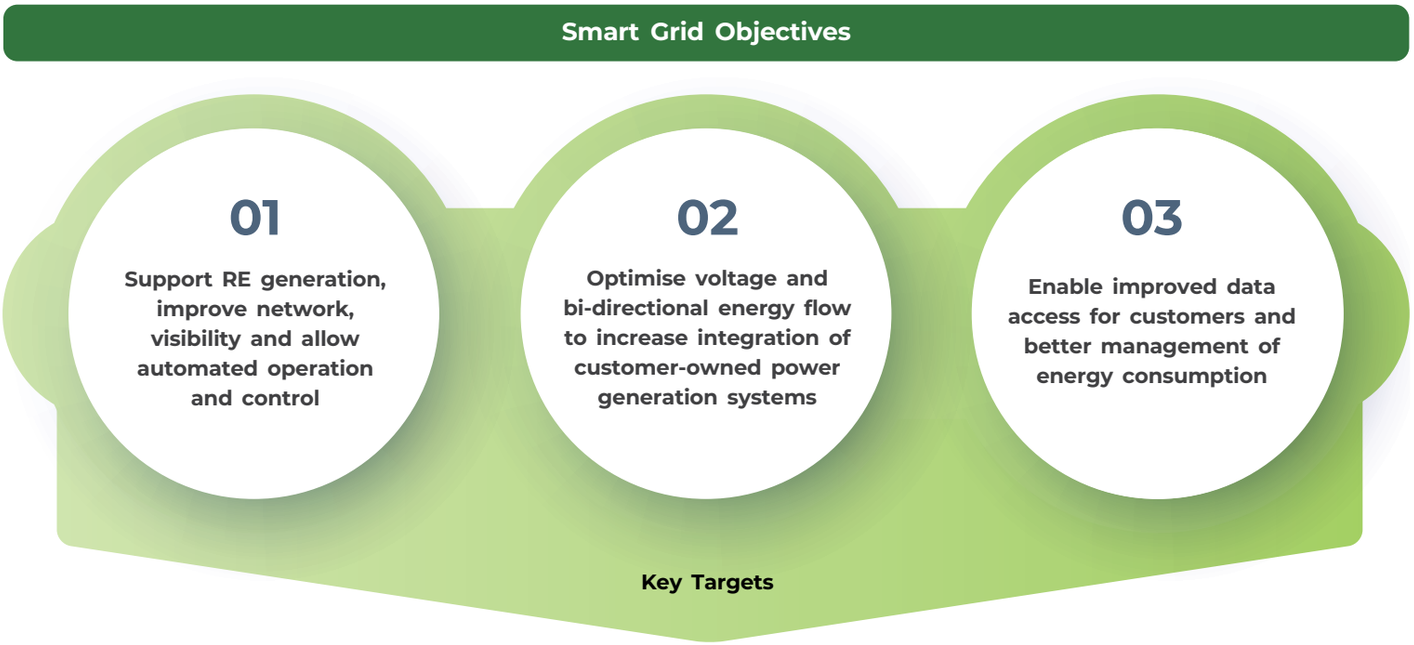
TNB remains committed to building a reliable, resilient, and flexible energy transition network to support Malaysia's national energy goals. During Regulatory Period 3 (RP3), we invested RM20.73 billion to strengthen the grid and to ensure energy supply reliability. In 2024, our Grid and Distribution Network Divisions spent over RM2.49 billion and RM6.15 billion, respectively, toward securing, modernising, and maintaining the national grid.

Moving forward for RP4 (2025-2027), we intend to increase investments in the national grid to facilitate the injection of renewable energy into the grid.

## POWERING THE FUTURE WITH SMART GRID

The shift from conventional fossil fuel-based energy sources to cleaner and more sustainable alternatives have a profound impact on electrical grids. Distributed Energy Resources (DERs), such as rooftop solar panels, are essential in fostering a more decentralised energy landscape. This shift moves away from the traditional one-way flow of energy from power plants to consumers, introducing a bi-directional flow of electricity. As a result, consumers are increasingly becoming prosumers, actively engaging in both the production and consumption of electricity. To effectively manage these dynamic energy flows, TNB is upgrading the national grid through its smart grid initiatives, targeting on being Top 20 Utilities in the Smart Grid Index by 2025.

We have undertaken a series of initiatives to optimise our network assets in compliance with ISO 55000 Asset Management standards. Among the smart grid initiatives are the Advanced Metering Infrastructure (AMI) expansion, implementation of real-time network monitoring and control, and distribution network assets optimisation through advancement in asset performance and analytics.




**Top 20 Utilities**
by end of 2025

LED Relamping target of
**700,000 units**
installed by end of 2026

Volt-Var Optimisation (VVO) targets of
**1,120 MVAR**
by end of 2027

Smart Meter Installation target of
**9 million units**
installed by end of 2029

**Advanced Metering Infrastructure**

Advanced Metering Infrastructure (AMI) plays a critical role in managing Malaysia's complex energy system and empowering consumers by providing visibility into the network. In 2024, we successfully installed 949,226 smart meters, on track to meet our target of 888,000, bringing our total installations to 4,498,715 across Klang Valley, Melaka, Kedah, Johor, Penang, and Pulau Tenaga Hijau. TNB aims to install a total of 9.1 million smart meters in Peninsular Malaysia by 2029 and beyond.

Moving forward in RP4, smart meters would continue to be installed in Selangor, Johor, and Negeri Sembilan. AMI is expected to further enable us to introduce innovative features such as remote energisation and de-energisation, improving service reliability and enabling flexible prepayment schemes in the future.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM2: Energy Transition and Innovation

### Real-time Network Monitoring and Control

#### Distribution Automation (DA)

We are actively advancing Distribution Automation (DA) in our substations, with a strong emphasis on remote monitoring and control capabilities. These efforts are aimed at enhancing the efficiency and reliability of our distribution network, ultimately benefiting our customers and supporting a more resilient energy system. Our operational efficiency has significantly improved, reducing the average restoration time for unplanned outages by 27%, with most outages now restored within just 15 minutes. In 2024, we equipped 4,565 substations, serving approximately 500,000 customers, with DA. Cumulatively, 32,905 substations, serving approximately 3.6 million customers, have been upgraded. Our goal is to expand DA coverage to 64% by 2027, and 84% by 2030.

#### Voltage and reactive power management

Volt-Var Optimisation (VVO) optimises voltage and reactive power management in the distribution network, to achieve network loss savings, enhance voltage stability, and minimise the impact of renewable energy integration. This initiative is expected to reduce losses by 1.61GWh through planned capacitor bank installations. In 2024, we commissioned 140 MVAR. Cumulatively, 890 MVAR have been installed, representing 79.5% progress toward our goal of 1,120 MVAR by 2027.

#### Online Feeder Pillar (OFP)

The Online Feeder Pillars (OFP), also known as Smart Feeder Pillars enable near real-time, remote monitoring of energy flow within distribution networks. Through continuous data transmission, OFP enhances network visibility, allowing accurate and efficient energy distribution and management.

#### Power Quality Management System (PQMS)

The Power Quality Monitoring System (PQMS) comprises of online power quality recorders installed at TNB's Pencawang Masuk Utama (PMU) and Pencawang Pembahagian Utama (PPU), that detects, records and diagnoses the occurrence of the quality of power disturbances in the Distribution Networks (DN) that can affect the operations of TNB prime customers. The the power-quality disturbances detected include power outages, voltage regulation (under/over voltage), frequency regulations (under/over frequency), voltage sags etc. The data from the power quality recorders are stored in the PQMS servers. With the PQMS data and via WhatsApp groups with customers, TNB can provide immediate information to prime customers that have experienced operation interruptions and assist them in the restoration process and thus reducing their operation losses.

*PQMS monitors the performance and operations of PMU and PPU, ensuring reliable power supply to our customers.*

#### Power Quality Monitoring System Web (PQMSWeb)

The Power Quality Monitoring System Web (PQMSWeb) is designed to compile all data from PQMS servers, to allow reporting and documentation of complaints from TNB prime customers as well as preparation of reports for customers and Energy Commission.

#### Advanced Distribution Management System (ADMS)

Advanced Distribution Management System (ADMS) integrates various utility system applications, offering automated capabilities for efficient outage restoration and distribution grid optimisation. This system reduces technical losses, enhances work safety and strengthens grid resilience against natural disasters and other disruptions, ensuring a reliable power supply to end users. From 31 December 2024, ADMS has integrated with Geographic Information System (GIS) to cater for the requirement of the medium voltage data for the Distribution System Operator (DSO) in managing the medium voltage distribution network.

#### Mapping the Future: GIS in Distribution Network

The primary goal of implementing a GIS within the distribution network is to systematically map network assets in relation to customer locations, power lines, infrastructure, and distributed energy resources (DERs). This comprehensive mapping is crucial for improving the management and optimisation of the entire distribution network.

As of 31 December 2024, the GIS for the distribution network has successfully completed 100% of its medium voltage (MV) data mapping. This dataset includes 87,991 distribution substations interconnected with 126,403 kilometres of MV underground cables and 17,179 kilometres of MV overhead lines, covering whole Peninsular Malaysia. Additionally, 45% of the low voltage (LV) data has been completed in the GIS, establishing connections between LV assets and networks to approximately 4.5 million out of a total of 10 million customers in Peninsular Malaysia.

## OPTIMISING GRID ASSETS AND EFFICIENCY

As one of the recognised top performers in the International Transmission Operation & Maintenance Study (ITOMS), we continue to be a leader among international transmission utilities. One significant stride in our journey has been the integration of IEC61850 technology, pivotal for the modernisation of digital substations.

#### Substation Digital Intelligent Infrastructure

Development of an open data platform to provide ready access to quality real-time data, through leveraging TNB's internal Real-Time Application Platform (RTAP) and Intelligent Electronic Devices (IED) within grid substations. The deployment of the Substation Digital Intelligent Infrastructure (SDII) is a leap forward, providing real-time data integration and insights that drive better operational decisions. These technologies have not only enhanced our grid's efficiency but have also set a high standard for asset management and preventative maintenance.

### Self-Healing Grid and Grid Integrated Special Protection Scheme

The enhancement of our Self-Healing Grid capabilities through the Wide Area Intelligent System (WAIS) underscores our proactive approach to managing the complexities of the grid. Since 2010, TNB Grid Division has implemented Special Protection Schemes (SPS) to enhance grid reliability and prevent cascading outages. To address challenges posed by network expansion and renewable energy integration, the Integrated SPS Digital Twin was launched. This in-house innovation simulates and optimises the entire SPS system using real-time data, enabling proactive issue resolution and enhanced grid management. The platform has delivered significant cost savings, such as RM4.46 million per major scheme, while supporting a resilient and future-ready power network aligned with the New Energy Transition Roadmap (NETR).

### Automatic Fault Analysis and Asset Performance Management System

In addition, advancements in the Automatic Fault Analysis (AFA) system have resulted in more efficient fault location identification and enhanced decision-making processes.

### Asset Investment Planning Management

Complementing these technological upgrades, the Asset Investment Planning Management (AIPM) system facilitates a strategic analysis of investment opportunities, enhancing the grid reliability and operational capabilities.

### Generation Connection Management System (GCMS)

To facilitate easier applications of grid-connected projects, Grid is embarking on the Generation Connection Management System (GCMS). The GCMS is a digital platform that allows external parties (consultants/developers) to submit applications for Power System Study and Model Validation in grid-connected projects in Peninsular Malaysia. The GCMS platform automates generator application processes, enhancing efficiency, data security, and overall productivity.

### Geospatial Land Value Information (GeoLVI)

Geospatial Land Value Information (GeoLVI) in Grid Land Planning System (GLPS) is a platform to store land transactional value with geolocation hence capable to do geospatial & statistical (land value analysis) for proposed ATDP & Target Network Project (New Subs & OHL). The land value data will be used as a reference to estimate the land cost for future projects.

### Nested Drone

With the growing number of substations in the Grid Division, adopting advanced technologies like drones has become essential for efficient and routine inspections. By integrating the substation inspection process into a digital platform with visual analytics, we aim to enhance productivity and operational efficiency. Leveraging a data-driven approach, Grid Division is pioneering the use of nested drone technology to revolutionise substation inspections, ensuring higher precision and improved outcomes.

### Energy Storage Solutions

#### Utility Scale Battery Energy Storage System

To meet escalating energy demands and the nation's goal of integrating up to 6GW solar penetration by 2025, we are advancing the deployment of utility scale Battery Energy Storage Systems (BESS) to ensure the security, reliability, and stability of the national grid. We have initiated the first BESS installation in 2024, with targeted completion by 2026.

As part of our global business expansion, we are also installing BESS at Eastfield and Bunker Hill in the United Kingdom, with capacities of 25MW and 40MW, respectively. These systems will support two greenfield solar power plants totaling 102MWp. These BESS projects offer key benefits, including grid stabilisation, peak load management, and carbon emissions reduction.

In East Malaysia, our subsidiary Sabah Electricity Sdn. Bhd. (SESB) is developing a 100MW/400MWh BESS in the East Coast of Sabah that is expected to be completed by mid-2025. The system will provide peak shaving and/ or load shifting function with configuration for additional functions such as spinning reserve, frequency/voltage regulation, and enables higher integration of intermittent renewables. The operation of the system is expected to increase Sabah's electricity grid reserve margin at peak period as well as increase higher integration of solar energy sources such as Large Scale Solar (LSS).

### Community Energy Storage System (CESS)

We have successfully implemented three (3) CESS projects in Elmina Township in collaboration with Sime Darby Property Berhad. These systems allow more integration of solar rooftop PV in Elmina. At night, the CESS performs peak shaving and reduces the transformer loading.

Installed at Elmina Ilham Residence, these lithium-ion battery units, with capacities ranging from 76.8 kWh to 170 kWh will store excess green energy generated from rooftop solar panels during day time and use the energy at night for localised consumption for the respective area. A new technical specification for CESS 150 kW 430 kWh has been developed for future installation of CESS.

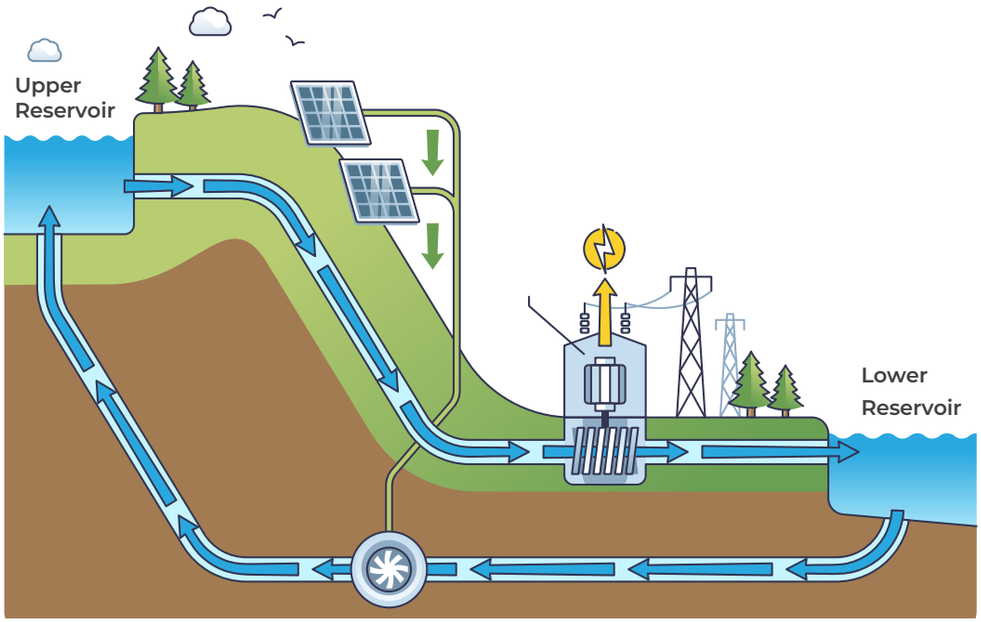
*TNB collaborated with Sime Darby Property Berhad to install our first CESS at Elmina Township.*

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM2: Energy Transition and Innovation

### Long Duration Energy Storage (LDES)

TNB is exploring on a LDES solution with a potential of 1,750MW at our hydro power plants utilising Hydro Energy Storage System (HESS). Technically, HESS stores energy by pumping downstream water at hydro plant back into the dam during period of excess energy generated from non-dispatchable renewables resources such as Solar PV. The stored water can be utilised to generate electricity in stabilising the grid due to the dynamics of Renewable Energy generation and electricity demand, and assist in restoring the power system in the event of blackout. Additionally, HESS can complement the intermittency power generation caused by solar PV thus allowing higher capacity of solar PV to connect with the Grid, supporting the National Energy Transition Roadmap's goals.




HESS uses a system of two interconnected reservoirs with one at a higher elevation than the other. During the period of surplus energy (pumping mode) water is pumped from lower reservoir to upper reservoir using excess energy from solar. Whereas during the period of excess demand (generating mode), water is released from upper reservoir and flows down through turbines to generate electricity.

### PROGRESSING ASEAN POWER GRID DEVELOPMENT FOR ENHANCED REGIONAL CONNECTIVITY

As a key player in ASEAN's energy sector, TNB actively supports the ASEAN Power Grid (APG) agenda, fostering greater regional connectivity and energy security. We are collaborating with neighbouring countries to explore new interconnections, focusing on feasibility studies and future capacity planning.


*The APG has the potential to promote cross-border energy exports and ensuring more reliable and green energy delivery in the ASEAN region.*

### ASEAN Power Grid (APG) Capacity Expansion Potential

Estimated Total Capacity
**386GW by 2025**

Total Regional Capacity
**649GW by 2040**

Potential Variable Renewable Energy (VRE)
**126GW by 2040**

We aim to enhance the existing Peninsular Malaysia-Thailand interconnection capacity to 1,000MW by 2031. We are preparing for future capacity needs upon the expiration of the current 300MW HVDC under the System Interconnection Agreement (SIA) with EGAT in 2027.

We are working with Singapore to establish a second interconnection link targeting 1,000MW capacity by 2031 and expanding power trade via the Energy Exchange Malaysia (ENEGEM).

We are also exploring a potential new interconnection with Sumatera, Indonesia, targeting 2,000MW by 2033, alongside resource-sharing initiatives to increase renewable energy integration and improve energy security. Together with Indonesia's PT Perusahaan Listrik Negara (PLN), we are conducting feasibility studies, supported by a U.S. Trade and Development Agency (USTDA) grant and coordinated by the ASEAN Centre of Energy (ACE), to enhance energy security and increase renewable energy integration across the region.


*TNB is promoting the growth of BEV ecosystem in Malaysia.*

In line with Malaysia's Cross-Border Electricity Sales (CBES) RE Scheme approved in 2023, ENEGEM has become a strategic platform for cross-border renewable energy trading, initially facilitating up to 300MW using existing interconnections. ENEGEM, operated by Single Buyer, serves as a centralised marketplace for green electricity trading, employing a bidding mechanism to manage cross-border RE sales and green attributes.

Through its inaugural auction in June 2024, 50MW was successfully sold to Singapore, leveraging on surplus renewable energy generation. TNB continues to support ENEGEM's operations which contribute to bolstering Malaysia's cross-border electricity integration and advancing ASEAN's regional cooperation on renewable energy trading.

## DYNAMIC ENERGY SOLUTIONS

Consumers play a crucial role in driving a successful energy transition. In 2024, we made significant strides in creating a sustainable transportation ecosystem, encouraging the adoption of renewable energy, and empowering consumers through digital solutions.

### Electrification of Mobility

TNB plays a vital role in developing the Battery Electric Vehicle (BEV) ecosystem by ensuring that the grid and network are equipped to meet the increasing demand for charging infrastructure. Reinforcing our commitment to this sector, TNB has allocated RM90 million for investments from 2022 to 2025.

As a founding member of the Malaysia Zero Emission Vehicle Association (MyZEVA), TNB collaborates with the Malaysian government and regulatory bodies to shape the nation's EV landscape. MyZEVA unites 57 stakeholders to advocate for BEV policies and initiatives. It serves as a central hub for research and industry insights, supporting policy proposals such as EV charging system safety guides, incentives for EV manufacturers, and inputs for the Garis Panduan Perancangan Petak Pengecasan Kenderaan Elektrik (GPP EVCB). TNB's involvement in MyZEVA strengthens its commitment to advancing sustainable transportation in Malaysia.

### BEV Charging Infrastructure

**In supporting the growing demand for charging points, TNB focuses on two key roles**

**01**

Supplying electricity infrastructure to Charge Point Operators (CPOs) via the EV Green Lane initiative. The EV Green Lane Initiative was designed to streamline the process and reduce the lead time for supply. 109 applications have been processed, with an average time of 20 days without substation and 50 days with substations.

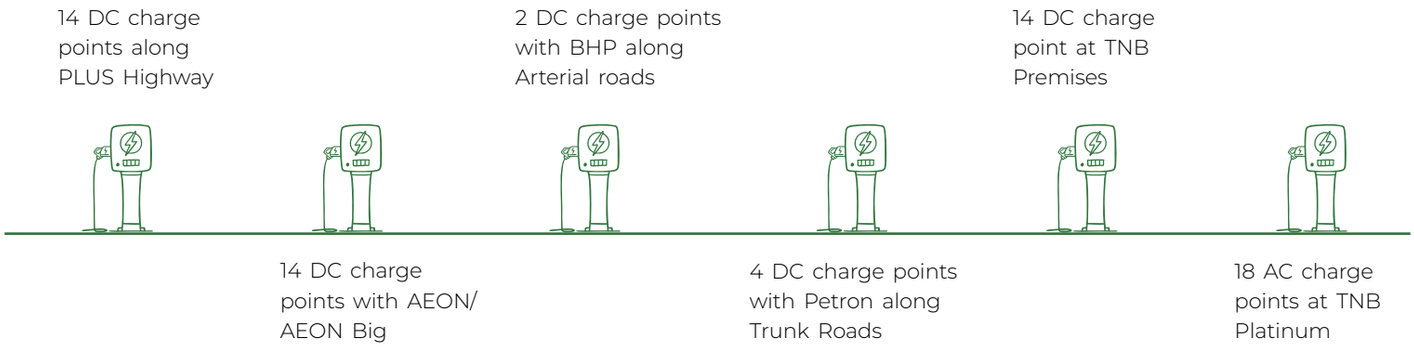
**02**

Installing EV charge points under the brand name TNB Electron. A budget of RM90 million has been allocated, with 66 charge points installed in 2024 and another 150 planned for installation by the end of 2025.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM2: Energy Transition and Innovation

The 66 charge points are as follow:




### EV Fleet Conversion

We target to electrify 30% of our fleet by 2030, in support of NETR's goal of 20% EV adoption by 2030. Our EV fleet conversion covers a wide range of pickups, vans, passenger cars and specialised units. We aim to replace over 1,000 units to significantly reduce our Scope 1 emissions. We have already deployed 157 EVs, including 138 technical operational vehicles and 19 corporate vehicles, marking a strong start towards our fleet electrification goals.

### Rooftop Solar Prosumers

In 2024, PETRA launched Net Energy Metering (NEM) 3.0 and the Solar for Rakyat Incentive Scheme (SolaRIS) to encourage domestic customers to install solar PV systems. NEM 3.0 enables consumers to generate their own electricity from solar energy and export excess power back to the grid with a quota of 2,400MW, where installed capacity is 1,468MW in 2024. Leveraging this initiative, we continue to offer solar rooftop solutions through our subsidiary, GSPARX Sdn. Bhd.

The SolaRIS scheme is open to Malaysian citizens on a one-time basis per individual. In 2024, 19,081 customers have received the SolaRIS rebate totalling RM76.2 million, administered by TNB.

*Refer to MM7 (Customer Experience and Satisfaction) on pages 120-124.*

### CUSTOMER EMPOWERMENT THROUGH DIGITALISED LIFESTYLES

Our customers play a crucial role in driving the energy transition through informed decisions and active participation in renewable energy and energy efficiency initiatives. In 2024, 7.26 million customers are enjoying solutions provided through the myTNB app. The combination of smart meter functionality and myTNB app enables customers to monitor their energy consumption in near real-time, effectively manage their budgets, and track their electricity usage, facilitating efficient energy management.

*Refer to MM7 (Customer Experience and Satisfaction) on pages 120-124.*

### Enhancing Customer Experience Through MyDigital ID

MyDigital ID is a government-backed digital identity initiative aims to enhance online service authentication by providing individuals with a secure and reliable digital identity. Aligning with this initiative, TNB has successfully implemented MyDigital ID as an additional login option, enhancing customer experience and cybersecurity.

This implementation received positive feedback from our customers, where a survey finding shows that over 90% of new and existing users would start using MyDigital ID as their main login method and would recommend MyDigital ID to other TNB customers. All the surveyees also agreed that the login option provides better and more convenient login experience.

### DIFFERENTIATED SOLUTIONS FOR TARGETED CUSTOMERS

### Corporate Renewable Energy Supply Scheme (CRESS)

The Corporate Renewable Energy Supply Scheme (CRESS), introduced by the Ministry of Energy Transition and Water Transformation (PETRA), is designed to enhance the adoption of green energy by allowing participants to supply or purchase green electricity through open access to the grid network with a pre-determined System Access Charge. CRESS enables Green Consumers to contract directly with Renewable Energy Developers (REDs) for green electricity and associated Renewable Energy Certificates (RECs). By participating in CRESS, Green Consumers can meet their sustainability objectives by offsetting their carbon emissions.

As Malaysia's national utility and the owner of the grid network, TNB plays a significant role in ensuring the success of this initiative. TNB is committed that the national grid remains reliable, resilient, and capable of accommodating the growing volume of applications under CRESS, as more solar players participate in this initiative.

TNB will also continuously serve as the Supplier of Last Resort (SOLR), providing an essential safety net for Green Consumers during the unavailability of RE Developers.

**Green Lane Pathway**

Data centres are energy intensive facilities, requiring substantial and uninterrupted power to run the server and cooling systems. The Green Lane Pathway initiative emphasises efficient and sustainable solutions for data centre operations, aligning with global trends towards greener technology. It facilitates the smooth setup of data centres in Malaysia through:

- Fast-Track Electricity Supply: Data centres can connect to the power grid three times faster than usual, reducing setup time from 36-48 months to 12 months.
- One-Stop Centre (OSC): This facility provides dedicated support for data centre investors, simplifying the onboarding process and expediting related approvals.

TNB has experienced a notable increase in demand for electricity connections from data centres with 37 Electricity Supply Agreement (ESA) for a total demand of 5,765MW signed in 2024.

In 2024 alone, we completed nine data centres electricity supply projects, with a total energy demand of 1,236MW. Since the establishment of the Green Lane Pathway, we have successfully completed 18 supply connections, meeting a demand of 1,856MW.

## DRIVING INNOVATION FOR ENERGY TRANSITION

Our research and development in new technologies and innovations towards energy transition are overseen by the TNB Technology Committee. Its primary role is to drive innovation as we progress in our energy transition journey. This committee oversees our R&D and innovation strategy and policy, as well as the effective implementation of our technology roadmaps.

In 2024, the Technology Committee approved twelve projects, with a total investment of RM79.2 million, for high-impact projects to innovate and advance all parts of the energy value chain, such as Carbon Capture, Utilisation, and Storage (CCUS), hydrogen, energy storage systems, renewable offshore floating solar, interconnector, wave energy, alternative fuel co-firing and artificial intelligence.

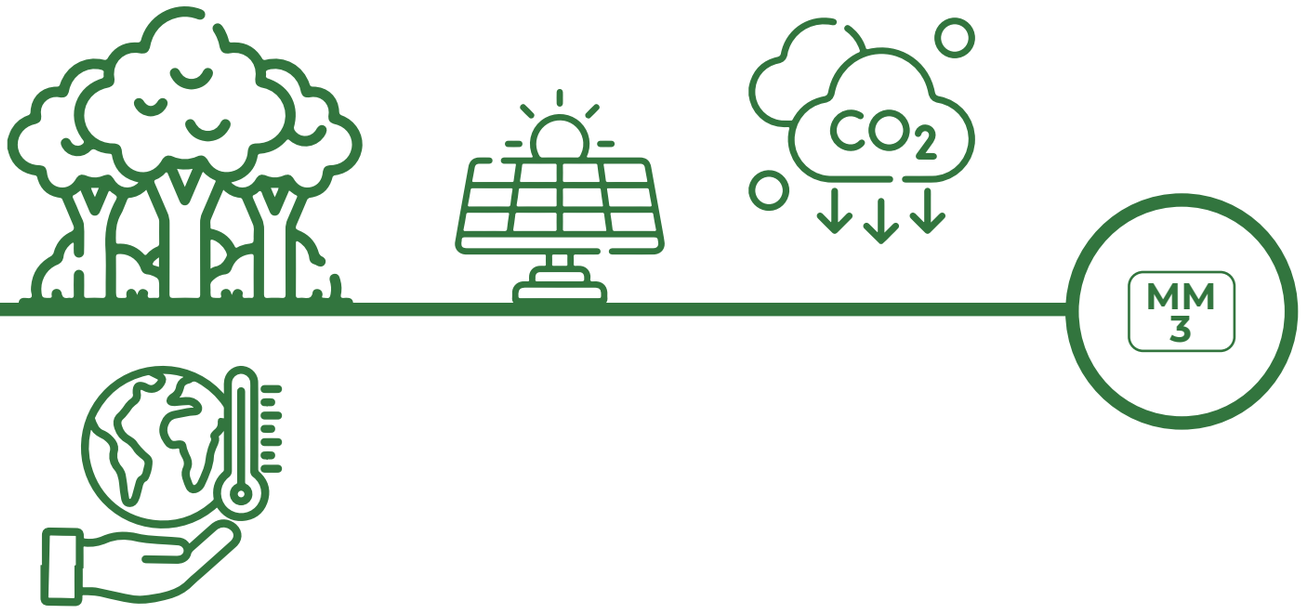
## OUR PERFORMANCE

**PERFORMANCE : Additional Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target |
|---|---|---|---|---|---|---|---|
| G4 – EU29 | – | RE Capacity | MW | 3,780 | 3,989* | 4,152* | 8.3GW by 2025 |
| | – | Number of smart meters (AMI) installed | Number | 838,830 | 873,740 | 949,226 | 360,000 annually |
| | | Cumulative number of smart meters (AMI) installed | Number | 2,675,749 | 3,549,489 | 4,498,715 | 9 million by 2029 |
| – | – | Cumulative number of EV charging point | Number | 3 DC | 14 DC | 48 DC | 200 by 2025 (cumulative) |
| | | | | 3 AC | 18 AC | 18 AC | |

**RE installed capacity is calculated using the equity capacity approach. Data for FY2023 has been reinstated to adhere to this approach.*

Note:
- *MW = Megawatt ; GW = Gigawatt*
- *Reinstated data on RE Capacity for FY2023*
- *Additional indicators disclosed to support the narrative, and the target setting as per TNB's specific target.*




# Climate Change and Emissions

Taking a decisive step towards combating climate change, Malaysia has developed the National Climate Change Policy 2.0 that is anchored on the principle of common but differentiated responsibilities. In TNB, we acknowledge the impact we have on climate change as well as the threats of climate change to our business. We consistently assess climate related risks and opportunities to our assets, business operations and growth, with a robust climate adaptation and mitigation plan to enhance business resiliency.

In support of targets outlined in the Paris Agreement and United Nations 2030 Agenda as well as Malaysia's Nationally Determined Contribution (NDC) to reduce economy-wide carbon intensity against GDP by 45% by 2030 compared to 2005, TNB aims to reduce our annual carbon emissions intensity for Scope 1 by 5% annually from 2024. This annual target reflects our steadfast commitment to achieve 35% carbon emissions intensity reduction by 2035 and Net Zero by 2050. Our efforts to reduce carbon emissions intensity is outlined in our Carbon Management Strategy and Renewable Energy (RE) Capacity Expansion.

The TNB Energy Transition Plan, which cuts across the electricity value chain, continues to direct focused efforts in addressing climate change and GHG emissions reduction as we transition to a low-carbon economy. In the spirit of a just transition, we believe that building a strong and positive relationship with stakeholders and strategic partners is essential in view of the complexity and uncertainties inherent in energy transition.

## MANAGEMENT APPROACH

### SERVING MALAYSIA'S ECONOMIC GROWTH WHILE REDUCING EMISSIONS

As Malaysia's economy progresses, electricity demand has shown consistent growth. Historical trends reveal that the national power sector's emissions has risen in tandem with GDP and electricity demand. From 2018 to 2024, Malaysia's GDP grew at a Compound Annual Growth Rate (CAGR) of 3.9%, surpassing the power sector's absolute emissions CAGR of approximately 1% and TNB's own absolute emissions CAGR of 0.8%. This indicates that TNB's absolute emissions have been contained at a slower rate compared to the growth in GDP working towards greener fuel mix.

Looking ahead, Malaysia's GDP is projected to continue its growth trajectory from 2025 to 2030. The ongoing energy transition is expected to result in a reduction in emissions, while still supporting positive GDP growth. TNB's emissions are anticipated to decrease further through the effective implementation of its Energy Transition (ET) Plan.

### TNB'S COMMITMENT IN ADDRESSING CLIMATE RISKS & OPPORTUNITIES

Since 2019, we have adopted the Task Force on Climate-related Financial Disclosures (TCFD) framework that serves as a comprehensive approach for assessing and managing climate-related risks and opportunities. We are persistent in evaluating and mitigating both physical and transition risks, drawing guidance from the Representative Concentrating Pathways (RCP) scenarios by the Intergovernmental Panel on Climate Change (IPCC) as well as scenarios suggested by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS). Furthermore, we identify business opportunities linked to transitioning to a low-carbon economy and execute adaptation strategies for climate change impacts like floods, heatwave, soil movement and coastal flooding.

*Refer to the climate-related disclosures page 146-153*


*TNB promoted TNB Energy Transition Plan during United Nations Climate Change Conference of the Parties 29 (COP29).*

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM3: Climate Change and Emissions

### SCOPE 1 EMISSIONS: REDUCING OUR CARBON EMISSIONS INTENSITY

The TNB Carbon Management Strategy and Renewable Energy Capacity Expansion was approved by the SETC (chaired by TNB President/CEO) and was acknowledged by BSRC and TNB BOD. The initiatives intend to reduce carbon emissions intensity from our operations and set the stage for long-term sustainability by integrating renewable energy and innovative carbon management technologies.

**TNB's Strategy to Reduce Carbon Emissions Intensity**

**Emissions Intensity Target** | **5%** annual reduction from 2024 | **35%** reduction by 2035 | Net Zero by 2050

#### Carbon Management Strategy

Three (3) carbon management strategies:

| | |
|---|---|
| **Reduce Carbon Emissions** | Lowering carbon emissions across the company (scope 1, 2 & 3). |
| **Capture Carbon Emissions** | Capturing and storing of carbon dioxide ($CO_2$) before it is released into the atmosphere. |
| **Offset Carbon Emissions** | Offset carbon emissions with the goal of reducing overall emissions over time. |

**Measures:**
Carbon Emissions ($tCO_2e$)
Carbon Emissions Intensity ($tCO_2e$/MWh)

#### Renewable Energy Capacity Expansion

Capture RE growth potential in domestic and international markets:

**Local**

Capture Malaysia market through TRe & Genco:
- LSS
- Corporate Green Power Programme (CGPP)
- NETR (Solar park & HHFS)
- TPA

**International**

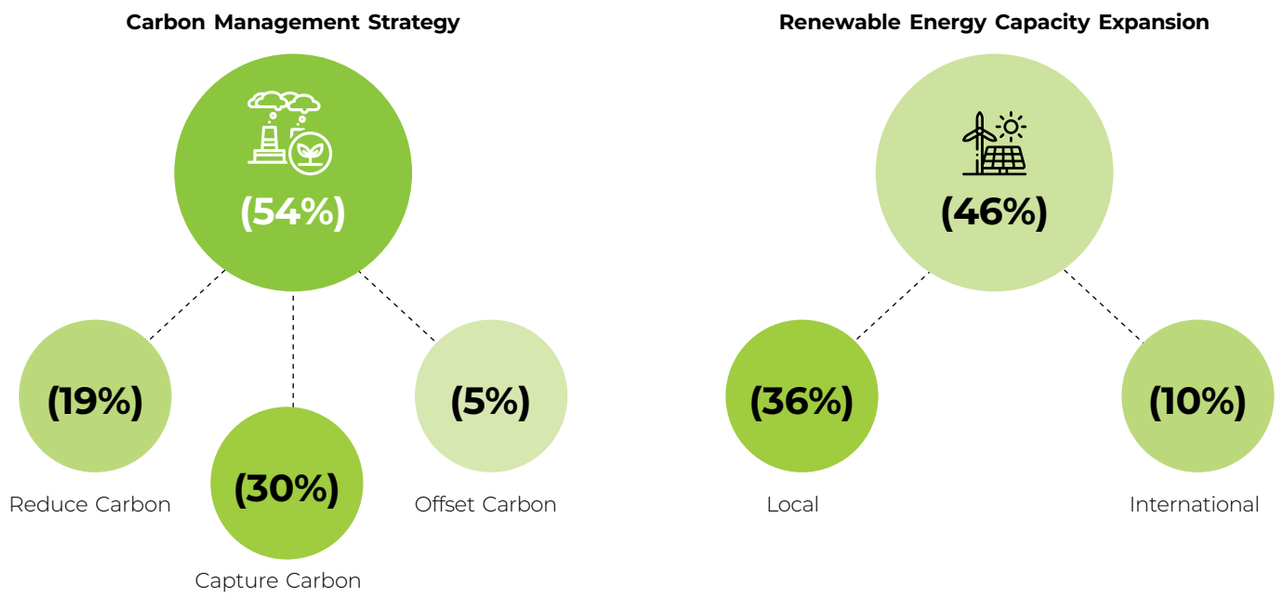
- Capture United Kingdom market through Vantage RE.
- Capture Australia market through Spark Renewables

Embark on strategic partnership for new technology, e.g., grid-scale BESS.

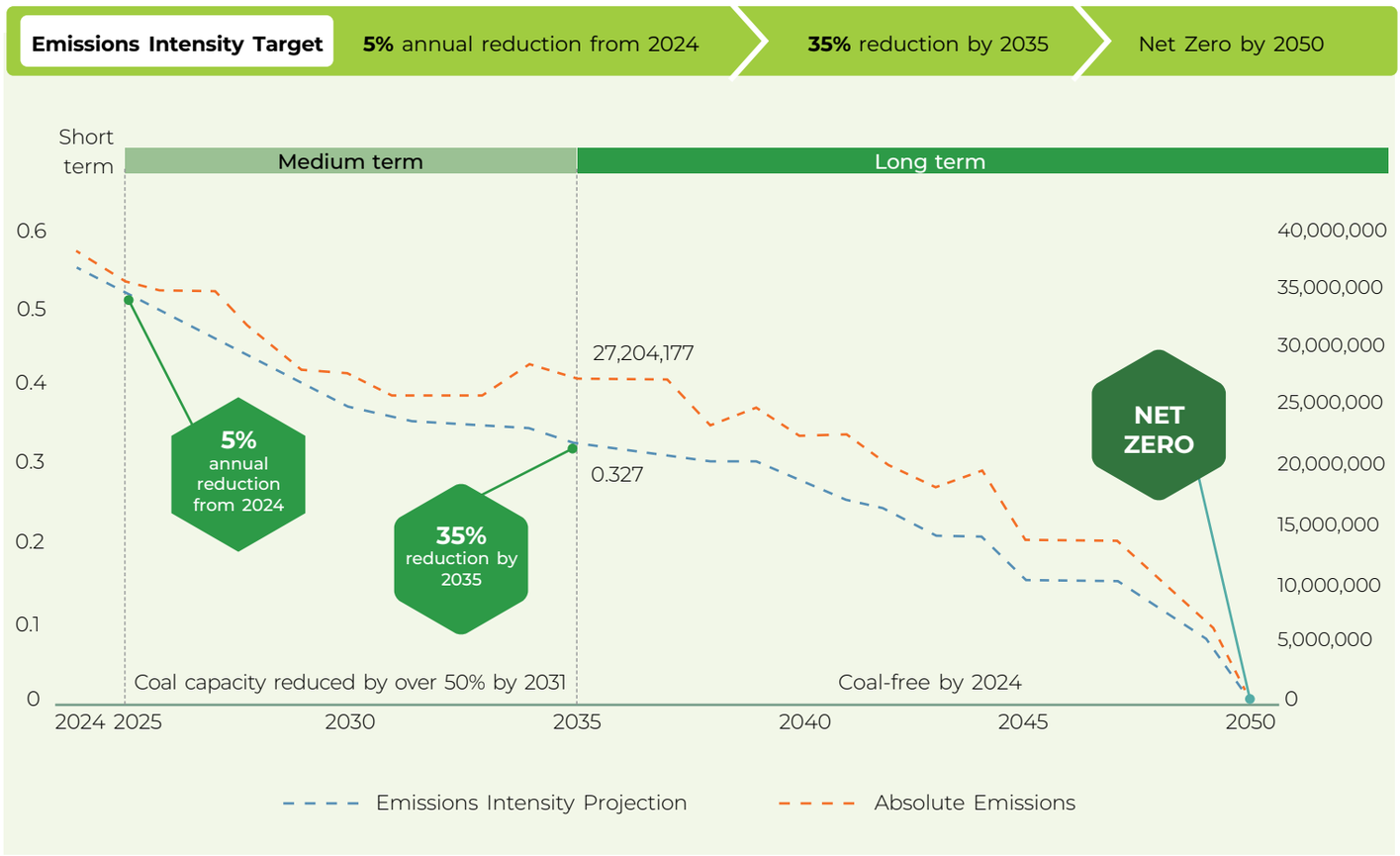
**Measures:**
RE Capacity (MW)
Net Generation from RE (MWh)

With this strategy, we aim to achieve the following carbon emissions intensity reductions by 2050, compared to 2024:

**Expected Carbon Emissions Intensity Reduction by 2050 Compared to 2024**



**TNB Emissions Intensity Projection 2024 to 2050**




## CARBON MANAGEMENT STRATEGY: REDUCE, CAPTURE, OFFSET

### Reduce Carbon Emissions

In our relentless pursuit of a sustainable future, we are committed to achieving 19% reduction in carbon emissions intensity by 2050, through a series of targeted initiatives.

### Enhancing Power Plant Efficiency

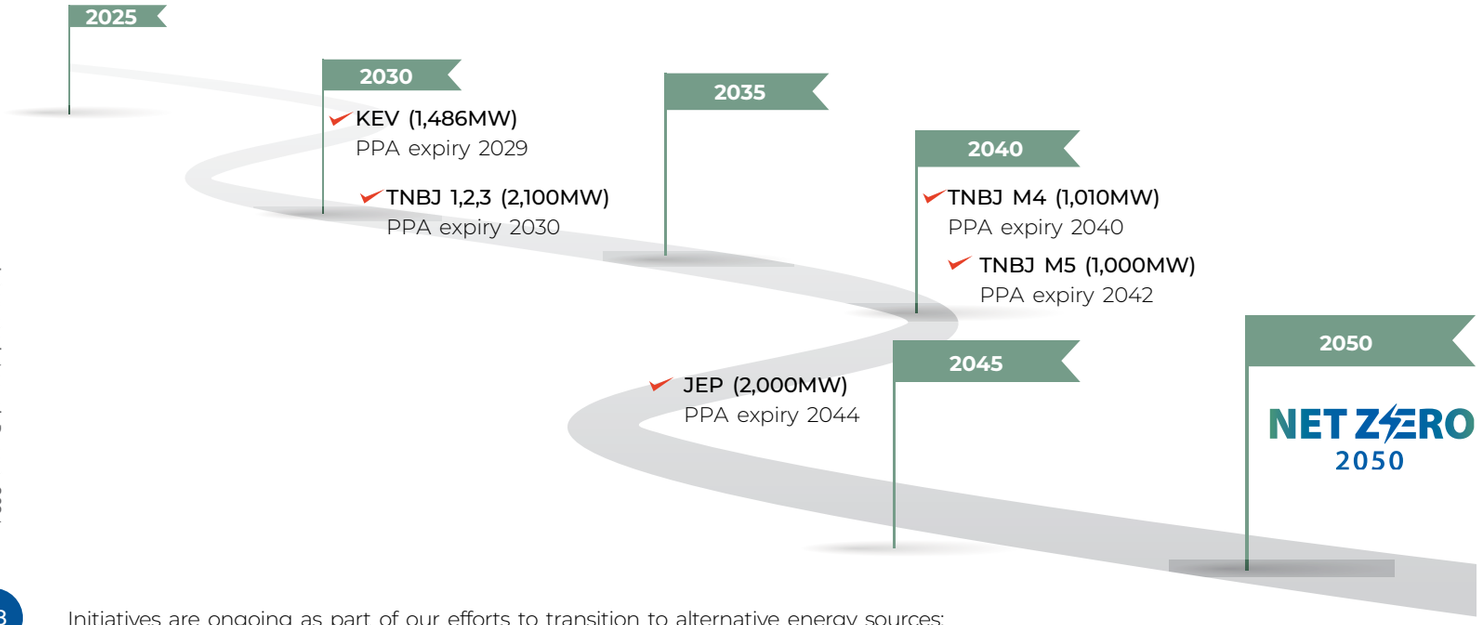
Carbon emissions are reduced by optimising fuel consumption at our thermal power plants to generate the same amount of electricity. To achieve this, we continuously monitor the heat rate of our thermal power plants and implement various efficiency enhancement initiatives, which include coal blending, periodic boiler cleaning, condenser cleaning, and compressor washing. We also leverage on Digital Twin technology to optimise power plant performances by simulating different scenarios and identifying the most efficient operating conditions.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM3: Climate Change and Emissions

### Transitioning Energy Sources

We continue to explore the feasibility of retiring our coal-fired power plants ahead of schedule, subject to shareholders' agreement and approvals from relevant authorities and regulators. This is expected to reduce emissions from our coal power plants, as they retire according to their respective Power Purchase Agreements (PPAs), as follows:




Initiatives are ongoing as part of our efforts to transition to alternative energy sources:

### Hydrogen Fuel: Paving the way for a Sustainable Energy Future

Building upon the TNB-PETRONAS MOU entered in 2022 to decarbonise the energy sector, a joint feasibility study on green hydrogen as an alternative clean energy was completed in 2024. Both parties are entering into a strategic collaboration agreement to explore a joint venture for the development of end-to-end green hydrogen value chain towards establishing Peninsular Malaysia as a green hydrogen hub.

### Hydrogen Production for TNB Power Plant Operations

In 2024, TNB Research Sdn. Bhd. (TNBR) initiated a project on green hydrogen production system that is feasible, efficient, and scalable for the power sector. A 500kWp rooftop solar installation, coupled with a 1MWh battery system, would supply the energy needed by the electrolyser to produce an estimated 125,000Nm$^3$ of green hydrogen annually. The green hydrogen produced will be used for generator cooling at one of TNB's power plants, while other potential applications are being explored simultaneously.

### Ammonia-Biomass Co-firing at Coal Power Plants

Following the successful execution of the Empty Fruit Bunch (EFB) Pellet Trial Burn at the Jimah East Power (JEP) (1,000MW Unit 2) Power Plant, further assessment and studies are ongoing to evaluate the technical behaviour under increased concentrations.

### Biomass as Sustainable Fuel of the Future

In 2024, TNB Fuel Services Sdn. Bhd. (TNBF) supplied and delivered 4,305 metric tonnes of biomass in the form of EFB pellets to Tanjung Bin Power Sdn. Bhd., a subsidiary of Malakoff Berhad, as part of the co-firing project in the NETR.

### Capture Carbon Emissions

We aim to achieve a 30% reduction in carbon emissions intensity by 2050 through the implementation of advanced carbon capture and utilisation (CCU) technologies, which are:


**Carbon Capture:** Development of systems for bio-carbon capture or chemical carbon capture to efficiently absorb and capture $CO_2$.


**Carbon Utilisation:** Development of a $CO_2$ utilisation system through biological and hydrogenation pathways.

A project was initiated in June 2024 to assess the technical and economic viability of integrating CCU technology at the Jimah East Power (JEP) coal power plant. The goal is to successfully capture up to 5,000 kg of $CO_2$ annually using microalgae.

### Advancing Carbon Capture, Utilisation and Storage (CCUS) Solutions through Strategic Partnerships

The first stage of a CCUS joint feasibility study with PETRONAS was completed in the first half of 2024, on the costs involved in capturing carbon and transporting it to the receiving terminal. In the next stage, the study shall focus on the costs of sequestration, as well as obtaining supportive government policy including carbon tax.

### Offset Carbon Emissions

We have been diligently investing in nature-based carbon offset initiatives such as reforestation to tackle hard-to-abate emissions. We target to plant 40,000 trees annually, covering about 89 acres and sequestering approximately 1,600 $tCO_2e$. In 2024, a total of 49,214 trees were planted at 25 designated areas across the country, which is equivalent to approximately 91.65 acres and 1,968.60 $tCO_2e$ sequestered.

Total number of trees planted:
**49,214 at 25**
designated areas across the country

- Areas planted:
  Approximately **91.65** acres
- Approximate sequestration:
  **1,968.60** $tCO_2e$

*Refer to the MM8 Community Development and Social Impact on page 125-129.*

We will continue to explore and invest in both nature-based and technology-based carbon offset initiatives, aiming for a reduction of 5% of carbon emissions intensity by 2050.

*Mangrove replanting helps to offset carbon emissions as well as mitigate coastal erosion.*

### Renewable Energy (RE) Capacity Expansion

We aim to expand our RE capacity up to 22GW both domestically and internationally to achieve our Net Zero aspiration. Domestically, through various programs such as the NETR, Large Scale Solar (LSS), Corporate Renewable Energy Supply Scheme (CRESS) and Corporate Green Power Programme (CGPP), we aim to secure 5GW of renewable energy (RE) capacity by 2025, with 4,152MW already secured as of 2024.

As the demand for green energy in centres continues to rise, we have a significant opportunity to enhance our renewable energy growth and work towards achieving Net Zero emissions.

### NETR projects

TNB is making substantial strides in its commitment to drive large-scale RE, championing two (2) flagship projects which are the Centralised Solar Park (CSP) and Hybrid Hydro Floating Solar (HHFS) and partnering with Sime Darby for Residential Solar.

#### *Hybrid-Hydro Floating Solar (HHFS)*

Leveraging on the recently announced CRESS on 26 July 2024, as well as support from states government, we are committed to deliver a total of 2,500MW by 2030. We are also looking at an additional 1,000MW of HHFS targeted to be completed in subsequent years.

| Year | Capacity (MW) | Estimated Annual Emissions Avoidance ($tCO_2e$) |
|---|---|---|
| 2026 | 170 | 301,920 |
| 2027 | 550 | 976,800 |
| 2028 | 750 | 1,332,000 |
| 2029 | 590 | 1,047,840 |
| 2030 | 440 | 781,440 |

**Estimated $CO_2$* avoidance assumes 1MW generation from RE = ~1,776 $tCO_2e$/year avoidance (ref: Sustainable Energy Development Authority).

HHFS projects at the Chenderoh and Kenyir hydro reservoirs are expected to be completed by 2026, while the HHFS at Temenggor is scheduled for completion by 2028. Our existing floating solar PV located on ash pond in Manjung comprises of 105.12kWp capacity and 100kWac pilot HHFS at Kenyir lake will serve as key references for the feasibility studies of the remaining phases of the project in the Terengganu and Kelantan schemes. As a key enabler, TNB has penned partnership with the relevant state agency, Terengganu Incorporated (TI) to ensure that the HHFS development is carried out successfully and responsibly. The commissioning of all projects is expected to avoid an estimated annual emissions of 4.44 million $tCO_2e$.

*Pilot Floating Solar PV located on Kenyir dam with a capacity of 100kWac.*

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM3: Climate Change and Emissions

***Centralised Solar Park***

Under the NETR, our subsidiary TNB Renewables Sdn. Bhd. (TRe) is developing five large scale solar parks each with a capacity of 150MWp (100MWac), totaling 750MWp (500MWac). These projects, in partnership with SMEs, cooperatives, and state related entities, span across multiple states in Malaysia. The commercial operation dates are targeted in late 2026 and are expected to avoid an annual emissions of 1.33 million $tCO_2e$.

| Phase | Capacity (MWp) | Projected COD | Estimated Annual Emissions Avoidance ($tCO_2e$) |
|---|---|---|---|
| 1 | 300 | Q3 2026 | 0.53mil |
| 2 | 450 | Q4 2026 | 0.80mil |
| **Total** | **750** | | **1.33mil** |

**Estimated $CO_2$ avoidance assumes 1MW generation from RE = ~1776 $tCO_2e$/year avoidance (ref: Sustainable Energy Development Authority).*

***Partnership with Sime Darby Property for Rooftop Solar***

TNB through its fully owned subsidiary, GSPARX Sdn. Bhd., has entered into a corporate partnership with Sime Darby Property to construct the upcoming 4.5MW solar photovoltaic (PV) capacity for 450 homes in the City of Elmina and Bandar Bukit Raja, both located in Selangor.

As part of TNB's high commitment to ensure the best-in-class reliability of supply, special infrastructure has been incorporated into the distribution network in Elmina Ilham Residence, namely Community Energy Storage System (CESS), Voltage Regulated Distribution Transformer (VRDT) and online feeder pillar. This is part of the preparation for the upcoming installation of the solar PV system at the homes of City of Elmina.

In 2024, the partnership has invested into 10 commercial sites where the solar PV installations were already rolled out, totaling 811kWp and avoiding 662 $tCO_2e$ emissions annually.

**Other Domestic Projects**

**Nenggiri Hydroelectric Project**

The 300MW Nenggiri Hydroelectric Project has reached a completion status of 46.3% and is on track to achieve its Commercial Operation Date (COD) by Q2 2027. The commissioning of the hydro power plant is expected to avoid an estimated annual emissions of 0.53 million $tCO_2e$.

**Corporate Green Power Programme (CGPP)**

In 2024, we continue to develop the 90MW (135MWp) of solar generation capacity secured through the government-launched CGPP. This capacity includes a wholly-owned 30MW (45MWp) facility and two joint venture facilities, each with 30MW/45MWp capacity.

**Solar *Rooftop***

In 2024, with a total of 970 residential customers, 22 property developer customers, and 132 commercial and industrial customers secured and onboard, TNB has empowered communities and businesses to embrace clean energy solutions. A total of 64.09MWp solar rooftop was successfully commissioned in 2024, contributing to a cumulative installed capacity of 168.97MWp.

| Solar Roof-Top Project Type | Secured | | COD* | |
|---|---|---|---|---|
| | MWp | Number of Customers | MWp | Number of Customers |
| Commercial Supply Agreement Renewable Energy (SARE) | 146.11 | 111 | 49.78 | 79 |
| Outright Purchase (OP): Commercial & Industrial | 6.26 | 21 | 9.15 | 22 |
| Outright Purchase (OP): Property Developer | 1.59 | 22 | 0.44 | 2 |
| Outright Purchase (OP): Residential | 9.56 | 970 | 4.72 | 517 |
| **Total** | **163.52** | **1,124** | **64.09** | **620** |

**Inclusive of project secured in 2023*

**International RE Project**

TNB is driving international renewable energy expansion through strategic partnerships, spearheaded by two (2) subsidiaries, Vantage RE in the UK and Spark Renewables in Australia.

| | Solar (MWp) | Wind (MWp) |
|---|---|---|
| Vantage RE | 640.8 | 165.4 |
| Spark Renewables | 120.50 | – |

Asset portfolio as of December 2024

In 2024, two greenfield solar power plants in the UK with a total capacity of 102MWp are in construction with both sites targeted to achieve Commercial Operation Date (COD) by early 2025.

**Our Response to Challenges and Unforeseeable Incident**

As we have established our Carbon Management Strategy and committed to an annual 5% reduction in scope 1 emissions intensity starting from 2024, we acknowledge a slight increase in our 2024 emissions intensity compared to 2023. This was due to an unforeseeable incident on 4 December 2023, when our 1,000MW TNB Manjung Unit 4 (M4) Ultra-Super Critical coal power plant faced an approximately 11-month forced outage due to steam turbine blade damage. To ensure grid system security and meet rising customer demand, higher-emissions sub-critical coal power plants were dispatched during this period.

Through a collaborative effort with the OEM and an efficient crisis recovery strategy, we successfully expedited M4's restoration by 10 days, preventing an excess emissions of approximately 329,323 $tCO_2e$.

To enhance the reliability of our coal power plants and prevent recurrence of similar incidents, we are implementing robust measures, including improving steam quality, conducting regular blade inspections using Non-Destructive Testing (NDT) methods, and monitoring vibrations to detect early signs of anomalies.

## SCOPE 2 EMISSIONS: IMPROVING ENERGY EFFICIENCY WITHIN OUR OPERATIONS

We are dedicated to reducing our energy consumption intensity to lower our Scope 2 emissions through energy efficiency initiatives.

**Improving Power Plant Auxiliary Energy Consumption**

We are implementing energy efficient initiatives at our power plants for the auxiliary systems such as co-firing of high-sulfur coal with lower-sulfur brands to decrease auxiliary consumption in the Flue Gas Desulphurisation (FGD) aeration fan and absorber spray pump, optimising the auto-changeover frequency of air compressors and adjusting the operation of the Main Cooling Water Pump (MCWP). By optimising these auxiliary systems, energy is utilised efficiently leading to reduced overall energy consumption.

**Enhancing Energy Efficiency at TNB Office Buildings**

Through the "Drip by Drip, Watt by Watt" campaign rolled out since July 2023, we are actively reducing electricity and water consumption at 109 TNB-owned offices. This campaign promotes energy conscious practices, fosters a collective commitment among TNB personnel towards resource conservation, that leads to cost savings. TNB personnel towards resource conservation, leading to cost savings. In 2024, our efforts have resulted in a reduction of 1,723,244kWh in electricity consumption, equivalent to an estimated reduction of 1,333 $tCO_2e$ in Scope 2 emissions and RM877,131.00 cost savings.

**Our Flagship Green Building – TNB Platinum Campus**

The TNB Platinum Campus is designed in accordance with Green Building Index (GBI) principles, adopting key features such as a 25% reduction in electricity consumption compared to conventional building designs. It includes a photovoltaic system capable of supplying up to 2% of the building's total electricity needs, along with efficient energy monitoring facilitated by the Integrated Building Management System's Energy Sub-Metering System.

*TNB Platinum Campus is certified with Platinum rating of GBI.*

## SCOPE 3 EMISSIONS: EMBRACING DIGITALISATION AND AUTOMATION

We continue to assess our Scope 3 indirect emissions for Categories 6 (Business Travel) and 7 (Employee Commuting), focusing on our operations in Peninsular Malaysia. Leveraging on current data availability and our internal monitoring systems, we are employing a distance-travelled-based methodology, which is aligned with the GHG Protocol Scope 3 Calculation Guidance (2013).

In 2024, we enhanced our data collection process through automation and integration of our human-resource systems with data such as the distance from registered home addresses to the office, employee check-in/out times, work-related travel to other locations and modes of transport.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM3: Climate Change and Emissions

### OUR PERFORMANCE

We have established climate-related targets as milestones in realising our Net Zero aspirations and re-affirm our commitment to stop investing in new greenfield coal-fired power plants.

**35%** reduction of Scope 1 emissions intensity by 2035 and Net Zero Emissions by 2050, compared to the base year 2020

**50%** reduction of coal capacity by 2035 and 100% by 2050, compared to the base year 2020

Revenue from coal generation plants does not exceed **25%** of our total revenue

**5%** annual reduction of Scope 1 emissions intensity from 2024

**PERFORMANCE : Bursa Indicator**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **Energy** | | | | | | | |
| GRI 302-1 | C4(a) | Total energy consumption within organisation | GJ | 863,462.69 (MWh)* | 404,523,322 | 320,997,148 | 1% reduction annually*** |
| **Direct (Scope 1) GHG emissions** | | | | | | | |
| GRI 305-1 | C11(a) | Total direct GHG emissions (Scope 1) | million $tCO_2e$ | 38.58 | 38.92 | 38.75 | 5% reduction compared to 2024 |
| **Energy indirect (Scope 2) GHG emissions** | | | | | | | |
| GRI 305-2 | C11(b) | Indirect (Scope 2) GHG emissions | million $tCO_2e$ | 0.292** | 0.331** | 0.321 | 1% reduction annually*** |
| **Other indirect (Scope 3) GHG emissions** | | | | | | | |
| GRI 305-3 | C11(c) | Business travel | million $tCO_2e$ | – | 0.037 | 0.035 | 1% reduction annually*** |
| | | Employee commuting | million $tCO_2e$ | – | 0.063 | 0.063 | 1% reduction annually*** |

**FY2022 data was reported according to the amount of energy consumption at TNB buildings (MWh). Data for FY2023 onwards was reported based on GRI 302-1 methodology.*

***The data was reinstated following a thorough methodology revision in alignment with GRI Standards.*

****For FY2025 target – base year target is 2024.*

*Note: GJ = Gigajoule; MWh = Megawatt-hour*

**PERFORMANCE : Additional Indicator**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 |
|---|---|---|---|---|---|---|
| **Energy** | | | | | | |
| GRI 302-1 | – | Coal | GJ | 444,682,239 | 452,842,875 | 366,740,751 |
| | | Natural gas | GJ | 210,857,206 | 194,060,333 | 193,211,458 |
| | | Distillate fuel | GJ | 2,445,795 | 1,846,890 | 1,387,891 |
| | | Residual Fuel Oil / Medium Fuel Oil | GJ | 2,559,614.00 | 1.94 | 487,249 |
| | | Biodiesel (93% Fossil) | GJ | – | 19,182 | 14,191 |
| | | Total fuel consumption within the organisation from non-renewable sources | GJ | – | 648,769,280 | 561,841,541 |
| | | Biomass | GJ | – | 1,134,665 | 980,948 |
| | | Biodiesel (7% Renewable) | GJ | – | 1,444 | 1,068 |
| | | Biogas | GJ | – | 222,874 | – |
| | | Total fuel consumption within the organisation from renewable sources | GJ | – | 1,136,109 | 982,016 |
| | | Large scale and hydro | GJ | – | 22,665,154 | 25,480,236 |
| | | Electricity purchased for consumption | GJ | – | 1,659,736 | 1,408,189 |
| | | Electricity sold by the organisation | GJ | – | 269,937,097 | 268,714,834 |
| GRI 302-3 | – | Energy intensity ratio for the organisation* | GJ/MWh | – | 5.39 | 4.30 |
| **Generation** | | | | | | |
| G4-EU1 | – | Total Installed Capacity | MW | – | 17,949.54 | 16,385.35 |
| | | Gas | MW | – | 6,147.77 | 5,145.07 |
| | | Coal | MW | – | 7,378.89 | 6,790 |
| | | Hydro | MW | – | 2,666.55 | 2,666.56 |
| | | Diesel | MW | – | 258.96 | 203.18 |
| | | Solar | MW | – | 1,135.85 | 1,298.90 |
| | | Biomass | MW | – | 5.00 | 5.00 |
| | | Biogas | MW | – | 2.40 | 2.40 |
| | | Wind | MW | – | 179.47 | 179.47 |
| | | Oil | MW | – | 142.88 | 71.00 |
| | | Solar Hybrid | MW | – | 31.77 | 23.34 |

** Target maintained at <6*

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

### MM3: Climate Change and Emissions

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 |
|---|---|---|---|---|---|---|
| G4-EU2 | | Total Net Energy Output | GWh | – | 79,535.45 | 73,185.02 |
| | – | Gas | GWh | – | 26,065.97 | 22,238.84 |
| | | Coal | GWh | – | 44,826.58 | 40,678.64 |
| | | Hydro | GWh | – | 6,452.92 | 7,148.16 |
| | | Diesel | GWh | – | 365.68 | 532.65 |
| | | Solar | GWh | – | 572.01 | 1,274.96 |
| | | Biomass | GWh | – | 13.16 | 31.37 |
| | | Biogas | GWh | – | 13.8 | – |
| | | Wind | GWh | – | 544.43 | 852.24 |
| | | Oil | GWh | – | 660.52 | 395.21 |
| | | Solar Hybrid | GWh | – | 20.38 | 32.95 |
| **GHG Emissions Intensity** | | | | | | |
| GRI 305-4 | | Scope 1 | $tCO_2e$/MWh | 0.5488 | 0.5465 | 0.5571 |
| **GHG Emissions Avoidance** | | | | | | |
| GRI 305-5 | | Total avoided emissions | mil $tCO_2e$ | 7.30 | 7.38 | 8.46 |

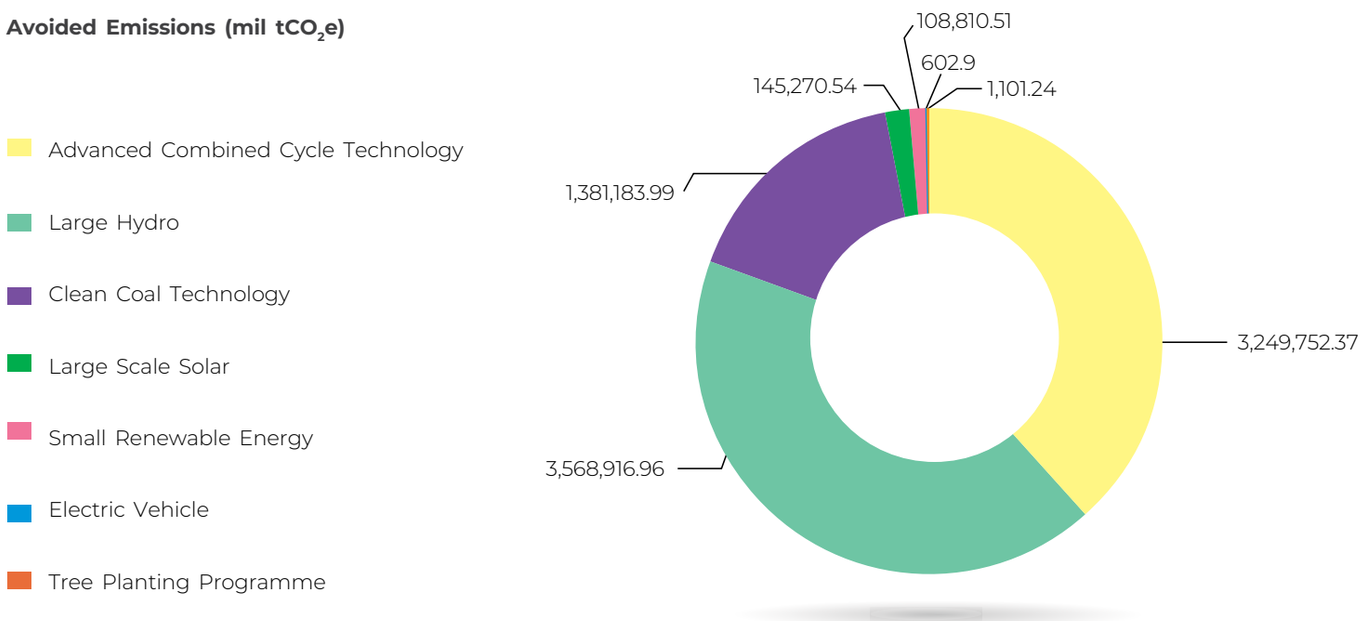
*Note:*

- *GJ = Gigajoule ; MWh = Megawatt hour ; GWh = Gigawatt-hour ; $tCO_2e$ = metric tons of carbon dioxide equivalent*

**GHG Emissions Avoidance**

In 2024, we achieved the emissions avoidance of 8.46 mil $tCO_2e$ due to our emissions avoidance initiatives and investment in technology.

**Avoided Emissions (mil $tCO_2e$)**





MM 4

# Reliable Energy and Fair Tariff

Our commitment to stakeholders extends beyond merely providing a secure and reliable electricity supply; it encompasses addressing their expectations regarding affordability and sustainability. In addressing the future of the electricity industry within Malaysia, TNB is strategically navigating the evolving regulatory and policy landscape to ensure the best outcomes for its business, stakeholders, and the broader community. It is here that we recognise the symbiotic relationship between government support, TNB's proactive measures and the collective move towards a sustainable energy transition.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM4: Reliable Energy and Fair Tariff

We continue to see the Malaysian government's steadfast support for the Incentive-Based Regulation (IBR) framework, which has been governing our electricity sector since 2014 and implemented for three (3) Regulatory Periods (RP). The IBR framework has enabled enhancements in our network infrastructure, including the improved agility, flexibility and regional interconnectivity of the grid. In December 2024, the government has approved TNB Regulatory Period 4 (RP4) with RM42.82 billion of CAPEX, which consists of RM26.55 billion base CAPEX and RM16.27 billion contingent CAPEX, allocated from 2025 to 2027 to accelerate energy transition plan for the nation. TNB continues to perform beyond the requirements of the IBR framework, with world-class System Minutes and System Average Interruption Duration Index (SAIDI) ensuring reliable energy is supplied to our customers. With the IBR framework, tariffs are established in a fair and transparent manner to address local economic growth and socioeconomic challenges.

## MANAGEMENT APPROACH

### ENSURING RELIABLE SUPPLY

In 2024, we upheld our world-class grid performance, recording Transmission System Minutes of 0.0019 minutes and a System Average Interruption Duration Index (SAIDI) of 47.88 minutes. This achievement is an outcome of our implementation of the ISO 55001 Asset Management System, which promotes optimal asset performance through structured and systematic approaches, including risk-based preventive maintenance supported by data analytics. Additionally, a total of RM3.2 billion was invested in FY2024, to strengthen grid network resiliency ensuring continuous reliable supply to customers despite facing complexity with greater demand supply and RE interconnection and more complex system in near future.

Moving forward for RP4 (2025-2027), we intend to increase investments in the national grid to make the grid more modern, reliable and dynamic in addressing the challenges of Energy Transition. We believe that the demand for clean and renewable energy will continue to grow spurred by the trend in digitalisation and artificial intelligence that requires more data centres to be constructed, as such will continue to play our role in strengthening grid resiliency and reliability in delivering top notch product and services for our customers.

We have introduced the Green Lane Pathway, a strategic initiative aimed at enhancing Malaysia's data centre market. This pathway offers efficient and environmentally responsible solutions for data centre operators by streamlining the onboarding process, expediting approvals, and facilitating a smoother setup of data centre operations in the country.

A key feature of the Green Lane Pathway is its fast-track electricity supply, which connects data centres three times faster than the standard delivery time. This reduces the implementation period from range of 36 to 48 months to just 12 months. Since the establishment of the Green Lane Pathway, we have successfully completed all 18 supply connections ahead of schedule, meeting a demand of 1,856MW. In 2024, we completed nine (9) data centres electricity supply projects, with a total energy demand of 1,236MW, which represents 66% of the total energy demand. Additionally, TNB has established a One-Stop Centre (OSC) to assist data centre investors, providing dedicated support services to attract more companies to establish their operations in Malaysia.

### ROBUST BUSINESS CONTINUITY MANAGEMENT (BCM)

In the event of disruptions to our business, we are fully committed to preparing and responding effectively, guided by the TNB BCM Framework. Our BCM Framework provides a structured approach that enables us to respond quickly and effectively while ensuring the continuity of our operations towards greater resilience.

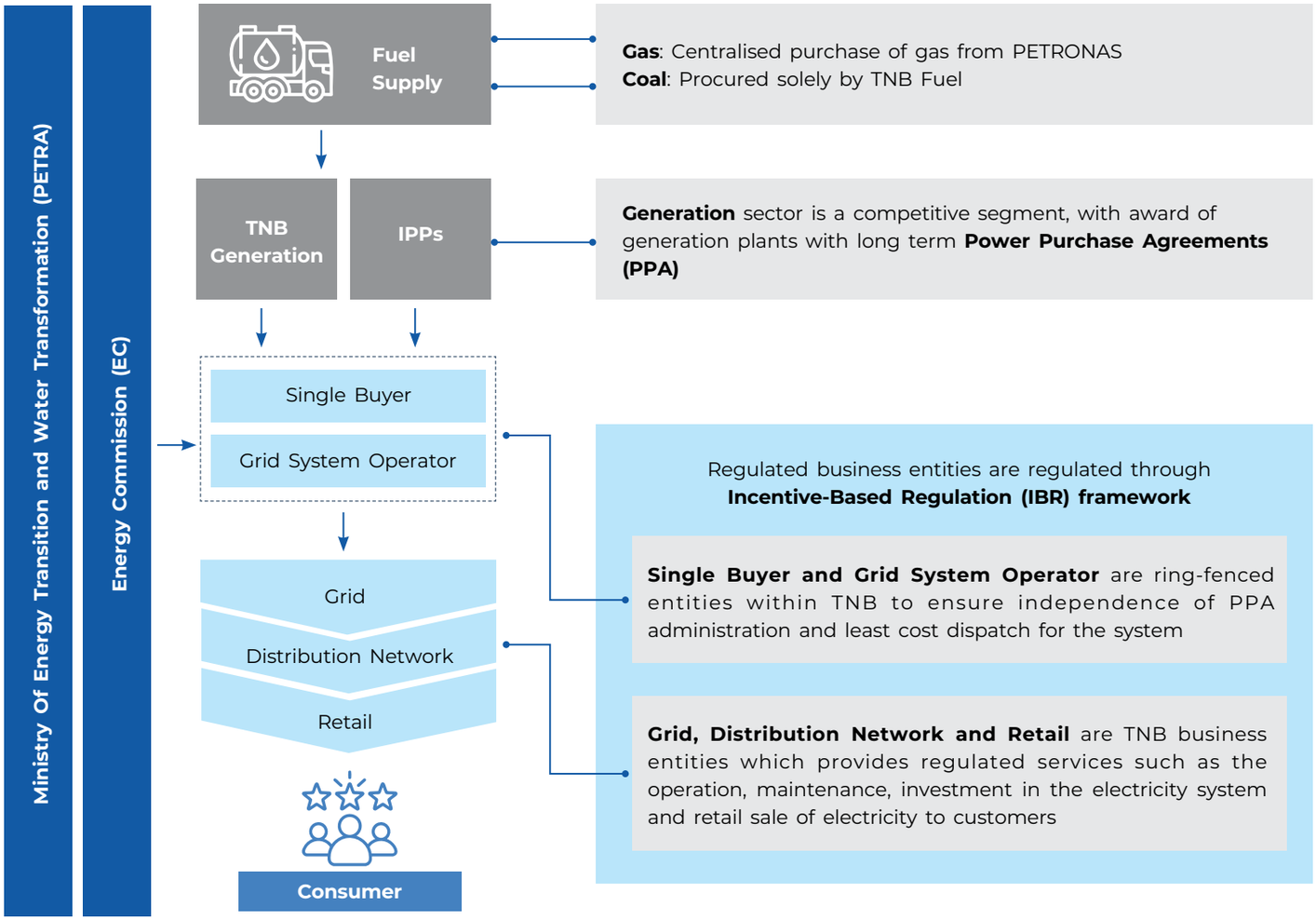
*Refer to TCFD pages 145-153*


*In time of needs, mobile generator set will be despatched to ensure continuous power supply to our customers.*

## FAIR AND TRANSPARENT TARIFF DETERMINATION

The electricity tariff structure is governed by the Energy Commission (EC) based on the IBR framework with built-in incentives to improve our efficiency and for greater tariff transparency to our customers. TNB is protected against fuel cost fluctuations with the effective implementation of the Imbalance Cost Pass-Through (ICPT) mechanism within the IBR framework.

Below is the electricity ecosystem and regulatory framework which supports a transparent tariff structure:




In 2024, the Government continues to uphold the Imbalance Cost Pass-Through (ICPT) mechanism, focusing on a more targeted approach for domestic customers for 1H2024. This includes the removal of rebates for domestic customers with consumption between 600 - 1,500 kWh, ensuring that subsidies are allocated more effectively to protect vulnerable groups.

Overall, the ICPT framework has proven to be an effective mechanism for maintaining the balance between ensuring sustainable electricity supply and supporting vulnerable customers, ultimately contributing to the stability of the electricity market in Malaysia. For the upcoming ICPT implementation, TNB will continue to ensure that the ICPT mechanism remains effective and responsive to market conditions. TNB will work closely with the Government to further enhance the ICPT mechanism through forward forecast approach, alongside frequent adjustment of the additional generation costs. This enhancement will also balance the need for fair pricing.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM4: Reliable Energy and Fair Tariff

The Government has launched the Corporate Renewable Energy Supply Scheme (CRESS) in September 2024 to enhance corporate access to green electricity supply. CRESS is a strategic initiative which aims to provide corporations with greater access to green electricity, reinforcing Malaysia's commitment to a sustainable energy future. This programme leverages the concept of open grid access, enabling third parties to supply electricity to their preferred customers using the grid network under a regulated system access charge.

CRESS principle ensures that energy prices are determined through voluntary agreements between parties, free from external compulsion. This concept facilitates a marketplace where the price of energy is negotiated in good faith, with both buyer and seller seeking mutually acceptable terms. The aim is to create a transparent, fair, and competitive environment that ensures both sides can sustain their interests.

For the first phase, CRESS is open to high and medium voltage power consumers. This means that existing buildings, on top of buildings requiring new or additional power demand, can utilise green electricity through the CRESS policy in Malaysia.

### REGULATORY ENGAGEMENT TO STRENGTHEN INSTITUTIONAL GOVERNANCE

We consistently engage with regulatory stakeholders to enhance the governance framework of the electricity sector, working towards balancing the energy trilemma. We continue to contribute to governmental studies and policy formulation, including the implementation of the National Energy Transition Roadmap (NETR) flagship projects and the CRESS.

The effectiveness of our engagement efforts is reflected in the Regulatory Relationship Strength Index (RRSI) score, which gauges the sentiment and expectations of key ministries, regulators, and government agencies that directly interact with TNB. Dedicated TNB personnel engage with stakeholders at the federal and state levels to address potential issues and enhance mutual collaboration. We achieved our highest RRSI score in 2024 with an overall trust score of 94%, surpassing our target of 92%, showcasing a consistent increase since 2020.

### OUR PERFORMANCE

**PERFORMANCE: Additional Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| G4 – EU4 | - | **Regulatory Relationship** | | | | | |
| | | Regulatory Relationship Strength Index (RRSI) | % | 85 | 92 | 94 | >92 |
| | - | **Electricity Transmission System** | | | | | |
| | | Transmission System Minutes | Minutes (for Peninsular Malaysia operations) | 0.172 | 0.483 | 0.0019 | <1.5 |
| | | | Minutes (for Sabah operations) | 14.22 | 16.83 | 0.548 | <5.0 |
| G4 – EU29 | - | **Average Power Outage Duration** | | | | | |
| | | System Average Interruption Duration Index (SAIDI) | Minutes/ Customer/ Year (for Peninsular Malaysia operations) | 45.06 | 46.10 | 47.88 | ≤48.00 |
| | | | Minutes/ Customer/ Year (for Sabah operations) | 286.21 | 266.37 | 203.65 | ≤220 |

*Note:*
- *Additional indicators disclosed to support the narrative, and the target setting is based on industry best practices.*

MM 5

# Health, Safety and Well-Being

Safeguarding the lives of our employees and vendors through robust occupational safety and health management systems and best practices is one of our top priorities. We are committed to providing a safe and conducive workplace where our employees and vendors feel cared for and supported while contributing to our shared goals. As a caring and responsible organisation, our commitment to safeguarding safety and health extends to all individuals affected by our operations.

Paramount focus is given to relevant safety standards where compliance is strictly imposed to mitigate the risks associated with work-related injuries and illnesses. Regular health and safety audits and assurance works are conducted with focus on improvement beyond compliance. By continuously refining our safety culture and conducting engagement and risk assessment with customised approach, we strive to inculcate self-regulation at all workplaces whilst strengthening the tone from the top from TNB BOD and top management safety committees.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM5: Health, Safety and Well-Being

We maintain vigilance and constant attention to safety and wellbeing in our workplace where safety is not only a corporate objective but also a commitment to mutual responsibility between the company, employees, vendors and the public.

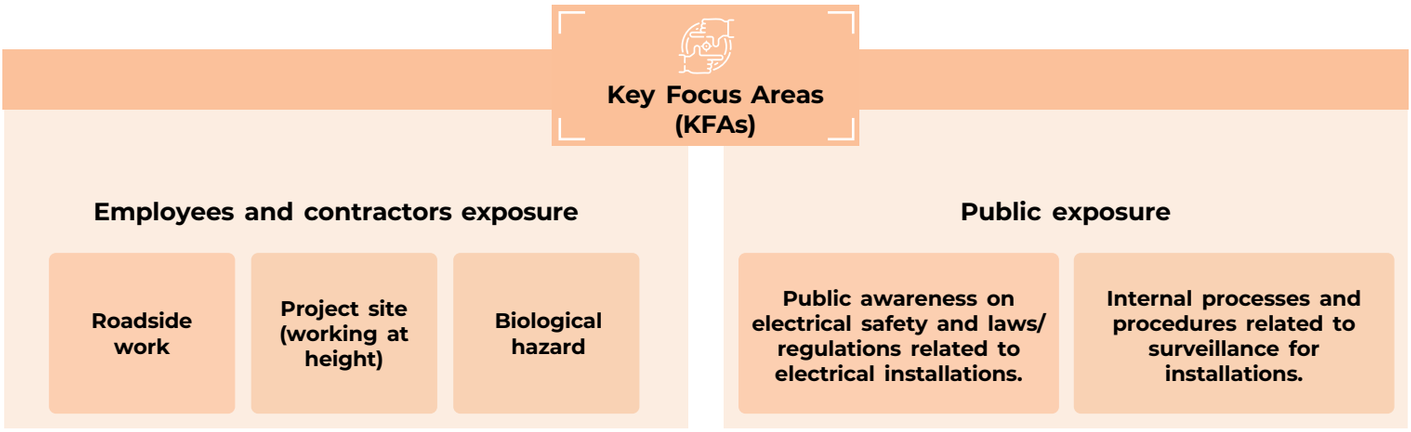
## MANAGEMENT APPROACH

### SAFETY, HEALTH & GOVERNANCE OVERSIGHT

We have strengthened our governance by enhancing the oversight and management of health and safety matters. In 2024, the Terms of Reference and membership of the TNB Health, Safety & Environment Committee (HSEC) have been enhanced with approving authority to drive the implementation of HSE across TNB. Chaired by the Chief Distribution Network Officer (CDNO), with members from the top management of key operations and corporate functions, the HSEC deliberates strategies and monitors the performance of initiatives implemented across TNB Group. The Board Sustainability and Risk Committee (BSRC) and TNB Group Executive Management Committee (GEMC), chaired by the President/Chief Executive Officer, maintain oversight on the implementation of HSE strategies and initiatives.

We uphold rigorous safety standards with the aim of zero workplace fatality and maintaining a Lost-Time Injury Frequency Rate (LTIFR) below 1.0.

In 2024, the number of fatal accidents remained at four (4) as per previous year. A detailed diagnostics based on past incidents was conducted to identify strategic initiatives to enhance our health and safety management practices across the organisation. GEMC approved the identified key focus areas as follows:




We have zero tolerance to fatality and every fatal accident is investigated and deliberated vigorously to identify root causes and actions to prevent recurrence. In the event of a fatal accident, the HSEC convenes immediately to ensure urgent mitigations are taken. The outcomes of fatality investigations are deliberated at GEMC and BSRC.

We remain guided by the TNB Occupational Safety and Health (OSH) Policy, which underscores our unwavering commitment to adhering to relevant legislation and regulations. This includes complying with all the relevant laws and regulations, namely the Occupational Safety and Health Act 1994, Electricity Supply Act 1990, Fire Services Act 1988, as well as the Energy Commission licensing conditions.

The Health, Safety and Environment Management System (HSEMS) provides a framework for TNB Group to ensure the health and safety of employees, contractors and the public are managed holistically and systematically, based on the principles of ISO management systems.

Our business entities that are currently certified with ISO 45001:2018 Occupational Health and Safety Management Systems are:

**Business Entities Certified with ISO 45001:2018**

| | |
|---|---|
| 01 | TNB Power Generation Sdn. Bhd. |
| 02 | Grid Division |
| 03 | Distribution Network Division |
| 04 | Project Management & Control (PMC), PSD |
| 05 | Malaysian Transformer Manufacturer (MTM) Sdn. Bhd. |
| 06 | Tenaga Cable Industries (TCI) Sdn. Bhd. |
| 07 | Tenaga Switchgear (TSG) Sdn. Bhd. |
| 08 | Sabah Electricity (Generation, Transmission and Distribution Divisions) |

**Health & Safety Training For Employees**

We are committed to building employee capability in health and safety practices and culture, ensuring that safety remains paramount in all our endeavours and is ingrained in every aspect of our TNB operations. Every two years, employees undergo mandatory safety and health training through the Tenaga Safety Passport module.

To enable greater self-regulation among our employees, HSEMS implementation training is provided to employees to ensure they are adequately trained to implement health and safety practices in respective workplaces.

We continue to provide health and safety trainings for our employees. In 2024, a total of 13,973 employees group-wide attended the related trainings, underscoring our dedication to equip our workforce with the essential health and safety skills and knowledge.

**Health & Safety Risk Assessments**

We meticulously identify all work-related hazards, assess the health and safety risks, and establish relevant controls to eliminate hazards and mitigate risks through our Hazard Identification, Risk Assessment, and Risk Control (HIRARC) procedure. Our HIRARC procedure is developed based on guidelines from the Department of Occupational Safety & Health (DOSH) and forms the foundation of our safety protocols. HIRARC procedures must be carried out prior to the commencement of any project and maintenance works. We conduct regular training sessions on HIRARC to ensure comprehensive understanding and implementation of the procedure across our operations.

Specific risk assessments are also conducted to assess exposures related to the workplace and work conditions such as Chemical Health Risk Assessment (HRA), Noise Risk Assessment (NRA) and Ergonomic Risk Assessment (ERA).

**Life Saving Rules**

We have implemented five (5) out of six (6) Life Saving Rules (LSR), which are LSR 1-5, with the primary objective of preventing serious accidents that could result in fatalities among employees and contractors. In 2024, the LSR consequence management process was enhanced with the inclusion of human factor assessment.

| Core Rules | |
|---|---|
|  | LSR 1:<br>Isolate, earth and test before touch |
|  | LSR 2:<br>Valid permit to work mandatory |
|  | LSR 3:<br>Wear arc flash suit when switching |

| Supplementary Rules | |
|---|---|
|  | LSR 4:<br>Use fall protection |
|  | LSR 5:<br>Obtain authorisation before entering confined space |
|  | LSR 6:<br>Caution suspended load |

We refined our incident investigation process by incorporating the Human Factor Analysis (HFA), a methodology introduced by Energy Institute, United Kingdom, to effectively identify the cause of human errors in an accident. This effort is to ensure fair justification is reached when human errors have resulted in fatal accidents before the consequence management process takes into effect. To effectively implement this initiative, 30 employees from various business entities were trained in-house by a representative from Energy Institute.

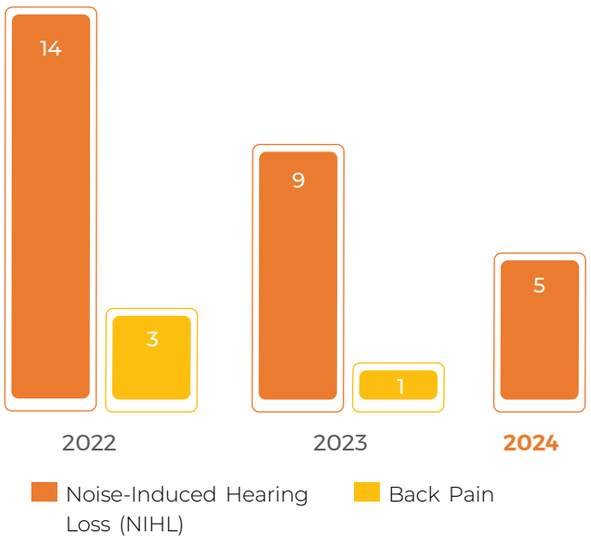
**Occupational Health**

We continue our efforts to strengthen occupational health (OH) practices by focusing on noise, ergonomic, and chemical management initiatives. Aligned with regulatory requirements, assessments in these areas were conducted with verification by internal audits and external parties.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM5: Health, Safety and Well-Being

**Number of occupational diseases for 2022-2024**




We continue to participate in the Systematic OH Enhancement Level Program (SOHELP) organised by DOSH. This programme drives occupational health compliance and improves overall health among employees, where companies with best practices based on a year of evaluation are acknowledged in the annual National SOHELP Convention. A total of 17 business entities with high exposure have enrolled in the SOHELP programme to drive the reduction of occupational diseases. In 2024, our OH practices were acknowledged with 2nd Prize in the Best SOHELP Award (Category 2 – Conglomerate Company) at the National SOHELP Convention 2024.

**Public Safety Awareness Programme**

As a caring and responsible organisation, we are committed to enhancing public safety. Any incidents related to TNB electrical installation involving the public safety are highly of our importance. TNB management, through HSE committee reviews investigation outcomes and identifies mitigation actions for each incident, overseen by BSRC to prevent recurrence. Significant effort has been carried out to mitigate these incidents to happen in the future through collaborative efforts with both internal and external stakeholders.

Key initiatives include the "RumahKu Selamat" campaign, where we encourage employees and contractors to promote electrical safety within their families. We also engaged targeted community groups, particularly those in plantations focusing on palm, paddy farmers, and fishermen to educate them about electrical hazards and safety.

An integrated public safety campaign during flood season raises awareness about electrical safety before, during, and after floods. It engages customers in flood-affected states through multi-lingual print media, digital and radio advertisements, personalised myTNB engagements, and visits to temporary flood shelters to distribute safety posters. These were further shared on TNB's social media accounts and through collaborations with Key Opinion Leaders (KOL), reinforcing the importance of electrical safety as part of disaster preparedness. Additionally, we work closely with the Energy Commission (EC) and local authorities to ensure compliance and safety in house renovations and TNB installations. Through these initiatives, we strive to foster a safer environment and promote sustainable practices within our communities.


*Instilling safety as an integral aspect of our employees' daily work culture through toolbox meeting.*

## TENAGA SAFETY CULTURE

We instill safety to be an integral aspect of our employees' everyday working culture by anchoring on four (4) core behaviours of "Assess," "Comply," "Intervene" and "Actively Caring" (ACIA). To nurture these fundamental behaviours, we implement a wide range of initiatives to progressively inculcate the safety mindset. We conduct Safety Culture Assessment (SCA) once every two (2) years to promote leadership involvement and foster a sense of health and safety ownership by adopting the "Hearts and Minds Safety Culture Toolkit" methodology developed by the Energy Institute in the United Kingdom. The last assessment was conducted in 2023 where the result was at "Proactive" level. This year we focus our efforts to address gaps identified through the Safety Culture Management Plan (SCMP).

Our appointed HSE Culture Change Agents (HSE CCAs) act as ambassadors who advocate the ACIA behaviour through interactions and consistent communication, as well as monitoring and evaluating workplace safety. This encourages employees' participation in health and safety implementation with two-way communication to inculcate the Tenaga Safety Culture.

Our group-wide *Nampak, Dengar & Rasa Selamat* (NDRS) framework advocates occupational safety and health awareness and practices. This framework anchors on three (3) core elements, namely engineering, education and enforcement, and is supported by a consequence management process that rewards positive behaviour, encourages good practices, and addresses non-compliance appropriately. We give recognition to individuals and business entities for outstanding performance and behaviour during NDRS Award ceremony that is conducted every year.

In 2024, we further reinforced our TNB Stop Work Policy by implementing the *Intervensi Stop Work* (ISW) guideline across the Group, whereby all employees are empowered to intervene and stop work if an unsafe condition or act is observed. This initiative is enabled through the HSE Wallet mobile application for real-time reporting and response.

## ADVANCING HSE DIGITAL TRANSFORMATION

We leverage on digitalisation to manage and centralise HSE data with the progressive rollout of modules for the holistic implementation of our eHSE online system. The TNB Safety Information System (TSIS) captures reports of incidents and near misses, and incidents are investigated to identify corrective and preventive actions to prevent recurrence. The HSE Wallet mobile application enables employees to record potential incidents, stop work intervention occurrences and good safety and health practices across the Group.

In 2024, we upgraded eHSE system by integrating multiple modules that incorporate Non-Conformance Report (NCR), Notice, Compound & Lawsuit (NCL), Safety Health Committee Online, Chemical Register and Legal Compliance. This upgrade streamlines our HSE processes to strengthen compliance and accountability across the Group and facilitates analysis and diagnostics for informed decisions.

## SUPPORTING EMPLOYEES' HEALTH AND WELLNESS

We encourage our employees to stay active by continuing our wellness programme through subscription to the BookDoc mobile application where all employees are encouraged to track their daily steps as part of our initiative to promote fitness.

We conduct basic health screenings for all employees nationwide to monitor their health status. The health screening provides a baseline for employees to gauge their vital health statistics such as blood glucose levels, blood pressure, and Body Mass Index (BMI). Where necessary, TNB's Wellness Team will provide basic counselling and advice to employees on steps to modify their lifestyle and improve their overall health. Intervention plans are also made available such as M-Quit, a programme to help employees to quit smoking, and Biggest Loser challenge, a 6-month programme to manage weight and fitness.

Weekly 'Wellness Wednesday' and monthly "Are You Ok? Jom Sembang" webinars are held throughout the year in collaboration with panel hospitals on health and wellness-related topics, open to all employees and retirees. These webinars, with at least 1,000 participants each session, aim to increase awareness on common global health issues and holistic wellbeing, including identification and control of physical and mental health, treatment of bacterial and viral diseases, and prevention through healthier habits and lifestyle. In 2024, over 50 global health topics were conducted in this webinar sessions, ranging from various subjects including bipolar disorder, Attention Deficit Hyperactivity Disorder (ADHD) and depressions, stress management, cancer, diabetes, eye disease, monkey pox infection, and weight management.

*TNB encourages our employees to stay active by participating in the wellness programme.*

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM5: Health, Safety and Well-Being

### OUR PERFORMANCE

**PERFORMANCE: Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **Health & Safety** | | | | | | | |
| GRI 403-9 | C5(a) | **Number of fatalities as a result of work-related injuries** | | | | | |
| | | Employees | Number | 0 | 3 | 0 | Zero fatalities |
| | | Contractors | Number | 2 | 2* | 4 | |
| | | Total (Employees and Contractor) | Number | 2 | 5* | 4 | |
| | C5(b) | **Lost-Time Injuries Frequency Rate (LTIFR)**** | | | | | |
| | | Employees | per million manhours | 0.82 | 0.74 | 0.87 | <1.0 |
| | C5(c) | **Number of employees undergoing Health & Safety trainings** | | | | | |
| | | Number of employees undergoing Health & Safety trainings | Number | 18,986 | 12,192** | 13,973 | 2% annual increase |

** Reinstatement for FY2023 due to an incident that happened in 2023 but the fatality of victim in 2024.*

*** Data for FY2022 has been reported based on Safety, Health and Environment training categories meanwhile data FY2023 onward reported based on Health and Safety Training categories. Reinstatement for FY2023, due to alignment with Bursa guidelines with focus on health and safety training. In TNB, health and safety training have been identified based on respective job hazards.*

**PERFORMANCE : Additional Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **Health & Safety** | | | | | | | |
| – | – | **Fatality rate result of work-related injuries** | | | | | |
| | | Employees | per 1000 workers | – | 0.09 | 0.00 | Zero fatalities |
| | | Contractors | per 1000 workers | – | 0.04 | 0.10 | |

*Note:*

- *Additional indicators disclosed to support the narrative, and the target setting is based on industry best practices.*

MM 6

# Biodiversity & Environmental Management

At TNB, our commitment to responsible environmental management is evident through effective actions and ongoing initiatives, especially in the areas of toxic emissions, biodiversity, waste management and water management. TNB BOD and Management have set a clear tone regarding environmental management for the preservation and conservation of natural resources, which is reflected in the TNB Environmental Policy. Our business entities are certified with ISO 14001:2015 - Environmental Management Systems (EMS). We remain guided by the TNB Health, Safety and Environmental Management System (HSEMS), which sets out environmental risk identification and control requirements. We are committed to protecting the environmental ecosystem through the implementation of a circular economy and proactive prevention of waste and pollution.

The fight against climate change cannot be separated from a commitment to the conservation of natural capital, which is increasingly impacted by the consequences that climate change is having on biodiversity and ecosystems. In 2024, we established TNB Biodiversity Framework with the commitment to minimise the impact on biodiversity and protect the land, aquatic and marine ecosystems comprising elements of flora, fauna, water, soil and air.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM6: Biodiversity & Environmental Management

### MANAGEMENT APPROACH

#### TNB ENVIRONMENTAL COMMITMENTS

TNB Sustainability Policy and TNB Environmental Policy are key guidance in driving our environmental objectives and initiatives across the organisation. Our environmental commitments are summarised as follows:

1. Reduce emissions, seek opportunities in renewable energy and promote energy efficiency, in line with TNB Energy Transition Plan
2. Optimise the utilisation of natural resources through effective land use and water management
3. Manage waste responsibly, implement circular economy and prevent pollution
4. Promote to minimise impact on biodiversity and protect environmental ecosystem
5. Strive to comply with environmental laws and regulations and proactively managing risks

Achieving our goals relies on fostering a culture of environmental responsibility among employees, contractors, and suppliers.

#### ENVIRONMENTAL MANAGEMENT SYSTEM

Our environmental management system, embedded in TNB HSEMS is applicable across TNB Group, as guidance for environmental management and in compliance with regulatory requirements. TNB HSEMS supports continuous improvement including setting policies and implementation of action plans to manage environmental hazards and minimise environmental risks.

We actively improve our environmental management through benchmarking, site inspections, external and internal audits. The annual internal audits are conducted by ISO 14001 certified internal auditors. In 2024, nine (9) of our business entities were certified to ISO 14001:

**Business Entities Certified to ISO 14001**

| | |
|---|---|
| 01 | Grid Division |
| 02 | TNB Power Generation Sdn. Bhd. |
| 03 | Malaysia Transformer Manufacturing Sdn. Bhd. |
| 04 | Tenaga Cable Industries Sdn. Bhd. |
| 05 | Tenaga Switchgear Sdn. Bhd. |
| 06 | Stesen Janakuasa Patau-Patau, SESB |
| 07 | Stesen Janakuasa Sandakan, SESB |
| 08 | Stesen Janakuasa Tawau & Kubota, SESB |
| 09 | Jabatan Pengurusan Gudang & Logistik, SESB |

Recognising the importance of developing competencies in environmental management, we have 194 competent personnels accredited by the Department of Environment, who are experts in waste, effluent and emissions management. Their responsibilities include providing advisory services, planning, and implementing effective environmental practices and notifying authorities when required.

| No. | Environmental Certification | Applicability | Number of certified personnel |
|---|---|---|---|
| 01 | Certified Environmental Professional in Scheduled Waste Management (CEPSWaM) | • Power Plants<br>• Warehouse | 75 |
| 02 | Certified Environmental Professionals in the Operation of Industrial Effluent Treatment Systems (CePIETSO) | Power Plants | 21 |
| 03 | Certified Environmental Professionals in Bag Filter Operation (CePBFO) | Power Plants | 17 |
| 04 | Certified Environmental Professionals in Sewage Treatment Plant Operation (CePSTPO) | • Power Plants<br>• Offices | 14 |
| 05 | Certified Professional for Environmental Officer in Environmental Impact Assessment (CePEOEIA) | EIA Projects | 21 |
| 06 | Certified Inspector of Sediment and Erosion Control (CISEC) | | 28 |
| 07 | Certified Professional for Environmental Officer in EIA (CePEOEIA) | | 18 |

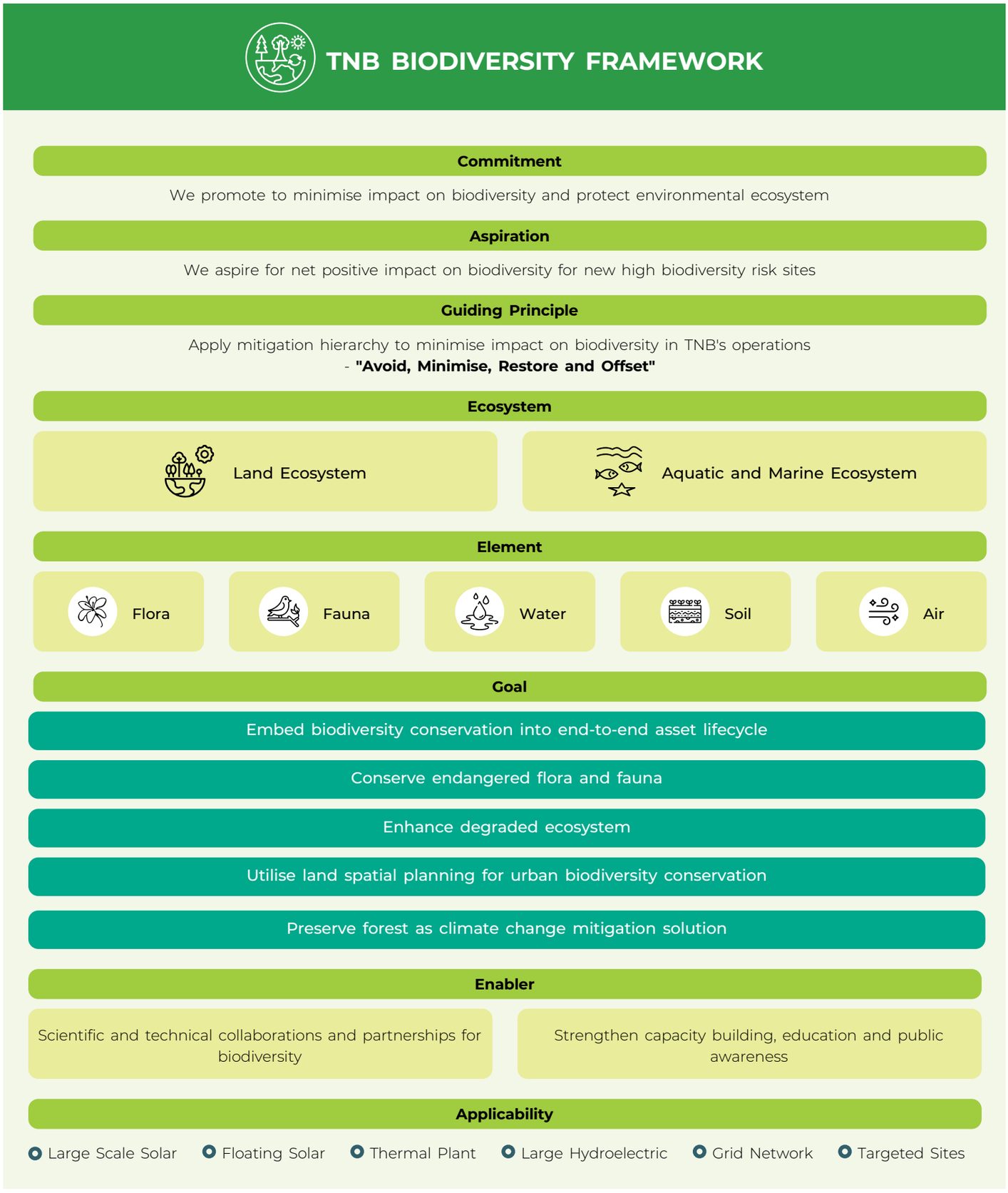
## BIODIVERSITY MANAGEMENT

The TNB Biodiversity Framework is developed with the aspiration to achieve a net positive impact on biodiversity in new high biodiversity risk sites, aligning with the Kunming-Montreal Global Biodiversity Framework and Malaysia's National Policy on Biological Diversity 2022-2030. Our guiding principle focuses on applying the mitigation hierarchy to minimise impact on biodiversity in TNB operation. The framework embeds conservation across the asset lifecycle, focusing on endangered species, ecosystem restoration, forest preservation for climate action, and urban biodiversity through spatial planning.

*Fish sanctuary conservation at Sungai Chilling, Kuala Kubu Baru to mitigate the impact of grid development in that area.*

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

### MM6: Biodiversity & Environmental Management




**Targeted sites covers degraded areas, high biodiversity value areas and locations with ecotourism potential*

Our operations impact diverse ecosystems, with key biodiversity risks from habitat use, water exploitation, and pollution. Aquatic impacts are more prominent with thermal plants and floating solar, while land projects like hydroelectric and large scaled solar (LSS) mainly affect habitat fragmentation and land use. Understanding these biodiversity loss drivers helps guide our efforts in minimising their ecological footprint and ensuring sustainable energy production.

| Ecosystem | Elements | Biodiversity Loss Driver | TNB Operation | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | LSS | Floating Solar | Onshore Wind | Offshore Wind | Thermal Plant | Hydro electric | Grid |
| AQUATIC AND MARINE ECOSYSTEM | Flora and Fauna | Use of aquatic habitat | | H | | | H | | L |
| | | Use of marine habitat | | H | | L | L | | L |
| | | Invasive species | | L | | | H | L | |
| | | Conflict | | L | | | M | | |
| | Water | Water exploitation | | | | | H | H | |
| | | Water pollution | | L | | L | H | L | L |
| | Air | Air pollution | | | | | | H | |
| LAND ECOSYSTEM | All | Climate change | | | | | H | | |
| | Flora and Fauna | Land use changes and habitat fragmentation | H | | L | | M | H | M |
| | | Invasive species | | | | | | L | |
| | | Conflict | H | | | | | H | L |
| | Air | Air pollution | | | | | H | | |
| | Soil | Soil pollution | | | | | L | | H |

*Note: Based on TNB internal high level analysis*

**Legend**

H High Potential Impact

M Medium Potential Impact

L Low Potential Impact

**Addressing Biodiversity Impact**

Our data-driven methodology supports adaptive biodiversity management with measurable goals. Following successful initiatives implemented at the Ulu Jelai and Hulu Terengganu hydroelectric projects, we continue to extend these initiatives at the Nenggiri Hydroelectric Project, Bukit Selambau Solar Farm, and biodiversity conservation at Sultan Azlan Shah Power Station.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM6: Biodiversity & Environmental Management

Our initiatives to mitigate biodiversity risks in our operations prioritise preventive and rehabilitative actions, comply with environmental laws and avoid Protected Areas as a result of Environmental Impact Assessment (EIA) studies.

| | |
|---|---|
| **Hydroelectric Site** | • Nenggiri Hydroelectric Project: Collaborate with Jabatan PERHILITAN on wildlife management by maintaining wildlife corridors, rescuing animals, and educating workers on wildlife safety.<br>• Royal Belum State Park: Support the community led AKEKCHEP Fish Sanctuary to protect local fish and sustain indigenous livelihoods.<br>• Hydro Lake Sultan Abu Bakar: Partner with the Pahang Forestry Department to rehabilitate degraded areas and engage local communities in sustainable farming.<br>• Annual ecology monitoring at multiple sites, including Hulu Terengganu, in compliance with the Environmental Quality Act with biodiversity health reports submitted to the Department of Environment. |
| **Grid Infrastructure** | • Tree Hyperspectral Identification System (THySIS) identifies endangered species along power lines for preservation.<br>• Elevated transmission towers in ecologically sensitive areas minimise vegetation clearing and restore habitats with native species.<br>• Fish sanctuary conservation at Sungai Chilling, Kuala Kubu Baru to mitigate the impact of grid development in that area. |
| **Large Scale Solar (LSS)** | • TNB Bukit Selambau: Development of a conflict management plan to address human-macaque conflicts.<br>• Sepang Solar: Improvement in operational activities to protect identified bird species.<br>• Bomen Solar Farm (Australia): Vegetation control aided by sheep grazing and beehive installations to promote pollination and ecosystem health. |
| **Tree Planting** | • My Brighter Green Programme: Supporting Malaysia's Greening Campaign to plant 100 million trees by 2025, a total of 49,214 trees have been planted nationwide. |

**Biodiverse Habitat**

We acknowledge that our operations may impact habitat protected under local and international regulations. Accordingly, we have identified endangered and threatened species listed by the International Union for Conservation of Nature (IUCN) at our operational sites to safeguard surrounding ecosystems.

| IUCN Conservation Status | No. of Species |
|---|---|
| Critically Endangered (CR) | 8 |
| Endangered (EN) | 21 |
| Vulnerable (VU) | 21 |
| Near Threatened (NT) | 20 |
| Lease Concern (LC) | 199 |
| Data Deficient (DD) | 0 |
| Not Evaluated (NE) | 209 |

In addition to My Brighter Green Programme, in FY2024, TNB has planted a total of 144 trees at Nenggiri Hydroelectric plant project site for the purpose of habitat and biodiversity rehabilitation.

*Refer to MM8 Community Development and Social Impact pages 125-129.*

### Biodiversity Engagement

We engage various stakeholders at different platforms, emphasising our commitment to conserve and manage biodiversity.

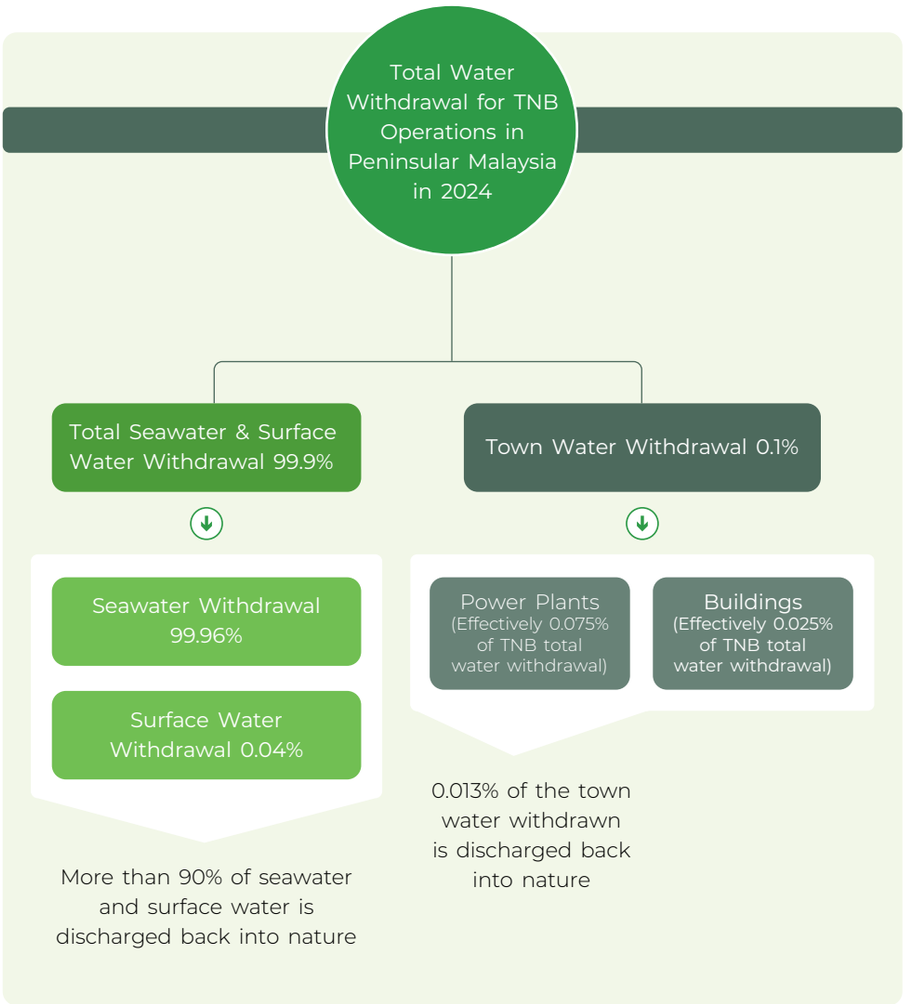
| | |
|---|---|
| Expert view in formulation of new protocols/guidelines in Malaysia | • Malaysia Platform for Business & Biodiversity<br>• Feasibility Studies and Development of Forest Carbon Offset Protocols in Malaysia |
| Dialogues with Governments or Regulators | • Terengganu Elephant Conservation Action Committee<br>• Terengganu Wildlife Conflict Management Committee |
| Participation in biodiversity forum/ activities at national and international level | • National Climate Governance Summit 2024<br>• Malaysia Biodiversity Forum 2024<br>• Biodiversity Day 2024, organised by the Malaysia Palm Oil Green Conservation Fund (MPOGCF) and Universiti Malaya (UM)<br>• ASEAN Carbon Forum 2024<br>• Sharing session on Nature-Based Solutions Projects in Malaysia organised by Fairatmos and the Embassy of the Republic of Indonesia |

## WATER MANAGEMENT

At TNB, we recognise that water is a finite resource. Water management initiatives and performance are among the key focus areas that are presented and deliberated in the SETC, demonstrating our commitment to efficient water management in our operations.

The SETC is chaired by the President/Chief Executive Officer (CEO), with members from TNB's top management team, to ensure executive-level responsibility for environmental, social and governance (ESG) matters. Our commitment to water efficiency is not just a responsibility but also a testament to our dedication to sustainable practices and resource conservation.

In FY2024, TNB consumed a total of 9,029 megalitres of water, a reduction of around 10% compared to the previous year. We withdraw water from seawater, surface water and town water for our operations, of which an estimated 90% or more was discharged back to the respective sources. Our focus, therefore, is to optimise the use of the 0.1% of town water withdrawn, where 0.013% of it is treated and safely discharged to nature. Our main efforts are concentrated on optimising the use of the remaining town water withdrawn through efficient operations, enhanced technologies, and innovation.



## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM6: Biodiversity & Environmental Management

**Town Water Optimisation in Thermal Power Plant Operations**

Our thermal power plants were built and continue to operate in accordance with the World Bank Environmental and Social Standards which include stringent water consumption protocols, aligned with high-efficiency thermal plant operations, reflecting our dedication to responsible and sustainable resource management.

Our power plant steam generation process is designed as a closed-loop system aimed at minimising reliance on town water sources. From 2023 to date, average water intensity (water consumption from town water source per net generation of respective plant) of our power plants is much lower than our counterparts with similar power plant technology, demonstrating our commitment to responsible water use.

Furthermore, we specialise in state-of-the-art plant upgrade initiatives. For instance, to address increasing water consumption since 2021 at our combined-cycle gas turbine plant, Sultan Ibrahim Power Plant, we installed 100 units of Zero Leakage Valve at the Heat Recovery Steam Generator (HRSG) in 2024 to reduce town water consumption.

**Alternative Water Sources for Thermal Power Plant Cooling System**

For our power plant cooling system, we utilise alternative sources such as seawater and river water to minimise dependency on town water sources.

Our open circuit Main Cooling Water (MCW) system effectively employs these sources, discharging water back into the sea at temperatures and chlorine levels compliant with the Department of Environment (DOE) standards, resulting in zero net water consumption. This approach underscores our commitment to sustainable practices and environmental stewardship, aligning with global water conservation standards established by the Electric Power Research Institute (EPRI). The average water intensity (water consumption from town water source per net generation of the respective plants) for our power plants is much lower than our counterparts using similar power plant technology.

| TNB Thermal Power Plant Water Consumption Intensity | | | | | |
|---|---|---|---|---|---|
| | | Water Intensity, Litre/kWh | | | |
| No. | TNB Genco Thermal Power Plant | TNB Genco Thermal Power Plant (Year 2024) | International Counterparts | Steam-water Cycle | Water source for cooling system |
| 1 | TNB Janamanjung | 0.161 | 0.36 – 0.52 *(Ultra-supercritical Boiler)* | Closed-Loop | Seawater |
| 2 | Jimah East Power | 0.097 | | Closed-Loop | |
| 3 | Kapar Energy Ventures | 0.242 | 0.41 – 0.57 *(Sub-critical Boiler)* | Closed-Loop | |
| 4 | Prai Power Station | 0.010 | 0.27 – 0.45 *(Combined-cycle Gas Turbine)* | Closed-Loop | |
| 5 | Tuanku Jaafar Power Station | 0.068 | | Closed-Loop | |
| 6 | Sultan Ibrahim Power Plant | 0.072 | | Closed-Loop | |
| 7 | Connaught Bridge Power Station | 0.062 | | Closed-Loop | River water |
| 8 | Gelugor Power Station | 0.034 | | Closed-Loop | Not Applicable (air-cooled) |

**TNB Generation Assets Located in Areas of Low Water Stress**

All of TNB generation assets in Peninsular Malaysia are strategically located in areas with zero water withdrawals from water-stressed areas. Our water stress mapping is based on the Aqueduct by the World Resources Institute. This proactive approach prevents potential conflicts over water use between industry and local communities.

### Rainwater Harvesting

As part of our commitment to water conservation, TNB has implemented rainwater harvesting systems at various assets for multiple purposes to reduce water usage.

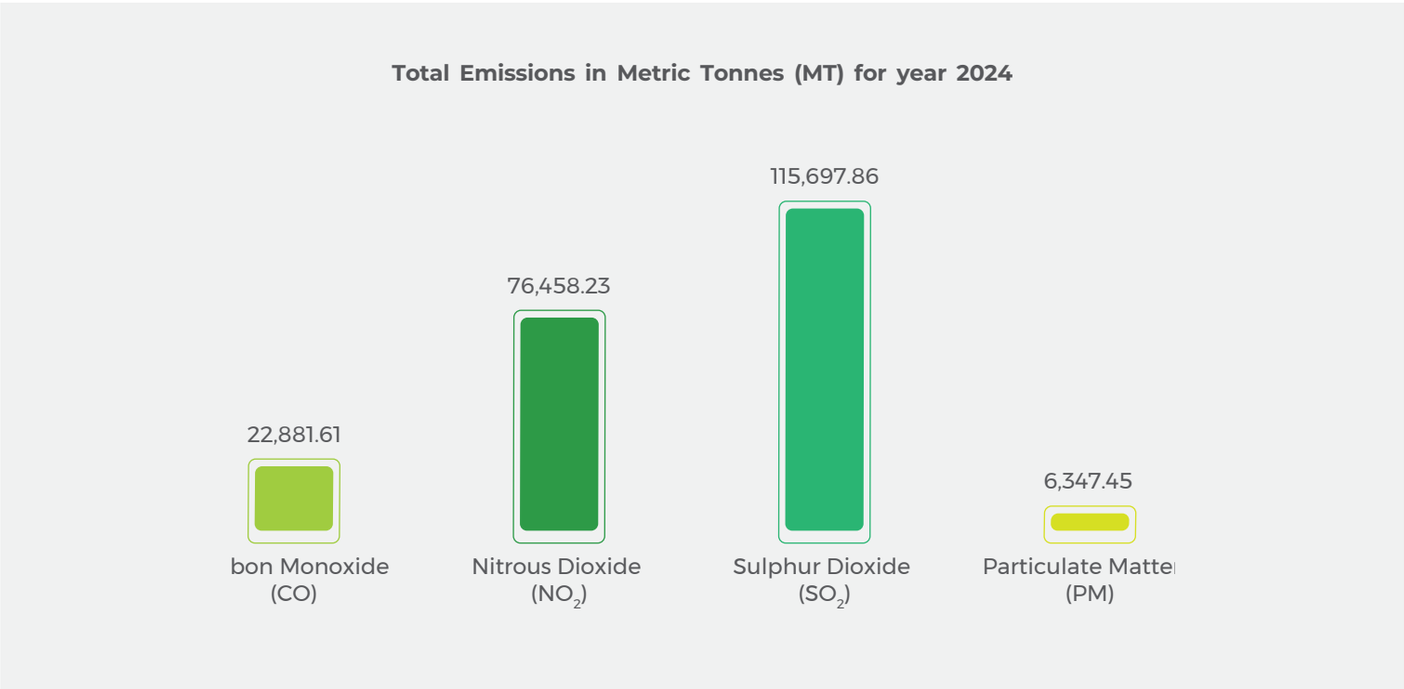
| Asset Type | Asset | Rainwater Harvested |
|---|---|---|
| **Large Scale Solar** | TNB Sepang Solar<br>TNB Bukit Selambau Solar | • Rainwater harvesting system with a capacity of 24,000 litres at TNB Sepang Solar and 1,000 litres at TNB Bukit Selambau Solar<br>• Mitigate erosion by decreasing ground runoff and essential to support PV module cleaning, cooling or fire prevention |
| **Thermal Power Plant** | TNB Janamanjung<br>Jimah East Power | • Rainwater harvesting system with a capacity of 1,375,000 litres at TNB Janamanjung and 1,890,000 litres at Jimah East Power<br>• Rainwater harvested is used for coal yard dust suppression and is recirculated into the process tank for reuse |
| **Substation** | TNB Pencawang Masuk Utama (PMU) Kuantan North | • Rainwater harvesting system with a capacity of 2,000 litres at TNB PMU Kuantan North Kuantan North<br>• The system useful for utilisation and reuse of rainwater for the building cleaning purpose |
| **Office Building** | TNB Headquarters, Bangsar | • Utilised for landscape irrigation and gardening |

### Water Reduction Initiative for TNB Office Buildings

Our "Drip by Drip, Watt by Watt" initiative is implemented at 109 TNB office buildings to promote water and energy efficiency. In 2024, we have saved a total of 17,863 $m^3$ of water consumption, a reduction of 20.5% compared to the previous year.

## TOXIC EMISSIONS MANAGEMENT

The combustion of fossil fuels produces emissions such as carbon dioxide ($CO_2$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulphur dioxide ($SO_2$) and particulate matter (PM). We actively mitigate our operations' impact to air quality by monitoring emissions in compliance with the Environmental Quality (Clean Air) Regulations 2014 and submitting annual toxic emissions reports to the DOE. Any deviations are reported within 24 hours, with corrective measures taken promptly.



# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM6: Biodiversity & Environmental Management

### WASTE MANAGEMENT

At TNB, our operations generate both hazardous and non-hazardous waste, each requiring tailored management and disposal strategies. We systematically categorise waste by its characteristics, origin, and potential environmental impact. This approach enables us to implement effective disposal, recycling, and treatment methods aligned with best practices.

Guided by the principles of the circular economy, TNB strives to establish a closed-loop waste management system that minimises waste generation, reduces environmental impact, and contributes to a sustainable future. Our initiatives are driven by our environmental policy and reflect our dedication to responsible environmental stewardship, focusing on:

**Raising Awareness:**

Promoting sustainable environmental practices among internal teams and external stakeholders.

**Enhancing Systems:**

Continuously improving our Health, Safety, and Environment Management System (HSEMS) to meet the highest safety and environmental standards.

**Innovative Technologies:**

Investing in cutting-edge solutions to advance environmental management practices.

**Regulatory Compliance:**

Ensuring full adherence to environmental laws and regulations while proactively identifying areas for improvement.

**Transparent Reporting:**

Maintaining accountability through detailed reporting of our environmental performance.

Our waste management efforts extend beyond compliance, emphasising education and collaboration to inspire sustainable practices among stakeholders. In anticipation of increasing solar and battery assets, we are committed to manage the end-of-life of these assets. By doing so, we aim to meet regulatory standards and prevent environmental harm, contributing meaningfully to a sustainable future.

#### Hazardous Waste Management

The TNB Scheduled Waste Roadmap 2018-2030 shapes our hazardous waste management strategy that is in line with national goals outlined in the DOE Strategic Engagement Plan 2021–2030. Our roadmap includes phased targets, starting with a 30% scheduled waste recycling rate by 2025.

Proactive waste prevention is our key priority and when waste generation is unavoidable, we manage it responsibly through the 4R approach — Reduce, Reuse, Recycle and Recover — alongside alongside our circular economy practices.

In compliance with the Environmental Quality Act, we strictly enforce the TNB Scheduled Waste Disposal Management Guidelines across all operations, which includes a five-step standardised process to manage hazardous waste through classification, storage, packing and labelling, inventory management, disposal and continuous monitoring.

Scheduled waste generated from our operations, including lead acid batteries, lubricating and hydraulic oils, contaminated soil, and chemical containers, are treated through reuse, cementation, or incineration as per regulatory requirements. With tailored disposal methods such as recycling of electronic waste, and physical/chemical treatment for mercury waste, we ensure safe and compliant waste handling to reduce environmental impact.

In terms of performance monitoring, we utilise the DOE-governed ESWIS system to enable reliable data tracking.

TNB continues to uphold best practices in hazardous waste management through inspections, risk-based audits, and Self Visual Report (SVR) programme. The SVR aims to promote self-regulation practices and accountability across our operations. In 2024, a total of 640 SVRs were recorded across 86 storage facilities.

#### Reducing Hazardous Waste and Maximising Recycling Rates

We have successfully reduced the amount of hazardous waste generated by 3.67% in 2024 (895,038 MT) compared to the previous year (929,123 MT). Of this hazardous waste, 55.58% (497,452 MT) was recycled.

Fly ash and bottom ash from our power generation operations constitute 99% of our total hazardous waste generated. The remaining hazardous waste is mainly used transformers, used lubricating oil, used batteries and e-waste.

Fly ash has substantial potential for reuse, particularly in construction. In 2024, we collaborated with ten (10) construction or cement companies to make use of the fly ash in the production of concrete and bricks, diverting the fly ash from landfills and promoting a circular economy. When recycling is not feasible, the fly ash is transported to secure, licensed landfills that adhere to DOE environmental standards.

### Enhancing E-Waste Management

Our e-waste management guidelines aim to significantly increase the amount of e-waste diverted from landfills. In 2024, we launched our E-Waste Inventory System for comprehensive e-waste tracking from waste generation to disposal, with our e-waste amounting to 10 metric tonnes (baseline). Moving forward, we aim to increase e-waste collection by 10% in 2025 from this baseline.

### Verification with Licensed Waste Collectors

We work exclusively with waste collectors licensed by DOE, ensuring responsible waste collection. To strengthen the validation of TNB's scheduled waste treatment, disposal methods, and data collection, we actively collaborate with our licensed vendors to ensure compliance and continuous improvement in our processes. In 2024, we began these efforts with onsite reviews, focusing on the collectors' waste treatment methods and inventory management. Visits to selected sites confirmed that 75% of our scheduled waste was recycled or recovered, reinforcing our commitment to the circular economy.

### A Streamlined Process for Responsible Disposal by Licensed Vendors

Damaged solar panels are stored at the licensed vendor's warehouse for responsible disposal, with approximately 300 panels already processed. The panels are meticulously dismantled, separating the glass and metal components. The glass is carefully broken down and disposed of at a designated industrial landfill, while the compressed metal is sold to a third party for recycling. For residential, commercial, industrial, and government clients, we prioritise recycling panels for reuse at other TNB sites if they are still under warranty and in good condition. This stringent approach not only ensures regulatory compliance but also significantly mitigates the environmental impact of our operations.

*TNB Chief Sustainability Officer (seventh from left) during a visit to a licensed waste collector.*

### Hazardous Waste Awareness Programmes

In 2024, we organised a symposium for our environmentally competent personnel to enhance their knowledge through the sharing of best practices in Grid Division and TNB Power Generation Sdn. Bhd., as well as to provide updates on the new Environmental Quality Act (Amendment) 2024 by DOE.

Various awareness initiatives for employees are also conducted, such as e-waste awareness videos and E-Waste Day at TNB headquarters, which allows employees to exchange e-waste for cash, thereby promoting responsible disposal.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM6: Biodiversity & Environmental Management

**Responsible for End-of-Life Management of Solar Panels & Battery**

As our solar capacity expands, so does our commitment to managing the end-of-life stage of solar panels. We recognise the importance of responsible end-of-life management for solar panels within a circular economy framework. By adhering to strict regulatory guidelines and employing the 3Rs principle (Reuse, Repurpose, Recycle), TNB ensures minimal environmental footprint during decommissioning. Furthermore, TNB actively explores avenues for panel reusability and recycling, aligning with Malaysia's ambitious target of achieving 70% renewable energy by 2050.

Our approach to solar panel end-of-life management adheres strictly to the Environmental Quality (Scheduled Waste) Regulation 2005, delegating the disposal process to licensed vendors under the close supervision of the DOE. This stringent approach ensures regulatory compliance and mitigates the environmental impact of our operations.

**A STREAMLINED PROCESS FOR RESPONSIBLE DISPOSAL BY LICENSED VENDORS**

**Storage of Damaged Solar Panels**

Damaged solar panels will be stored at the warehouse of the licensed vendor for further disposal. Approximately 300 solar panels waste have undergone the disposal exercise with the vendor.

**Segregation of Solar Panel Components**

Damaged panels will be dismantled from their structures and separated. For photovoltaic (PV) panels, the glass and metal components are typically separated first. The glass is broken down, and the metal frames are compressed into bundles.

**Recycling and Disposal Process**

Following segregation, the glass is disposed of at a designated industrial landfill. The compressed metal, meanwhile, is sold to a third-party for recycling.

**Residential, Commercial, and Industrial Solar Panels**

For solar panels installed for residential, commercial, industrial, and government clients, we prioritise recycling them for reuse at other TNB sites if there is a suitable site for re-installation, and the panels are still under warranty and in good condition.

In alignment with our circular economy commitment, we proactively explore initiatives across the solar energy lifecycle, from procurement to end-of-life management. These initiatives serve as integral steps towards supporting Malaysia's target of achieving 70% RE capacity target by 2050.

**Procurement**

We consider the recyclability of solar panels during procurement. This means prioritising components with high recycled content and favouring vendors with responsible sourcing practices.

**Product Lifespan Extension**

We focus on extending the lifespan of panels through proper maintenance, cleaning, and potential repair programmes. This reduces the need for early replacements and associated waste generation.

**Second-Life Applications**

We explore opportunities for reusing panels that are no longer suitable for primary use. For example, repurposing panels in non-critical applications.

Our subsidiary, TNB Research Sdn. Bhd. (TNBR), continuously seeks solutions to enhance solar PV circularity potential. TNBR has developed the Pilot Recycling System for PVs, which uses thermal treatment for material separation, supported by an optimised heat recovery design. The system is able to separate the PV samples into material components of clean glass, silicon wafer, metal and other recyclable resources.

By embracing these circular economy principles, we aim to establish a closed-loop system for solar energy, effectively minimising waste and environmental impact while fostering a more sustainable future.

In managing the battery lifecycle, we actively benchmark best practices and collaborate with industry partners to:

- Optimise battery performance
- Explore innovative second-life applications
- Minimise environmental impact through responsible recycling

*TNB launched the Uniforms and Fabrics Recycling Campaign with more than 100 tonnes of recycled waste collected by end of 2024.*

We have also intensified collaboration with vendors who are capable, licensed, and have vast experience in recycling and recovery to process our waste batteries.

Our commitment to responsible end-of-life solar and battery management extends beyond environmental considerations and encompasses minimising waste while educating stakeholders on sustainable practices.

**Responsible Effluent Management**

In mitigating legal and operational risks and ensuring that effluents meet quality standards to protect public health and the environment, we have developed the Industrial Effluent Treatment System (IETS) Management Guideline.

Industrial effluent treatment systems are fundamental in managing wastewater generated by TNB to safeguard the environment and ensure compliance with regulatory requirements. These systems encompass various stages and processes designed to remove contaminants from the effluent before its safe discharge into the environment.

**Non-Hazardous Waste Management**

Our non-hazardous waste management complies with the Solid Waste and Public Cleansing Management Act 2007 (Act 672) and regulations set by the *Jabatan Pengurusan Sisa Pepejal Negara* (JPSPN). We are taking a phased approach towards improving our non-hazardous waste management. In 2023, we introduced the Tenaga Solid Waste Inventory (TESWI) to streamline data collection and monitoring of non-hazardous waste generation, promoting waste separation and recycling practices.

In 2024, 958 tonnes of non-hazardous waste were generated, with garden waste as the largest category, followed by mixed waste, residual waste, paper waste and bulk waste. Of the total, 831.09 tonnes (86.8%) were disposed, while 126.91 tonnes (13.2%) were recycled. With data analysis and identification of key waste streams, we can pinpoint opportunities for targeted reduction and recycling efforts.

Initiatives such as source segregation, on-site composting and sustainable landscaping to transform waste into valuable resources are being explored to support our circular economy goals.

**Uniforms and Fabrics Recycling Campaign**

TNB launched the Uniforms and Fabrics Recycling Campaign in August 2024, targeting 75 tonnes of fabric collection by July 2025 across 135 locations in celebration of its 75th anniversary. This initiative promotes fabric waste recycling practices. By December 2024, the campaign had exceeded expectations, achieving 102.08 tonnes (136% of the target), with 89.86 tonnes (88%) from general fabrics and 12.23 tonnes (12%) from TNB uniforms. With strong participation and continued support from employees, TNB is making significant strides in reducing fabric waste and embedding a culture of recycling, and we strive to continue the recycling initiative.

## ENVIRONMENTAL COMPLIANCE

In 2024, we faced penalties for non-compliance with the Environmental Quality (Scheduled Waste) Regulations 2005 and Environmental Quality (Industrial Effluent) Regulations 2009. We took full responsibility and swiftly settled all fines through immediate engagement with the DOE to prevent recurrence. We continue to implement corrective and preventive actions to ensure strict adherence to environmental regulations and to uphold the highest standards of compliance in our operations.

In 2024, the number of compounds received had reduced compared to the previous year as a result of rigorous inspections, internal audits and proactive self-regulation efforts aimed at achieving full compliance.

| | 2022 | 2023 | 2024 |
|---|---|---|---|
| Number of compounds received | 5 | 10 | 4 |
| Amount (RM) | 20,000 | 20,000 | 8,000 |

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM6: Biodiversity & Environmental Management

### OUR PERFORMANCE

**PERFORMANCE : Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **WATER** | | | | | | | |
| GRI 303-5 | C9 | **Total water consumption from all areas** | | | | | |
| | | Total water consumption from all areas | ML | – | 10,096 | 9,234 | 2% reduction for water used in buildings |
| **WASTE** | | | | | | | |
| **WASTE GENERATED** | | | | | | | |
| GRI 306-3 | C10(a) | **Waste generated** | | | | | |
| | | Total weight of waste generated | metric tons | 74,150 | 929,123 | 895,996 | – |
| | | **Hazardous waste generated** | | | | | |
| | | Total weight of hazardous waste generated | metric tons | 74,150 | 929,123 | 895,038 | – |
| | | **Non–hazardous waste generated** | | | | | |
| | | Total weight of non-hazardous waste generated | metric tons | – | – | 958 | – |
| **WASTE DIVERTED FROM DISPOSAL** | | | | | | | |
| GRI 306-4 | C10(a) | **Hazardous waste diverted from disposal** | | | | | |
| | | Total hazardous waste diverted from disposal | metric tons | – | 440,595 | 497,452 | – |
| | | Total hazardous waste recycling rate | % | – | 47.42% | 55.58% | 30% recycling rate of hazardous waste by 2025 |
| | | **Non–hazardous waste diverted from disposal** | | | | | |
| | | Total non-hazardous waste diverted from disposal | metric tons | – | – | 126.91 | – |
| **WASTE DIRECTED TO DISPOSAL** | | | | | | | |
| GRI 306-5 | C10(a) | **Hazardous waste directed to disposal** | | | | | |
| | | Total weight of hazardous waste directed to disposal | metric tons | – | 488,528 | 397,586 | – |
| | | **Non–hazardous waste diverted from disposal** | | | | | |
| | | Total non-hazardous waste directed to disposal | metric tons | – | – | 831.09 | – |

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **SIGNIFICANT AIR EMISSIONS** | | | | | | | |
| GRI 305-7 | S4(a) | Carbon Monoxide (CO) | ton | 8,180.10 | 16,107.26 | 22,881.61 | - |
| | | Nitrogen Oxides (NOx) | ton | 31,024.14 | 6,539.63 | 76,458.23 | - |
| | | Sulfur Oxides (SOx) | ton | 27,412.40 | 34,977.44 | 115,697.86 | - |
| | | Particulate matter (PM) | ton | 1,880.70 | 6,539.63 | 6,347.45 | - |

*Note:*
- *ML = MegaLitre*
- *The target will be set based on prevailing trends for indicators that are without target*

**PERFORMANCE : Additional Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 |
|---|---|---|---|---|---|---|
| **WATER** | | | | | | |
| GRI 303-3 | | **Total water withdrawal from all areas by sources** | | | | |
| | | Total water withdrawal from all areas | ML | 9,822 | 3,694,205 | 4,235,191 |
| | | **Sources – Surface water** | | | | |
| | | Freshwater | ML | – | 3,230 | 2,389 |
| | | Other water | ML | – | – | – |
| | | **Sources – Seawater** | | | | |
| | | Freshwater | ML | – | – | – |
| | | Other water | ML | – | 3,679,348 | 4,221,884 |
| | | **Sources – Third-party water** | | | | |
| | | Freshwater | ML | – | 11,627 | 10,917 |
| | | Other water | ML | – | – | – |
| GRI 303-4 | | **Total water withdrawal from all areas** | | | | |
| | | Total water discharge to all areas | ML | – | 3,684,109 | 4,225,957 |
| | | **Total water discharge to all areas by category** | | | | |
| | | Category – Freshwater | ML | – | 4,762 | 2,389 |
| | | Category – Other water | ML | – | 3,679,348 | 4,221,884 |
| | | **Total water discharge to all areas by destination** | | | | |
| | | Destination – Surface water | ML | – | 3,230 | 2,389 |
| | | Destination – Seawater | ML | – | 3,679,348 | 4,221,884 |
| | | Destination – Third-party water | ML | – | 1,532 | 1,684 |
| GRI 303-5 | – | Water Intensity (Water consumption/Net Generation Output) | ML/GWh | – | 0.127* | 0.126 |

**Data reinstated due to formula revision*

*Note:*
- *ML = MegaLitre ; GWh = Gigawatt hour.*


# Customer Experience and Satisfaction

We take great pride and consider it a privilege to serve our diverse customers our diverse customers with quality products and services, continuously seeking ways to enhance our customer experience. We are committed to providing reliable and affordable electricity supply to our 10.41 million customers.

The energy sector is undergoing a major shift where consumers are becoming key contributors to both energy generation and consumption. Leveraging emerging technologies, we empower customers with innovative solutions that foster the development of renewable energy and facilitate customers' energy transition journey through dynamic energy solutions such as rooftop solar, energy efficiency solutions, and Green Electricity Tariff. The rapid growth of Artificial Intelligence and cloud computing has significantly increased the need for data centres in this region that require reliable, sustainable, and fast-track energy supply. We continue to support and deliver power at scale and speed for data centres through our Green Lane Pathway initiatives.

The digital application, myTNB app, which connects to 7.26 million customers has strengthened customers' experience. Our annual Customer Satisfaction Index (CSI) recorded a score of 87% in 2024, maintaining top-quartile performance for ten (10) consecutive years. This consistent performance underscores our dedication to delivering outstanding services and exceeding customer expectations.

## MANAGEMENT APPROACH

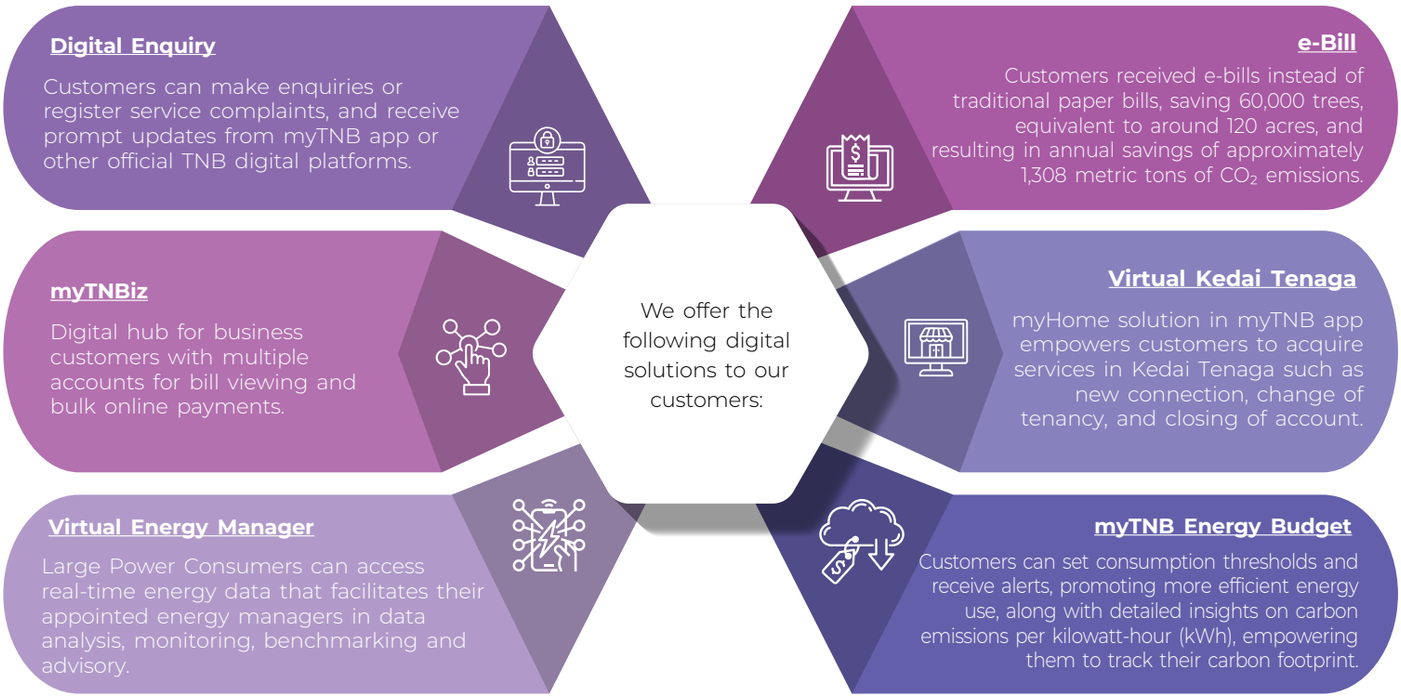
### ELEVATING CUSTOMER EXPERIENCE

We enhance our customer-centric approach by delivering top-rated customer experience through four (4) communication channels: Click, Call, Come Over and Go Over. We empower customers with innovative solutions, such as the myTNB app, which provides real-time insights into energy consumption, supports energy efficiency, and facilitates their transition to renewable energy. At the same time, we continue to offer face-to-face appointments at our Kedai Tenaga for those who prefer in-person interactions, ensuring a seamless and personalised customer experience.

In September 2024, a new Kedai Tenaga Phygital Concept Store at Iskandar Puteri was established, leveraging technology to enhance interactive customer experience where customers can choose between face-to-face or digital interactions in their customer journey from supply application to account closure. At this store, customers experience an enhanced integrated environment that offers solutions such as energy efficient products and sustainability-related services.

### DIGITALISING CUSTOMER SERVICES

Digital transformation is at the core of our strategy to enhance customer experience and contribute to sustainability. Our myTNB app and portal serve as a one-stop digital service hub, offering a comprehensive range of customer support features. Beyond simplifying customer interactions, the app and portal empower users to make informed energy choices, enabling them to collectively contribute to climate goals through more sustainable energy consumption. With over 7.26 million subscribers, representing around 70% of our customer base, the app and portal have strengthened our service delivery by providing greater convenience and control over energy usage.




**Enhancing Customer Interaction Through Strategic Social Media Platforms**

Throughout 2024, TNB's social media platforms saw remarkable growth, with around an 8% increase in followership, reaching over 1.06 million users across various channels. This strong digital presence allows us to engage customers more effectively, using social media as a key tool to communicate our goals, explain regulatory changes, and promote greener lifestyles. By sharing content such as energy-saving tips, updates on renewable initiatives, and insights into energy efficiency, we increase public awareness and encourage active participation in the country's energy transition journey.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM7: Customer Experience and Satisfaction

*TNB provides solar rooftop installations for our customers and has secured a cumulative capacity of 343MWp.*

### FACILITATING CUSTOMERS' ENERGY TRANSITION JOURNEY

We strive to provide various opportunities for customers to make informed decisions regarding renewable energy (RE) and energy efficiency such as:

#### 01 Feed-in Tariff (FiT)

Customers in the FiT programme export RE produced to the national grid at a fixed price. In 2024, there are 9,480 Feed-in Approval Holders (FiAH) with a total installed capacity of 605.3MW.

#### 02 Green Electricity Tariff (GET)

GET is a government initiative offering customers the chance to choose their electricity sources from renewable energy to reduce their carbon footprint. In 2024, 1,403 customers subscribed to GET, with a total annual consumption of 2,991GWh.

#### 03 Net Energy Metering (NEM)

Customers export excess energy produced from their solar PV systems to the national grid. In 2024, 55,831 NEM participants make up a total installed capacity of around 1.5MW.

#### 04 Supply Agreement for Renewable Energy (SARE)

Through its pioneering solution, the Supply Agreement for Renewable Energy (SARE), our subsidiary, TNBX Sdn. Bhd., has secured a cumulative capacity of 343MWp across 1,014 Solar PV projects. Seamless convergence billing and contracting services offered through SARE have attracted 110 Solar PV investors to adopt this solution in their Solar PV projects. This, in a way, assists to spur the growth of renewable energy adoption among commercial, industrial and government sectors in Peninsular Malaysia.

#### 05 Energy Audit

TNB Energy Services Sdn. Bhd. conducts energy audits to identify opportunities for energy conservation and cost reduction across various sectors. The audit process involves preliminary data analysis, installation of data-gathering equipment, on-site inspections, and detailed reporting of findings, including recommended improvements.

#### 06 Malaysia Green Attribute Trading System (mGATS)

mGATS, managed by TNBX Sdn. Bhd., was launched in May 2024 by PETRA. It serves as Malaysia's official marketplace for trading of Malaysia Renewable Energy Certificates (mREC) to support green customers in meeting their ESG commitments, particularly for Scope 2 GHG reductions.

#### 07 Green Lane Pathway

We provide rapid energy deployment within 12 months for our customers through the Green Lane Pathway initiative and One-Stop Centre services. In 2024, TNB and Bridge Data Centres (BDC) signed the Electricity Supply Agreement (ESA) to provide a reliable and efficient 400MW power supply for BDC's upcoming hyperscale data centre in Johor. This project will also integrate renewable energy into its operations, enhancing sustainability while maintaining consistent power availability.

#### 08 EV Charging solutions

TNB Electron EV charging stations provide more convenient and accessible EV charging infrastructure. EV users can easily locate and access these chargers via the GO TO-U mobile app, which had nearly 7,000 registered users registered users in 2024.

## EMPOWER CONSUMERS THROUGH ENERGY INNOVATIONS

### Solar PV Rooftop

In addition to the above, our subsidiary GSPARX Sdn. Bhd. empowers consumers by encouraging them to become prosumers through self-generated electricity. GSPARX allows consumers to install solar PV at zero upfront cost and enjoy savings via self-consumption. In 2024, a total of 169MWp rooftop solar PV have been installed at government buildings, universities, commercial and industrial segments. With the aim of giving homeowners peace of mind and to ensure the longevity of their solar PV investments, TNBX Sdn. Bhd. offers SuriaShield as insurance coverage for residential solar PV which includes restoration services and compensation for income or savings loss during system breakdowns. In 2024, 621 policies subscribed to SuriaShield, benefiting from its tailored plans.

### Solar Leasing

In September 2023, Sime Darby Property and TNB signed a Memorandum of Understanding (MoU) to advance renewable energy adoption through rooftop solar leasing. The partnership aims to install solar solutions for up to 1,000 properties in the City of Elmina and other developments, enabling residents to benefit from sustainable energy. Additionally, both parties explored integrating EV charging infrastructure and microgrid solutions to enhance energy efficiency within townships.

Building on this, in July 2024, the partnership progressed with the establishment of a joint venture to finance, develop and operate rooftop solar projects across Sime Darby Property's assets and townships. Initially, 14 assets were identified, with the potential to generate up to 4.5MW of solar capacity. This milestone reinforces Malaysia's push toward 70% renewable energy generation by 2050, offering customers sustainable energy solutions that enhance property value and support the nation's green agenda.

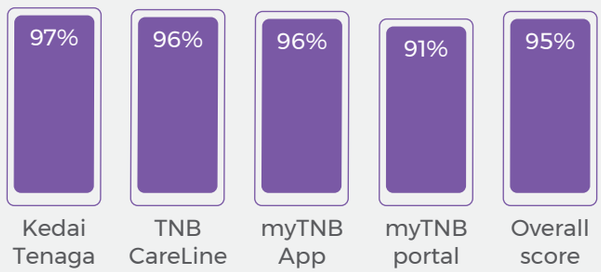
### Community Energy Storage System (CESS)

TNBX Sdn. Bhd., in collaboration with Sime Darby Property, has introduced solar-powered homes at Elmina Ilham Residences, featuring solar rooftop installations and Community Energy Storage Systems (CESS). These homes allow residents to harness clean, renewable energy, reducing their dependence on the grid while providing significant savings on electricity costs. The integration of solar panels and energy storage solutions empowers homeowners to store excess energy and optimise consumption, further enhancing energy efficiency. Additionally, TNBX is innovating by repurposing electric vehicle (EV) batteries for home energy storage, lowering system costs and contributing to a circular economy for sustainable living. Moving forward, we plan to expand these solar solutions to other townships like Bandar Bukit Raja, Serenia City, and Nilai Impian, helping to create resilient, climate-adaptive communities across Malaysia.

## ENHANCING CUSTOMER SATISFACTION

We are dedicated to ensuring a reliable electricity supply to our customers, meeting the Minimum Service Level (MSL) set by the Energy Commission. By adopting the Voice of Customer (VOC), we listen attentively to our customers and harness their feedback to drive satisfaction and continuous improvement. We remain committed to addressing and resolving enquiries and complaints received from customers and in 2024, 99.9% of enquiries and 99.4% of customer complaints were resolved.

**Customer Experience Index (%)**




**Customer Satisfaction Index (%)**


**Number of Customers Subscribed to myTNB**

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM7: Customer Experience and Satisfaction

### OUR PERFORMANCE

**PERFORMANCE : Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| GRI 418-1 | C8(a) | **Total number of substantiated complaints received concerning breaches of customer privacy** | | | | | |
| | | Total number of customer privacy complaints | Number | 0 | 0 | 0 | Zero complaints |

**PERFORMANCE : Additional Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 |
|---|---|---|---|---|---|---|
| – | – | **Results of surveys measuring customer satisfaction** | | | | |
| | | Customer satisfaction index | % | 87 | 88 | 87 |
| – | – | **Energy solution adoption by customers** | | | | |
| | | **Rooftop Solar (GSPARX)** | | | | |
| | | Cumulative rooftop solar capacity secured | MWp | 45 | 105 | 503.95 |
| | | Cumulative total number of customers secured | Number | – | 1,155 | 3,130 |
| | | **Green Electricity Tariff (GET)** | | | | |
| | | Number of customers subscribed per year | Number | – | 2,753 | 1,403 |
| | | Total annual consumption | MWh | – | 4,224,000 | 2,991,245 |
| | | **Net Energy Metering (NEM) connected to TNB Peninsular Grid** | | | | |
| | | Cumulative customers who are producer | Number | – | 24,664 | 55,831 |
| | | Total Installed Capacity | MW | – | 970.5 | 1,467.5 |
| | | **Number of customers subscribed to myTNB** | | | | |
| | | Number of customers subscribed to myTNB | Number | 6,294,064 | 6,742,081 | 7,264,768 |

*Note*

- *MW = Megawatt ; MWp = Megawatt peak*
- *Additional indicators disclosed to support the narrative, and the target will be made available when necessary.*

MM 8

# Community Development and Social Impact

Since our inception 75 years ago, we have been a part of nation-building, contributing to national and community growth. We believe that as a responsible organisation, it is a part of our responsibility to give back to the communities, providing opportunities for them to improve their lives and well-being.

We aim to drive progress with positive social impact to the community by allocating 1% of our Profit After Tax towards community development in social, education, environmental and sports. We continue to effectively engage with stakeholders to ensure our community development programmes create value and enhance social impact for responsible and sustainable growth. We are driven by our tagline “Better World. Brighter Lives.” towards brightening lives in Malaysia and beyond.

As a key driver of Malaysia’s Energy Transition, we are dedicated to a just and inclusive transition, ensuring no one is left behind.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM8: Community Development and Social Impact

### MANAGEMENT APPROACH

In 2024, TNB invested over RM63 million in community programmes, strategically directed across four key focus areas: Social, Education, Environment and Sports. This dedicated funding underscores our commitment to making a positive impact on communities.


*In FY2024, TNB has contributed RM0.5million to Home for the Needy programme.*

### SOCIAL

**Home for the Needy**

Through our Home for the Needy programme, we have successfully provided 962 homes supporting 962 families, primarily from the B40 and underprivileged communities, including differently-abled individuals, senior citizens and single parents. In 2024, we continue to refurbish and build new homes for underprivileged families, an investment amounting to RM0.5 million.

**Rural Electrification Programme**

Through the Rural Electrification Programme (*Bekalan Elektrik Luar Bandar*) carried out in collaboration with the Ministry of Rural and Regional Development, TNB facilitates the electrification of rural regions, encompassing remote villages and indigenous people settlements. Where feasible, these areas are connected to the national grid. Otherwise, off-grid solutions are deployed including solar hybrids, generator sets and mini-hydro systems.

**Village Street Lighting Programme**

Since 2002, TNB has been collaborating with the Government in the Village Street Lighting programme, with the aim to illuminate public areas in remote villages, improving community safety. In 2024, a total of 14,210 units of village streetlights were successfully installed at a total cost of RM39.91 million.

***Program Satu Pemimpin Satu Kampung (Santuni Madani)***

The TNB's Group Executive Committee (GEC) members are empowered to further engage adopted villages to suggest solutions on socioeconomic problems in order to support infrastructure development and improve the well-being of the local community, aligned to the government's *Santuni Madani* programme. With its objectives of caring leadership, fostering sense of belonging and promoting sustainability engagements, TNB has contributed over RM31,000 by the end of December 2024 and will continue the effort beyond 2024.

### Engaging Indigenous People (Orang Asli)

TNB actively engages with Orang Asli communities living near our operation sites and implements targeted initiatives to improve their well-being and socioeconomic conditions and address grievances. Specifically for resettled Orang Asli communities, a variety of community engagement activities and resilience-building programmes are implemented to promote community cohesion and well-being, including:

01 Income Restoration and Upliftment: Providing land for rubber and fruit plantations, alongside training for upskilling and reskilling to enhance productivity and employability.

02 Housing: Providing new houses of approximately 800 square feet per house.

03 Infrastructure and Amenities: Providing essential infrastructure including electricity supply, healthcare facilities, clean water supply, and schools.

04 Grievance Management: Engagements to address grievances are held regularly to ensure timely responses to concerns raised.

At the Nenggiri Hydroelectric Project site, the Social Impact Management Plan (SIMP) and Resettlement Action Plan have been initiated for the benefit of approximately 243 households comprising more than 1,200 individuals. These plans include physical development cost of resettlement area, cash compensation, and resettlement management costs, which currently amount to over RM59 million. TNB also invests over RM3.5 million in social impact and skills development programmes focusing on job and skills training, including financial literacy and other soft skills programmes for the Orang Asli communities.

## EDUCATION

We aim to transform individuals and their families through the power of education by promoting accessible, high-quality educational opportunities and by educating Malaysians on their role in managing energy efficiently.

### *Ceria Ke Sekolah* Programme (CKS)

Annually, we organise the CKS programme to provide primary school students from low-income families with adequate school supplies such as school uniform, school bags and shoes. In 2024, we contributed RM0.7 million to this programme, which benefited 6,640 students.

### Yayasan Tenaga Nasional (YTN)

At YTN, we sponsor students at the higher education level, both locally and internationally, through scholarships and convertible loans. In 2024, we contributed over RM41.5 million to support 1,582 students, with a particular focus on those from the underprivileged group through the My Brighter Future (MyBF) programme.

### Better Brighter Internship

TNB offers internship opportunities to students from higher learning institutions, providing them with valuable workplace exposure, thereby enhancing their employability upon graduation. In 2024, a total of 559 students interned in TNB and 2 were eventually employed by TNB.

### Graduate and Apprentice Programmes

We have been driving talent development through our PROTÉGÉ – Ready to Work Programme, which aims to tackle two key challenges in the country: reducing graduate unemployment and developing a skilled workforce for Malaysia's growing energy sector. This initiative is implemented through a hybrid learning model that combines theoretical knowledge with practical application. Since the launch of the SL1M/Protege programme at TNB back in 2011, a total of 6,610 trainees have been successfully trained, of which 546 trainees have been absorbed into TNB and its subsidiaries. Under the PROTEGE Phase 8 intake (spanning between December 2022 till July 2024), TNB has trained over 500 trainees. TNB's commitment and achievement in supporting this nation building initiative was recognised by Kementerian Pembangunan Usahawan dan Koperasi (KUSKOP) Malaysia.

### Cultivate Sustainability and Environmental Awareness Among Youth

TNB in collaboration with Universiti Tenaga Nasional (UNITEN), co-organised the "*Debat Alam Sekitar*" organised by the Department of Environment Ministry of Natural Resources and Environmental Sustainability, a debate competition involving higher education institutions across Malaysia. The debate competition enabled students to engage in meaningful discussions on pressing environmental challenges supported by data and research, enhancing their understanding and commitment to sustainability.

Commemorating our 75th anniversary, we launched a sustainability-themed video competition titled "Sustainability Superheroes: Your Journey, Our Future". University students participated in this competition, which aimed to raise awareness on sustainability practices. Participants were encouraged to showcase innovative ideas, personal contributions, or community-driven projects that promote ESG values.

Our involvement in these events underscores our dedication to cultivating environmental awareness among youth, fostering a new generation of environmentally conscious leaders.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

# MM8: Community Development and Social Impact

**Malaysia Energy Literacy Programme (MELP)**

One of MELP's key achievements was the Energy Literacy elective modules at universities. The modules are part of a pioneer programme driven by the Project Management Office (PMO) MELP in collaboration with Universiti Tenaga Nasional (UNITEN) and Universiti Kebangsaan Malaysia (UKM) professors. The development of the content was also conducted in collaboration with Suruhanjaya Tenaga (ST) and TNB's Subject Matter Experts (SMEs) from respective divisions, departments and PMO. These elective modules were successfully onboarded at six (6) universities UNITEN, UKM, Universiti Malaysia Kelantan (UMK), Universiti Teknologi Malaysia (UTM), Universiti Malaysia Perlis (UniMAP), and Universiti Utara Malaysia (UUM)). We also collaborated with Federation of Malaysian Consumers Associations (FOMCA) to focus on a smart and sustainable living campaign under the MELP programme. In 2024, the campaign targeted 25 schools and 35 communities across Peninsular Malaysia.

In 2024, we collaborated with Ministry of Energy Transition and Water Transformation (PETRA) and Yayasan Hijau Malaysia, to launch the Green Guardian Centre at the National Science Centre. The centre aims to nurture our youth in using energy wisely and provide them with knowledge of energy efficiency, renewable energy and energy generation.


## ENVIRONMENT

In 2024, our contributions to environmentally related corporate responsibility programmes amounted to RM1.76 million, with the aim of creating a lasting positive impact on the ecosystems and communities we serve. Through our My Brighter Green Programme, we target to plant 40,000 trees annually, covering around 89 acres and sequestering about 1,600 $tCO_2e$. Our progress is monitored through a centralised tree planted registry. In 2024, we planted a total of 49,214 trees, sequestering about 1,900 $tCO_2e$.

In addition to tree planting, we embark on various initiatives such as:

01 Restoring degraded forests in collaboration with the Malaysian Nature Society and Bentong Forestry Department through joint tree-planting programmes, enhancing forest cover and biodiversity.

02 Protecting endangered species by working with NGOs such as Sahabat Alam Sungai Tampik to protect endangered tree species and overall forest health.

03 Fostering innovation in collaboration with the Forest Research Institute Malaysia (FRIM) by supporting research and development in sustainable forestry practices.

04 Combating plastic pollution in partnership with the Department of Environment through beach clean-up activities and restoring the beauty of coastlines such as Pantai Desar.

## SPORTS

**Energising Malaysian Hockey Development**

TNB is the driving force behind hockey development in Malaysia and we are proud to have shaped many national hockey players with world-class standards. We foster national hockey development through the TNB Thunderbolts programme, which is aimed at nurturing high-potential youth between the ages of 13 and 17 to become future stars in the game.

In 2024, our contributions to hockey development amounted to RM5.86 million, which includes RM4 million sponsorship to the Malaysian Hockey Confederation (MHC), RM0.5 million for the TNB Thunderbolts programme and RM0.33 million for *Sumbangan Peralatan & Klinik Hoki*. TNB employees who were former national hockey players volunteered to coach promising students from selected local schools. Coaching programmes such as the *Pembangunan Klinik Hoki Remaja Negara* and *Kem Bakat Hoki 2024* were conducted with selected schools and clubs in Kelantan, Negeri Sembilan, Kuala Lumpur, Johor and Sabah, which benefited approximately 100 teachers and 600 students.


*TNB championed TNB Malaysian Hockey League (MHL) 2024.*

## OUR PERFORMANCE

**PERFORMANCE : Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **Community Development & Social Impact** | | | | | | | |
| GRI 203-1 | **Total number of beneficiaries of the investment in communities** | | | | | | |
| | C2(a) | Total amount invested in the community where the target beneficiaries are external to the listed issuer | RM million | 12.2 | 99.04 | 63.78* | 1% from PAT |
| | C2(b) | Beneficiaries of investment in communities | Number | - | 6,635 | 79,581** | - |

** The total amount invested to the community has included educational support from YTN and UNITEN to the children of TNB employees (238 beneficiaries, amounting approximately RM7.4 million). Additionally, the educational support for FY2024 refers to the actual amount invested instead of the total amount awarded to the scholars for that year.*

*** The beneficiary data for FY2024 reflects the total number of beneficiaries, rather than group beneficiaries as reported in FY2023.*


# Sustainable & Responsible Supply Chain

In our commitment to driving a sustainable future, our procurement and supply chain approach focuses on embedding responsible, transparent, and ethical practices across the entire supply chain ecosystem. We have embarked on a sustainable supply chain approach that goes beyond traditional procurement, emphasising sustainability at every stage. We endeavour to apply a rigorous Environmental, Social and Governance (ESG) lens to all our operations, ensuring that we create lasting value while minimising negative impacts.

Guided by the TNB Procurement & Supply Chain Policy & Procedure, we continue to pursue best-value procurement practices that uphold ethical and transparent standards for our vendors, partners, and contractors. Through the TNB Code of Business Ethics (COBE) and the TNB Sustainable Procurement Code of Conduct (SPCC), we maintain a strong commitment to ethical dealings that support a fair and responsible supply chain.

In 2024, we continued to advance our sustainability journey by promoting environmental stewardship, social responsibility and robust governance throughout our supply chain. Our efforts contribute to building a resilient, inclusive and sustainable future for Malaysia and beyond.

## MANAGEMENT APPROACH

In 2024, TNB recorded a substantial procurement expenditure of approximately RM36.37 billion, reflecting a consistent trajectory and underscoring our role in supporting Malaysia's economy.

Our procurement spend includes:

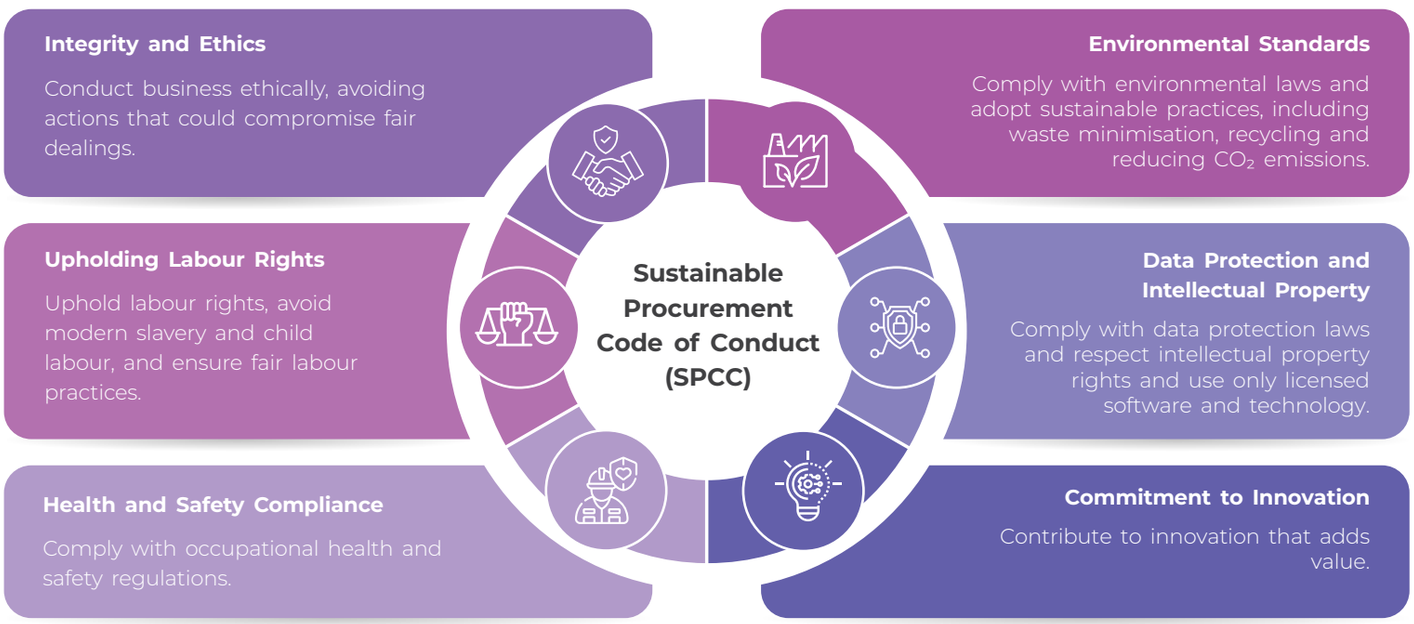
- Fuel-Related Expenditures: Approximately RM23.2 billion of our spend was dedicated to fuel, primarily locally sourced natural gas and internationally sourced coal, which are essential for power generation. By balancing local and international sources, TNB ensures a reliable energy supply to meet the nation's demands.
- Non-Fuel Expenditures: Non-fuel procurement spending amounted to RM13.15 billion, with around 95% sourced from local suppliers. This local focus reinforces our dedication to supporting Malaysian businesses across various industries and enhances the resilience of our supply chain.

Our commitment to local sourcing is reflected in 52.81% of our total procurement spend in 2024. This strengthens the Malaysian economy and aligns with our goal of building a supply chain that benefits local communities and businesses.

### SUSTAINABLE PROCUREMENT CODE OF CONDUCT (SPCC)

The TNB Sustainable Procurement Code of Conduct (SPCC), introduced in 2024, outlines a framework for ethical and responsible procurement practices, setting standards that vendors must adhere to. Any non-compliance could lead to penalties, including contract suspension or termination. By setting clear guidelines for environmental responsibility, labour rights and health and safety standards, SPCC ensures our vendors meet ethical requirements and our commitment to TNB's ESG goals.

**Code of Conduct for Vendors**




**Whistleblowing and Grievance Reporting**

The SPCC includes provisions for whistleblowing, allowing vendors and employees to report unethical practices anonymously. TNB ensures the confidentiality of whistleblowers and actions are taken accordingly.

## FACILITATING OPEN DIALOGUES AND GRIEVANCE MANAGEMENT

TNB fosters open, transparent, and effective communication with key stakeholders and vendor associations including *Persatuan Rakan Niaga Strategik Malaysia* (PERNISMA), *Persatuan Usahawan Tenaga Malaysia* (PUTM), *Gagasan Professional Melayu Malaysia* (GPMM), *Persatuan Industri Tenaga Boleh Baharu dan Alam Sekitar* (PINTARE) through various channels. These include face-to-face engagements such as the Business Partnership Retreat and Opportunity Day, Procurement Cycle Digitalisation (PCD) Rangers for e-tendering support and the *Sistem Maklum balas Bahan* platform. Regular Vendor Satisfaction Surveys are conducted as feedback for Vendor Grievance Management.

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM9: Sustainable & Responsible Supply Chain

Furthermore, our commitment to accountability is evident in our enhanced Vendor Grievance Procedure, which ensures a streamlined, centralised approach to handling grievances that allows for anonymous reporting to uphold impartiality and integrity.

### Vendor Grievance Management

The Vendor Grievance Management aims to uphold integrity, fair labour, and sustainability within the supply chain by providing clear steps for addressing grievances and promoting transparency. It is guided by TNB's core values, such as integrity, professionalism, and collaboration, ensuring a respectful, accountable, and open environment for vendors and stakeholders. The vendor grievance procedure includes accessible grievance channels, a dedicated committee for fair evaluation, and ongoing support for vendors to drive continuous improvement and uphold ethical standards.

## VENDOR COLLABORATION ECOSYSTEM

Together with our vendors, we collaborate to strengthen the supply chain ecosystem towards greater transparency and efficiency. This includes enhancing vendor performance and capabilities, and facilitating open dialogue.

### Enhancing Vendor Performance

The Contractor Assessment and Supplier Evaluation (CASE) system facilitates transparent evaluation of vendor performance, helping vendors to continually improve in providing quality products and services. This commitment to excellence strengthens our partnerships and supports a culture of continuous improvement throughout our supply chain.

### Elevating Vendor Capability Training and Development

TNB is committed to equipping our vendors with the knowledge and skills necessary to remain relevant and competitive in an evolving industry landscape. By offering a range of targeted training and development programmes, we support through programmes that build capabilities and aligning them to our stringent quality and safety standards.

These programmes include competency certification schemes such as *Orang Kompeten Suruhanjaya Tenaga*, technical competencies such as *Kad Kelayakan Teknikal* and ESG awareness and training.

### Creating Opportunities for Local Vendors

We recognise our role in bolstering the local value chain ecosystem. In 2024, we continue to promote business matching activities to offer opportunities for new business and collaboration.

- **Data analysis & matching:** Through open advertisement, we identify potential vendors with sound prospects and strong track records who are assessed and matched to identified opportunities.
- **Matchmaking events:** TNB organises and participates in matchmaking events that expand our supplier base and fosters new partnerships, including small and medium-sized enterprises (SMEs). These initiatives promote opportunities for local suppliers to be integrated into the value chain, contributing to economic growth and social impact.
- **Stakeholder collaboration:** We work closely with industry associations, government-linked companies, and relevant stakeholders to engage with suppliers who are dedicated to responsible business practices and sustainable growth.


### Creating Opportunities for our Local Vendors through Bumiputera Vendor Development Programme 3.0 (PV 3.0)

TNB's vendor development programme has been in place since 1994. After more than 30 years of implementation, it has been reviewed, in line with the NETR and the Government's Bumiputera economic agenda. Subsequently, the existing programme was enhanced by introducing a new framework to support TNB's business needs in the energy transition landscape and to realise the Government's aspiration in driving the Bumiputera Economic Transformation Plan 2035 (PuTERA35).

This program comprises 731 Bumiputera Contractors, and 26 manufacturers (operating under the Bumiputera Spend Share Policy), further reinforcing our dedication to economic inclusivity and supporting the national Bumiputera Spend Share initiative.

The PV 3.0 plays a vital role in driving Bumiputera participation in the energy sector in alignment with NETR (National Energy Transition Roadmap), offering opportunities in energy transition, green technologies and digital solutions. With a local procurement target to steadily increase from 47.8% (in 2024) of total TNB procurement spending to 55% by 2030, PV 3.0 aims to foster long-term market growth and create more than 1,700 Bumiputera vendors by 2030.

TNB is dedicated to enhancing the competitiveness of Bumiputera contractors by facilitating joint ventures with high-tech companies, supporting participation in international trade missions, and providing a comprehensive platform under PV 3.0 that encourages business expansion and skill development. TNB assists vendors to access green financing and collaboration opportunities in flagship projects within the energy sector, while driving innovation and technological advancements.

Through these efforts, TNB ensures that the Bumiputera economic agenda remains aligned with the principles of the MADANI Economy, promoting sustainability through NETR, encouraging innovation, and fostering inclusive development with programmes such as TVET Learn To Work.

## ENHANCING SUPPLY CHAIN EFFICIENCY THROUGH DIGITALISATION AND INNOVATION

We recognise digitalisation as a crucial enabler in transforming our supply chain for enhanced efficiency, resilience and sustainability. Digitalisation allows us to respond more effectively to changing market demands, optimise inventory management and reduce lead times.

| Digital Tool | Features | Outcome |
|---|---|---|
| **Procurement Connected Planning (PCP)** | Centralised demand planning | Greater visibility on price competitiveness and facilitates data analytics |
| **Robotic Process Automation (RPA)** | Automate high-volume orders within a short lead time & distribution of orders by geographical locations | Efficient management of high-volume procurement and orders by geographical locations |
| **Procurement Cycle Digitalisation (PCD)** | End-to-end procurement system | Trackability and visibility across supply chain |
| **e-Commerce Platforms (Lapasar, MyB2B and RS Puma)** | As an alternative purchasing platform | Reduces lead time from ordering to delivery |
| **Contractor Assessment and Supplier Evaluation (CASE)** | Centralised review and feedback on vendor performance | Enhances vendor performance |
| ***Sistem Maklum balas Bahan* (Material Feedback System)** | Two-way communication platform for reporting defects, warranty issues, and product feedback | Enhances supplier partnership |

## OUR PERFORMANCE

### PERFORMANCE : Bursa Indicators

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target 2025 |
|---|---|---|---|---|---|---|---|
| **Supply Chain Management** | | | | | | | |
| GRI 204-1 | C7(a) | Percentage spent on local suppliers | % | 95.10%*** | 46.45%** | 52.81%* | >35% |

* *Year 2024 data disclosed are based on spends under the scope of TNB Group which includes fuel purchases.*
** *Year 2023 data disclosed based on spends under the scope of TNB Group, including fuel purchases. All internal spends between TNB Business Entities are excluded.*
*** *Year 2022 data disclosed based on spends under TNB company and subsidiaries TPGSB, Retail Division and TNB Renewables SB. All fuel-related purchases were excluded. The data also included internal spends between TNB Business Entities*

### PERFORMANCE : Additional Indicators

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 |
|---|---|---|---|---|---|---|
| **Supply Chain Management** | | | | | | |
| - | - | Total spend on local suppliers | RM billion | 10.38 | 17.18 | 19.21 |
| - | - | Number of local vendors | Number | 3,618 | 3,632 | 3,639 |


# Cybersecurity Management

Digitalisation is a catalyst in enabling our energy transition journey, and is rapidly gaining importance in our operations, assisting us in enhancing customer and employee experiences. As cyber threats increase in sophistication, frequency and impact, we continue to act with an integrated approach, leveraging people, technologies and processes to reduce our cyber risk exposure. To this end, we ensure that we safeguard our Information Technology (IT) and Operational Technology (OT) systems, protecting customer privacy and stakeholders' data, while providing a reliable and secure electricity supply to the nation.

We diligently conduct risk assessments to foresee exposures related to cyber threats and data security. With the oversight of TNB BOD and commitment from the management, mitigation measures are implemented to address exposures.

Our cybersecurity management is developed to protect system and data confidentiality, integrity and availability in addition to securing our IT and OT systems. Apart from implementing initiatives to safeguard the data privacy of our 10.41 million customers, we comply with the relevant cybersecurity and personal data protection laws, and industry best practices.

## MANAGEMENT APPROACH

Our cybersecurity management for Information and Communications Technology (ICT) adheres to the TNB ICT Security Policy and Code of Practice, ensuring all employees understand their roles in protecting our ICT assets. Through 24-hour cyber threat monitoring, we safeguard the security of the national grid to ensure a reliable electricity supply. Our key installations and data centres are certified under ISO/IEC 27001 Information Security Management System (ISMS), and we implement IEC 62443 best practices for OT cybersecurity in our control systems.

We maintain Payment Card Industry Data Security Standard (PCI-DSS) certification to secure our payment gateways and card transactions. Our business leverages cloud services for enhanced scalability and accessibility, with all service providers required to comply with key national standards including ISO/IEC 27017, ISO/IEC 27018, and Service Organisation Control Type 2 (SOC 2).


### CYBERSECURITY RISK ASSESSMENT

TNB's cybersecurity framework adopts a strict no-ransom policy and implements defence measures through 2025. The initiative includes enhanced business continuity planning and international security standards compliance. Key measures include coordinating with the Energy Commission on cybersecurity guidelines, conducting system-wide risk assessments, and reviewing remote access protocols. The Risk Management Department oversees updates on cybersecurity operating model, digitalisation strategies, and ransomware mitigation strategies among others, while the Legal Services Department assesses Malaysia's Cyber Security Act 2024 against global benchmarks. TNB plans to achieve ISO/IEC 27001 certification across its ICT operations and will undergo thorough IT and OT security audits. TNB will also develop detailed contingency plans and crisis communication protocols.

In addition to our 24-hour cyber threat monitoring, the following measures prioritising cybersecurity are undertaken:

01 Enhance cybersecurity situational awareness through threat intelligence

02 Adopt cybersecurity risk assessment protocols for both IT and OT systems

03 Annual cybersecurity resilience assessments of TNB's key installations conducted by the *Jawatankuasa Pemeriksaan Keselamatan Sasaran Penting* under the leadership of the Malaysia Office of the Chief Government Security Officer (CGSO)

04 Group-wide effort to classify data according to criticality and sensitivity levels

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM10: Cybersecurity Management

### CYBERSECURITY AWARENESS THROUGH TRAINING

Cybersecurity awareness programmes are implemented across the Group through multiple learning modalities, including e-learning modules, newsletters, and hybrid engagement sessions. Employees across all organisational levels are equipped with knowledge of cybersecurity risks and mitigation strategies. This educational framework extends beyond internal stakeholders to encompass contractors and vendors, ensuring a uniform approach to cybersecurity awareness across our entire operational ecosystem.

### DATA PROTECTION MANAGEMENT

TNB is committed to safeguarding data subjects' personal data in accordance with the Personal Data Protection Act 2010 (PDPA), Personal Data Protection Code of Practice for The Utilities Sector (Electricity) Version 2.0 and other relevant internal policies, guidelines and circulars for the processing and handling of data subjects' personal data. Additionally, TNB places a high priority on personal data protection, ensuring that our customers personal data is managed with the utmost care and in full compliance with the relevant laws and regulations including a comprehensive Personal Data Protection (PDP) Policy. The PDP Policy is also applicable to TNB's subsidiaries.

### CUSTOMER DATA MANAGEMENT OUR PRIORITY

We facilitate customer data management through Data Access and Correction Request Forms, whereby our customers can easily make requests to access or rectify their personal data in the event of any inaccuracies. A structured data retention framework is implemented, aligned with corporate policies and contractual agreements, whereby data is maintained only for the duration necessary to protect stakeholder interests whilst ensuring compliance with legislative requirements.

In addressing the demands of global digital integration, we implement security protocols, including identity verification mechanisms to safeguard customer privacy within TNB's ecosystem. We maintain stringent controls over international data transfers to external entities, including our service providers and business partners. These external entities are bound by contractual obligations that mandate equivalent data protection standards and restrict data utilisation exclusively to agreed-upon services.

TNB via its Cyber Security Operating Model (CSOM) has taken proactive and reactive measures in safeguarding our data from breaches or leakages via robust data governance such as the Enterprise Data Governance (EDG) initiative, emulating best practices through international certifications (ISO27001 and PCI DSS), technology controls and 24x7 strict monitoring by our Security Operation Center (SOC). However, in the event of data breach or leaks, our incident response plan will ensure that TNB can swiftly contain the incident and protect the affected entities involved.

TNB practices a strict onboarding and offboarding policy for employees and contractors, guided by international cybersecurity standards, i.e. National Institute of Standards and Technology (NIST). We adopt best practices and leverage on advanced technology to ensure secure onboarding and offboarding experience for our employees and contractors.

TNB maintains continuous PDPA compliance through systematic implementation of regular training programmes and awareness sessions across TNB and its subsidiaries. Annual observational audits of personal data protection practices are conducted at designated premises to ensure adherence to the PDPA. Additionally, TNB also implements PDPA e-learning initiative with the identified business units in TNB based on operational needs.

TNB actively engages with the Personal Data Protection Commissioner's Office (PDP Commissioner's Office) to establish good working relationships, seek guidance and actively participate in discussion. TNB also proactively provides comprehensive feedback on the PDPA amendments and Public Consultation Papers issued by the PDP Commissioner's Office. This collaborative relationship facilitates informed guidance and strategic direction for personal data protection initiatives.

For any enquiries or concerns regarding the administration of customer personal data related to electricity supply, we encourage our customers to reach out to our dedicated Customer Care team. Additionally, for matters related to TNB PDP Policy, our designated Data Protection Officer team is readily available to address any concerns.

## OUR PERFORMANCE

**PERFORMANCE : Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target 2025 |
|---|---|---|---|---|---|---|---|
| **Data Privacy and Security** | | | | | | | |
| GRI 418-1 | Total number of substantiated complaints received concerning breaches of customer privacy | | | | | | |
| | C8(a) | Total number of customer privacy complaints | Number | 0 | 0 | 0 | Zero complaints |

MM 11

# Labour Rights and Employment Culture

At TNB, we are committed to fostering an inclusive and supportive work environment that upholds equal opportunities and professional growth for all employees. Through our Reimagining Culture initiative, we define our core values of Integrity, Collaboration, Professionalism, Customer Centricity, Forward-Thinking, and Mindfulness. Our comprehensive Labour Rights Policy Statement ensures fair wages, safe working conditions, and robust protections against discrimination and harassment. We prioritise continuous learning, comprehensive training and career advancement to fully realise the potential of our workforce. By embracing diversity and inclusion, we drive innovation and sustainable growth, ensuring that employee concerns are promptly addressed through regular feedback and transparent communication. Together, we strive to create a thriving and dynamic workplace.

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

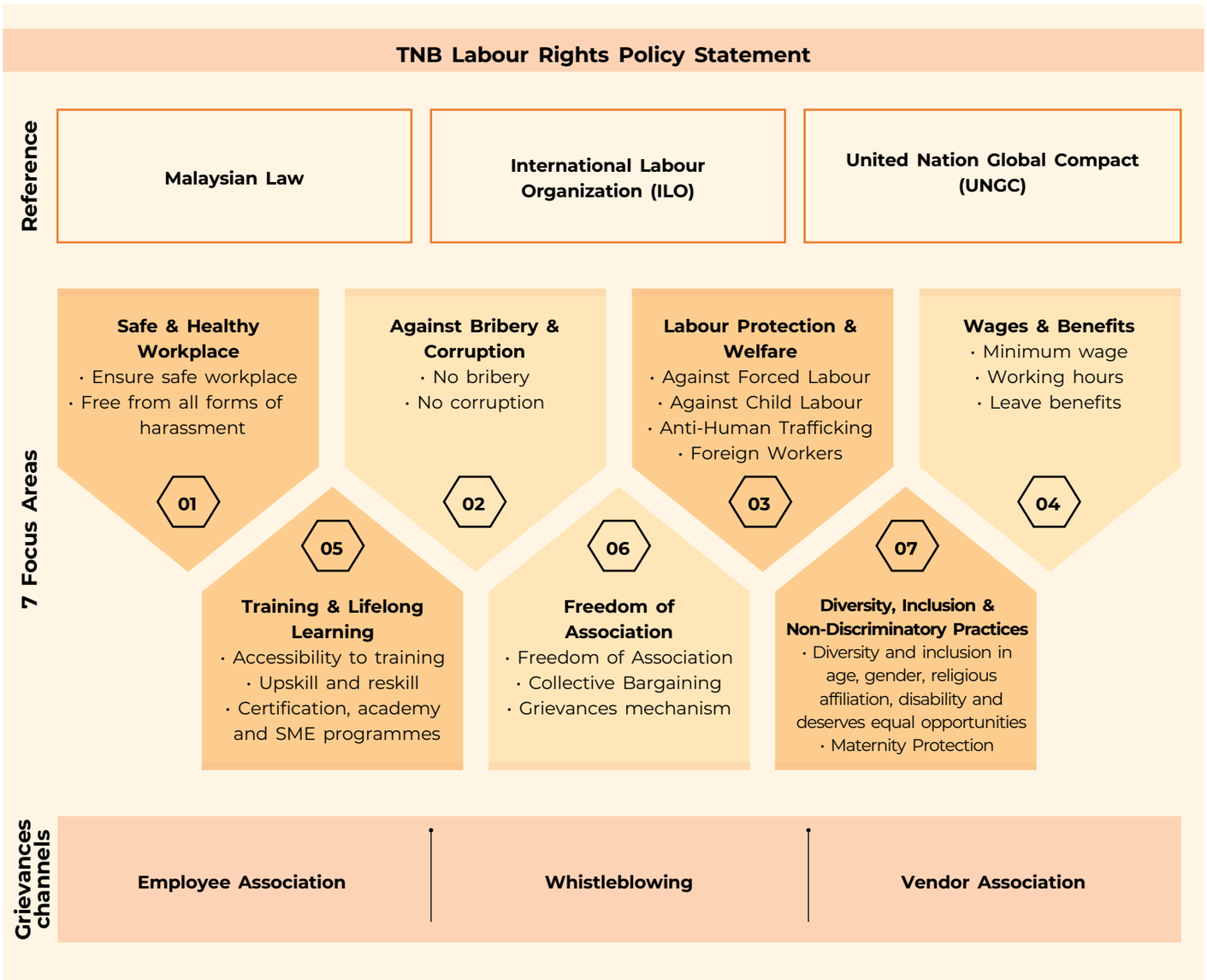
# MM11: Labour Rights and Employment Culture

## MANAGEMENT APPROACH

### TNB LABOUR RIGHTS PRACTICES

Human rights principles are integrated into our labour rights practices, aligning with the United Nations Global Compact (UNGC) guidelines. We are dedicated to fostering a workplace with equal opportunities, mutual respect, and employee growth, ensuring fair labour practices, diversity, inclusion, and workforce well-being. By adhering to Malaysian laws and international standards from the International Labour Organisation (ILO) and UNGC, TNB upholds labour rights, promotes safe working conditions, and prevents discrimination. Labour rights is one of the Key Focus Areas (KFA) in TNB sustainability framework, with oversight by the TNB's Board Sustainability and Risk Committee (BSRC).

The TNB Labour Rights Policy Statement outlines our commitment, encompassing seven focus areas. This Labour Rights Policy Statement applies to all TNB employees and vendors through the SPCC, with grievance channels available to address labour rights issues. TNB's Group People Division leads centrally in adopting, producing guidelines and implementing labour rights initiatives in TNB for employees and TNB's Procurement & Supply Chain (P&SC) Division continues to encourage vendors to uphold labour rights as per SPPC. The policy is communicated globally to all TNB employees.




*Key Elements in the TNB Labour Rights Policy Statement*

**Focus Area 1** **Safe and Healthy Workplace**

We adopt a zero-tolerance policy towards any form of discrimination and harassment in the workplace, ensuring a safe work environment for all. Our Occupational Safety and Health Policy emphasises continual improvement in safety performance, compliance with relevant laws, and the incorporation of safety requirements in all work activities.

*Refer to MM5 Safety, Health and Well-Being page 99-104*

**Focus Area 2** **Against Bribery and Corruption**

Our organisational Anti-Corruption Plan reflects this commitment by promoting a transparent and ethical culture throughout our operations. We prohibit bribery in all forms and require all personnel to act with integrity.

*Refer to MM1 Responsible Business and Financial Performance page 69-74*

**Focus Area 3** **Labour Protection and Welfare**

Any form of human trafficking, slavery, child labour and forced labour is prohibited. We ensure that all our operations comply with applicable laws and regulations related to labour protection and welfare rights.

**Focus Area 4** **Wages and Benefits**

We ensure compliance with working hours, uphold minimum wage rates and provide paid leave in line with relevant laws, supporting a healthy work-life balance. Our comprehensive benefits package includes public holidays, annual leave, sick leave, maternity and paternity leave and additional leaves for various occasions.

**Focus Area 5** **Training and Lifelong Learning**

The TNB Learning & Development Policy aims to create a learning organisation that evolves with business needs and global trends, aligning learning initiatives with our strategic objectives and promoting lifelong learning. The policy emphasises digital learning with the establishment of academies for practical development, ensuring agility and responsiveness to organisational needs.

**Focus Area 6** **Freedom of Association**

We uphold the rights to freedom of association and collective bargaining, empowering employees to engage in organised activities for mutual support and representation. Our three registered unions and two workers' associations protect the rights of both executive and non-executive employees, as specified in the TNB Collective Agreements (CA).

**Focus Area 7** **Diversity, Inclusion and Non-Discriminatory Practices**

Our policies protect against unfair dismissal and provides equal remuneration for men and women, maintaining a 1:1 salary ratio. The TNB Diversity Policy promotes diversity and inclusivity in TNB, fostering a diverse workplace irrespective of age, gender, race, religion, nationality, background or prior experience.

In 2024, women in senior management roles was at 24%, and executive roles was at 41%. Additionally, 36% of TNB's identified successors are women, reflecting our commitment to fostering gender diversity and inclusivity within leadership pipelines. This milestone underscores TNB's dedication to creating equal opportunities, promoting a balanced workforce, and driving sustainable growth through diverse perspectives.

In enhancing gender, race and religion inclusivity, TNB has established policies on religious/pilgrimage leave for all employees regardless of race and religion and has expanded the medical benefit coverage for spouses of female employees.

## TNB GRIEVANCE MECHANISM

We take labour rights issues seriously and provide accessible grievance and whistleblowing channels to address concerns related to our employees and vendors on broader business activities. Employees, vendors and other stakeholders can report violations such as fraud, bribery, corruption, and labour rights abuses through our grievance channels.

Grievances can be submitted in writing or through the Whistle Blowing Information System (WBIS), calling the toll-free number, or emailing the designated officials. For employees, if grievances remain unresolved within seven working days, the issues can be escalated to their immediate manager. For vendor grievance

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM11: Labour Rights and Employment Culture

channel, processing time depends on severity level, whereby low to medium level will require not more than 90 days, and high level will require not more than 120 days. In 2024, there were no substantiated complaints regarding human rights violations, reflecting our commitment to resolving grievances fairly and promptly.

### STRATEGIC CAREER DEVELOPMENT AND LEADERSHIP PROGRAMME

#### TNB Leadership Development Framework

The TNB Leadership Development Framework is a dynamic, forward-thinking strategy designed to support our business goals by ensuring a continuous pipeline of successors, now enhanced with digital leadership competencies. It emphasises experiential leadership development through coaching and mentoring, promoting both professional and personal growth.

We have enhanced our leadership programme to cultivate world-class leaders across all executive levels from new recruits to the C-Suite through flagship development programmes offered at the TNB Leadership Development Centre. In 2024, two Managing Directors of our subsidiaries participated in external peer coaching and four high-potential employees received coaching for C-Suite positions. Our Top Talent Development programme identifies future leaders, with three participants joining premium leadership programme at renowned business schools such as the Institut Européen d'Administration des Affaires (INSEAD) and South East Asia Leadership Academy (SEALA).

The Transitional Leadership Programme, tailored for newly promoted supervisors, managers and senior managers is divided into three categories: Supervisor Development Programme (SDP), First-Time Manager Programme (FTM), and Senior Manager Transition Programme (SMTP). The primary goal is to help our new leaders to understand key leadership skills, engage effectively with teams, and inspire a high-performance culture. In 2024, 246 managers completed the FTM as part of their leadership journey. We are currently in the midst of reviewing other leadership transition programmes, such as the SDP and the SMTP, aimed to kick off in FY2025 to ensure alignment with our aspiration towards RT2.0. These reviews aim to enhance the development pathways for leaders across all levels, fostering resilience, adaptability, and future-ready leadership capabilities.

#### Succession Management

In 2024, TNB enhanced its succession management framework, creating a more robust system that surfaced a larger pool of successors and ensured 90% of current critical positions have ready- now successors. This progress highlights TNB's commitment to leadership continuity, talent development, and long-term organisational resilience, aligning with our sustainability goals to drive innovation and deliver stakeholder value.

#### Employee Performance and Career Development Reviews

TNB has developed an integrated and continuous performance management approach, encompassing performance planning, monitoring, and evaluation to align individual KPIs with business requirements and drive a culture of performance excellence. Performance conversations are crucial throughout this cycle, with structured discussions between managers and subordinates occurring at least four times annually. These conversations help employees strive for continuous improvement and measure progress. In 2024, all TNB employees received regular performance and career development reviews, reinforcing our commitment to fostering a high-performing culture.

### CAPABILITY BUILDING

Through structured learning and development programmes, we ensure our workforce remains skilled and adaptable to navigate the evolving energy landscape. Integrated Learning Solutions Sdn. Bhd. (ILSAS), which serves as TNB's training institute, trains professionals within the broader power and utility industry. ILSAS is accredited by the Energy Commission, with various technical programmes recognised by City & Guilds UK and leadership modules accredited by the Institute of Leadership & Management (ILM) UK.

Development of technical and functional skills are embedded in each employee's learning journey and academies have been established to build specific capabilities such as power generation and distribution network.

Our capability development approach is built on 70% on-the-job experience, 20% exposure, and 10% formal training. The 70:20:10 learning approach supports flexible and dynamic learning interventions. In 2024, we achieved an Organisational Competency Index (OCI) of 88%, reflecting the organisation's strong commitment to building a capable and skilled workforce. This accomplishment is supported by our extensive training initiatives, which engaged 26,678 employees in various development programmes over the year, resulting in a total of 1,346,477 learning hours.

Additionally, TNB through Chief People Officer serves as Chairman in Heads of ASEAN Power Utilities/Authorities (HAPUA) Working Group No. 5. The working group focuses on driving collaboration on human resource and human capital development initiatives with ASEAN counterparts. Programmes conducted in 2024 include personnel exchange amongst utilities and collaboratively organise bilateral training programmes.

#### Professional Certifications

The technical competencies of our workforce are crucial for advancing our business operations. Our employees actively pursue relevant professional certifications prioritising compliance with regulatory requirements such as the Energy Commission Competent Person and Department of Occupational Safety and Health (DOSH) Competent Person.

#### Extended Study Programmes

We provide our employees with opportunities to further their academic studies through sponsorships for both undergraduate and postgraduate programmes, including a dedicated Employee Academic Development Programme. From 2021 to 2024, 93 employees participated in these programmes, reflecting our commitment to continuous learning and development, with a total investment of RM3.42 million.

### EMPLOYEE VALUE PROPOSITION (EVP) PACKAGE

At TNB, we offer competitive employee benefits packages to attract and retain talent through our comprehensive Employee Value Proposition (EVP). Our commitment to enhancing employee benefits includes subsidised childcare through the TNB Educare Programme and housing quarters for eligible employees. We provide medical treatment coverage for employees and their dependents, holiday accommodation at nominal rent, welfare

assistance, long service awards, personal accident group insurance benefits, and housing/ car loans under the Loan Interest Reimbursable Scheme. On our premises, we offer counselling services, and sports and recreational facilities. We also allocate various types of leave, including annual, sick, maternity, paternity, compassionate, marriage, religious and study leaves.

**Medical Benefit**

TNB extends its commitment to its *Lembaga Lektrik Negara* (LLN) retirees and their dependents by offering continued medical benefits, reflecting our unwavering dedication to their well-being even beyond their years of service. TNB is dedicated in providing comprehensive medical benefits for our employees and their dependents, including the spouses of our female employees, ensuring robust healthcare to support their families.

**Flexible Working Arrangements**

We continue to implement a hybrid work model called the TNB Way Of Working (TWOW), allowing employees to work both in the office and remotely, supported by the award-winning People App, which also aids in reporting GHG Scope 3 emissions. Our flexible working arrangement is integral to our culture, promoting employee well-being, work-life balance and inclusivity.

*TNB extends the medical benefits to LLN retirees.*

## EMPLOYEE COMMUNICATION AND ENGAGEMENT

Engagement with our workforce is encouraged through feedback and pulse check surveys, as well as face-to-face interactions such as employee gatherings, townhalls, outreach sessions, morning talks and meetings.

We conduct an annual survey to gain insights into our strengths and areas for improvement, enhancing the overall employee experience with a focus on corporate culture. In 2024, the survey recorded a score of 89%.

**Intranet Subpages**

Accessible internal pages for updates and resources

**Corporate Bulletins**

Tenagawan Daily: Regular updates and news

**Info TV**

Informative broadcasts in common areas

**Social Media**

Engaging interactions and timely updates through TNB Powerfaces Facebook group

# SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

## MM11: Labour Rights and Employment Culture

### OUR PERFORMANCE

**PERFORMANCE: Bursa Indicators**

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **EMPLOYEE DEMOGRAPHIC** | | | | | | | |
| GRI 2-7 | C3(a) | Male | Number | 27,258 | 27,084 | 27,353 | – |
| | | | Percentage | 78.6% | 78.4% | 78.3% | – |
| | | Female | Number | 7,441 | 7,459 | 7,586 | – |
| | | | Percentage | 21.4% | 21.6% | 21.7% | – |
| **EMPLOYEE DIVERSITY AND EQUAL OPPORTUNITIES** | | | | | | | |
| GRI 405-1 | C3(a) | **Workforce by level and gender** | | | | | |
| | | Senior Management | | | | | |
| | | Male | Number | 321 | 336 | 339 | – |
| | | Female | Number | 103 | 120 | 112 | – |
| | | Total | Number | 424 | 456 | 451 | – |
| | | Male | Percentage | 75.71% | 73.68% | 75.17% | – |
| | | Female | Percentage | 24.29% | 26.32% | 24.83% | – |
| | | Executive | | | | | |
| | | Male | Number | 5,312 | 5,362 | 5,508 | – |
| | | Female | Number | 3,588 | 3,685 | 3,866 | – |
| | | Total | Number | 8,900 | 9,047 | 9,374 | – |
| | | Male | Percentage | 59.69% | 59.27% | 58.76% | – |
| | | Female | Percentage | 40.31% | 40.73% | 41.24% | – |
| | | Non-executive | | | | | |
| | | Male | Number | 21,623 | 21,379 | 21,506 | – |
| | | Female | Number | 3,752 | 3,661 | 3,608 | – |
| | | Total | Number | 25,375 | 25,040 | 25,114 | – |
| | | Male | Percentage | 85.21% | 85.38% | 85.63% | – |
| | | Female | Percentage | 14.79% | 14.62% | 14.37% | – |
| | | **Workforce by age group** | | | | | |
| | | < 35 | Number | 12,692 | 11,238 | 10,493 | – |
| | | | Percentage | 36.6% | 32.5% | 30.0% | – |
| | | 35 – 50 | Number | 17,689 | 19,065 | 20,248 | – |
| | | | Percentage | 51.0% | 55.2% | 58.0% | – |
| | | > 50 | Number | 4,318 | 4,240 | 4,198 | – |
| | | | Percentage | 12.4% | 12.3% | 12.0% | – |

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| | | **Workforce by level and age group** | | | | | |
| | | Senior Management | | | | | |
| | | < 35 | Number | 2 | 0 | 0 | – |
| | | 35 – 50 | Number | 202 | 235 | 218 | – |
| | | > 50 | Number | 220 | 221 | 233 | – |
| | | Total | Number | 424 | 456 | 451 | – |
| | | < 35 | Percentage | 0.5% | 0.0% | 0.0% | – |
| | | 35 – 50 | Percentage | 47.6% | 51.5% | 48.3% | – |
| | | > 50 | Percentage | 51.9% | 48.5% | 51.7% | – |
| | | Executive | | | | | |
| | | < 35 | Number | 3,182 | 3,114 | 3,137 | – |
| | | 35 - 50 | Number | 4,956 | 5,150 | 5,400 | – |
| | | > 50 | Number | 762 | 783 | 837 | – |
| | | Total | Number | 8,900 | 9,074 | 9,374 | – |
| | | < 35 | Percentage | 35.8% | 34.4% | 33.5% | – |
| | | 35 – 50 | Percentage | 55.7% | 56.9% | 57.6% | – |
| | | > 50 | Percentage | 8.6% | 8.7% | 8.9% | – |
| | | Non-executive | | | | | |
| | | < 35 | Number | 9,512 | 8,128 | 7,356 | – |
| | | 35 – 50 | Number | 12,521 | 13,679 | 14,630 | – |
| | | > 50 | Number | 3,342 | 3,233 | 3,128 | – |
| | | Total | Number | 25,375 | 25,040 | 25,114 | – |
| | | < 35 | Percentage | 37.5% | 32.5% | 29.3% | – |
| | | 35 – 50 | Percentage | 49.3% | 54.6% | 58.2% | – |
| | | > 50 | Percentage | 13.2% | 12.9% | 12.5% | – |
| | | Total (excluding board members) | Number | 34,699 | 34,543 | 34,939 | – |
| | C3(b) | **TNB Board of Directors** | | | | | |
| | | Male | Percentage | 63.6% | 54.55% | 66.67% | – |
| | | Female | Percentage | 36.4% | 45.45% | 33.33% | >30% |
| | | **TNB Board of Directors by Age** | | | | | |
| | | < 50 | Percentage | 9.10% | 9.10% | 8.33% | – |
| | | 50 – 60 | Percentage | 54.54% | 45.45% | 41.67% | – |
| | | > 60 | Percentage | 36.36% | 45.45% | 50.00% | – |

## SUSTAINABILITY DISCLOSURES ON MATERIAL MATTERS

### MM11: Labour Rights and Employment Culture

| GRI | Bursa | Metric | Units | FY2022 | FY2023 | FY2024 | Target FY2025 |
|---|---|---|---|---|---|---|---|
| **CAPABILITY BUILDING** | | | | | | | |
| GRI 404-1 | C6(a) | **Training Hours** | | | | | |
| | | Senior Management | Hours | 11,642 | 15,469 | 15,884 | – |
| | | Executive | Hours | 313,836 | 421,416 | 416,946 | – |
| | | Non-executive | Hours | 792,874 | 907,736 | 825,924 | – |
| | | Average training hours | Hours/ employee | 34 | 47 | 50.47 | – |
| **EMPLOYEE DEMOGRAPHIC BY CONTRACT TYPE** | | | | | | | |
| GRI 2-7 | C6(b) | **Workforce by contract type** | | | | | |
| | | Total (Permanent) | Number | 31,130 | 31,066 | 31,729 | – |
| | | Total (Contract)* | Number | 3,569 | 3,477 | 3,210 | – |
| | | Total (Contract)* | Percentage | 10.29% | 10.07% | 9.19% | – |
| **NEW EMPLOYEE HIRES AND TURNOVER** | | | | | | | |
| GRI 404-1 | C6(c) | **Employee turnover by level** | | | | | |
| | | Senior Management | Number | 61 | 44 | 40 | – |
| | | Executives | Number | 369 | 342 | 327 | – |
| | | Non-executives | Number | 933 | 756 | 701 | – |
| | | Total | Number | 1,363 | 1,142 | 1,068 | – |
| | | **Employee turnover rate by level** | | | | | |
| | | Senior Management | Percentage | 4.48% | 3.85% | 3.74% | – |
| | | Executives | Percentage | 27.07% | 29.95% | 30.62% | – |
| | | Non–executives | Percentage | 68.45% | 66.20% | 65.64% | – |
| **LABOUR RIGHTS** | | | | | | | |
| GRI 2-25 | C6(d) | **Processes to remediate negative impact** | | | | | |
| | | Number of substantiated complaints concerning human rights violations | Number | 0 | 0 | 0 | – |

** The total number of employees includes permanent and contract employees with employment relationship as at the end of reporting period. Interns are excluded in this calculation.*

*Note;*
- *Target setting will be made available when necessary.*

# Our Response to Climate Change

Climate change presents us with one of the most significant challenges of our time, but it also offers an opportunity for innovation and resilience. While we face profound impacts on our environment, economies and societies due to rising temperatures and extreme weather events, this challenge also inspires us to transition towards sustainable practices. Human activities have increased greenhouse gas concentrations, highlighting the importance of shifting our energy reliance towards cleaner alternatives.

Malaysia, with its rich natural resources, is particularly positioned to adapt to and address climate change. Despite the country's vulnerability to natural hazards such as floods, heatwaves and strong winds, TNB continues to be resilient in enhancing our infrastructure and operations.

In alignment with the National Climate Change Policy 2.0, TNB is dedicated to safeguard our assets against climate impacts. This commitment strengthens our operational reliability and reinforces our role in building a sustainable future for Malaysia.

Since 2019, we have adopted the Task Force on Climate-related Financial Disclosures (TCFD) framework that serves as a comprehensive approach for assessing and managing climate-related risks and opportunities, ensuring a thorough evaluation of the associated financial implications.

**TCFD CORE ELEMENTS IN TNB**


We govern climate-related matters by integrating them into the TNB corporate governance system, with oversight from the Board and management

We prioritise to ensure business resiliency and continuous efforts in addressing climate change scenarios and exposures through our Reimagining TNB strategy and TNB Energy Transition Plan

We adopt the TNB Risk Management Framework, with continuous effort to address both transition and physical risks, and opportunities in the short-, medium- and long-term strategic risks across TNB business entities

We identify and set climate-related quantitative targets and monitor related metrics to ensure the realisation of the Net Zero by 2050 aspiration

# OUR RESPONSE TO CLIMATE CHANGE

## GOVERNANCE

The TNB sustainability governance policies and practices govern our climate-related matters.

*For more information on sustainability governance, please refer to pages 61 of the Sustainability Statement.*

**TNB's Commitment towards Addressing Climate Risks**

In line with the TNB Sustainability Policy and TNB Environmental Policy, we are committed to reducing emissions, promoting energy efficiency, and implementing effective climate change mitigation and adaptation measures, as outlined in the TNB Energy Transition Plan.

Our dedication to addressing climate risks begins at the board level, where the BSRC actively oversees the Group's sustainability performance in alignment with our approved strategies and targets. The BSRC periodically monitors our carbon emissions and sustainability initiatives, through forward-looking Key Risk Indicators reported in the quarterly TNB Risk Dashboard. Furthermore, the TNB BOD approves the Group's sustainability disclosures, ensuring transparency regarding climate risks and opportunities in accordance with TCFD guidelines.

At the management level, our commitment to tackling climate risks is evident in the setting of Key Performance Indicators (KPIs) at the President/CEO level, which are cascaded to all C-suites. Notably, the Managing Director of TNB Power Generation Sdn. Bhd., whose primary role is to manage TNB's power generation portfolio and adopt cleaner generation sources, is accountable for carbon emissions performance indicators. We also evaluate KPI performance annually as part of the remuneration package for senior management within our Short-term Incentive programme that reinforces accountability in performance management.

## STRATEGY

Our priority is to ensure that our business is resilient in addressing climate exposures with continuous assessment to adapt to transition and physical risks and opportunities in the short-, medium- and long-term horizon.

| **Short-Term**: Until 2025 | **Medium-Term**: 2025 to 2035 | **Long-Term**: 2035 to2050 |
|---|---|---|
| **Key target:**<br>• RE target of 8.3GW by 2025 with the acceleration of RE investments towards 2050<br>• Annual emissions intensity reduction of 5% | **Key Target:**<br>• Emissions intensity reduction of 35% by 2035<br>• Reduction of coal capacity by 50% by 2035<br>*Note: Base year 2020* | **Key Target:**<br>• Aspire to achieve Net Zero and be coal-free by 2050 |

We have identified nine transition risks and six transition opportunities and assessed their impact to our strategy, financial position and overall performance.

### TRANSITION RISKS

**S**: Short-term **M**: Medium-term **L**: Long-term

High Significant Medium Low

| Type | No | Transition Risk | Potential Impact | Exposure | Management Approach |
|---|---|---|---|---|---|
| Policy & Legal | 1 | **Carbon Price**<br>Uncertainty about the government implementing carbon pricing as an instrument to capture the external cost of GHG emissions | Cost | S M L | • Implement initiatives within TNB Carbon Management Strategy & Emissions Reduction Target<br>• Engage actively with regulatory bodies and government agencies on carbon pricing regulations<br>*Refer to MM3 page 84-94* |

| Type | No | Transition Risk | Potential Impact | Exposure | Management Approach |
|---|---|---|---|---|---|
| | 2 | **Emissions Reporting Obligations**<br>Increased expectations from regulatory bodies to track and publicly report emissions | Cost | S M L | • Digitalise emissions data and indicators<br>• Monitor and report emissions metrics and performance for informed decisions<br>• Engage actively with regulatory bodies to keep abreast of emissions reporting requirements<br><br>*Refer to MM3 page 84-94* |
| | 3 | **Litigation Exposure**<br>Lawsuits and fines driven by environmental and climate activism | Cost | S M L | • Comply with regulatory requirements<br>• Engage actively with relevant stakeholders to communicate TNB's environmental and climate management<br><br>*Refer to MM6 page 105-119* |
| Technology | 4 | **Low Carbon Technology**<br>Uncertainty in the deployment of low-emissions technologies due to high investment and technology maturity | Capital Investment | S M L | • Implement initiatives within TNB Carbon Management Strategy & Emissions Reduction Target<br><br>*Refer to MM3 page 84-94* |
| | 5 | **Talent Gaps**<br>Talent gaps that require upskilling and reskilling to navigate new and emerging technologies | Cost | S M L | • Implement talent management programme customised to meet energy transition and technology requirements<br><br>*Refer to MM11 page 137-144* |
| Market | 6 | **Changes in the electricity supply industry**<br>Changes in the Malaysian Electricity Supply Industry (MESI) such as policy, regulatory requirements and market demands, in line with the transition to a low-carbon economy | Revenue | S M L | • Engage actively with regulatory bodies to shape an equitable energy market<br>• Explore new opportunities in the energy market such as beyond kWh solutions<br><br>*Refer to MM2 page 75-83* |
| | 7 | **Shift In Customer Behaviour**<br>Changing customer behaviour and preference for low-carbon options | Revenue | S M L | • Engage actively with customers to anticipate and meet expectations by leveraging digitalisation<br>• Collaborate with regulators and stakeholders to enhance energy literacy of the people<br><br>*Refer to MM7 page 120-124* |
| | 8 | **Stranded Asset & Divestment**<br>Unanticipated or premature write-downs, devaluation and divestment of carbon-intensive assets | Asset Value | S M L | • Implement initiatives within TNB Carbon Management Strategy & Emissions Reduction Target<br>• Commit to no new coal power plants<br><br>*Refer to MM3 page 84-94* |
| Reputation | 9 | **Adverse Perception of TNB's Brand & Image**<br>Increased stakeholder expectations and scrutiny of our ESG strategy, management and performance | Share Price | S M L | • Implement the TNB Sustainability Pathway 2050 and Energy Transition Plan<br>• Engage actively with stakeholders to address ESG needs and expectations<br><br>*Refer to MM3 page 84-94* |

# OUR RESPONSE TO CLIMATE CHANGE

## TRANSITION OPPORTUNITIES

**S**: Short-term **M**: Medium-term **L**: Long-term

High Significant Medium Low

| Type | No | Transition Opportunities | Potential Impact | Opportunity | Management Approach |
|---|---|---|---|---|---|
| Resource efficiency | 1 | **Energy management at the supply and demand sides**<br>Opportunities to reduce the resources required to generate electricity and implement energy efficiency solutions | Cost Saving | S M L | • Optimise asset performance and efficiency through technology and innovation<br>• Repower power plants using cleaner and green technology<br>• Collaborate with the Energy Commission (EC) on the Malaysia Energy Literacy Programme (MELP)<br><br>*Refer to MM3 page 84-94* |
| Energy Source | 2 | **Renewable energy growth**<br>Opportunities to increase RE portfolio locally and internationally | Revenue | S M L | • Capture strong RE growth potential in domestic & international markets through subsidiaries, i.e., TNB Renewables, Spark Renewables and Vantage RE<br><br>*Refer to MM3 page 84-94* |
| Products and services | 3 | **Demand for low-carbon electricity and green energy solutions**<br>Opportunities from increased demand for renewable energy, energy storage and electrification | Revenue | S M L | • Offer green energy solutions across the electricity value chain as per the TNB Energy Transition Plan<br>• Implement energy transition projects in line with the National Energy Transition Roadmap (NETR)<br>• Establish GSPARX and TNBX to provide beyond kWh solutions<br>• Develop and enhance digital platforms such as myTNB app, EV charging platforms, a digital marketplace, etc. to complement ET initiatives<br>• Increase the EV adoption rate in Malaysia by facilitating the EV ecosystem<br><br>*Refer to MM2 page 75-83* |
| Markets | 4 | **Diversification of business activities**<br>Opportunities to diversify business activities leveraging energy transition targets, green and emerging technology, digitalisation and strategic partnership | Revenue | S M L | • Embark on strategic partnerships for new technology such as hydrogen with Petronas, ammonia co-firing with IHI Corporation and CCUS with Petronas<br>• Develop a hydrogen hub producing hydrogen for the industrial and power sectors<br><br>*Refer to MM3 page 84-94* |

| Type | No | Transition Opportunities | Potential Impact | Opportunity | Management Approach |
|---|---|---|---|---|---|
| Resilience | 5 | **Flexible and reliable Grid**<br>Opportunities for regulated assets due to the requirement for a flexible and reliable grid with the increase of renewable energy injection to the grid system | Revenue | S M L | • Enhance grid system efficiency through smart grid initiatives to facilitate bi-directional power flow from prosumers<br>• Pilot the Virtual Power Plant (VPP) technology for peer-to-peer generation among energy prosumers and demand response control for system stability in the future<br><br>*Refer to MM2 page 75-83* |
| | 6 | **ASEAN Power Grid Interconnection**<br>Opportunities for grid interconnection projects with ASEAN countries towards a low-carbon economy in the region | Revenue | S M L | • Establish MoUs with ASEAN countries, e.g., Indonesia, Thailand and Singapore, to undertake collaborations on interconnection projects<br>• Conduct feasibility studies for other cross-border electricity interconnection opportunities<br><br>*Refer to MM2 page 75-83* |

## OUR BUSINESS RESILIENCE AGAINST THE IMPACT OF CLIMATE CHANGE

Proactive steps are being taken to ensure the resilience of our business operations and assets against acute and chronic physical risks resulting from climate change. Our climate risk assessment considers the scenarios based on the Intergovernmental Panel on Climate Change (IPCC) and Network for Greening the Financial System (NGFS), as follows:

| IPCC/NGFS Scenario | NGFS–Net Zero Scenario | NGFS–NDC Scenario | IPCC RCP–6.0: Moderate Emissions Scenario | IPCC RCP–8.5: High Emissions Scenario |
|---|---|---|---|---|
| **Description** | 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 | 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 | The scenario suggests a future in which greenhouse gas emissions continue to rise at a moderate rate but Stabilise by 2070 | The 'Business as usual' scenario suggests a likely outcome if society does not make a concerted effort to cut greenhouse gas emissions |
| **Temperature Increase** | **1.5°C – 2.0°C by 2100** | **2.3°C – 4.5°C by 2100** | **2.6°C – 5.7°C by 2100** | **>4.0°C by 2100** |

In 2024, we undertook a comprehensive climate risk assessment at the asset level to gain deeper insights into climate-related threats. This approach has enabled us to strengthen the resilience of our assets by implementing targeted, effective, and sustainable adaptation measures.

# OUR RESPONSE TO CLIMATE CHANGE

We integrate climate data from agencies such as the Malaysian Meteorological Department, National Disaster Agency, or National Disaster Management Agency (NADMA) and the National Water Research Institute of Malaysia (NAHRIM) with our internal Geographic Information System (GIS). This integration allows us to identify climate hazards to our asset on comprehensive maps, giving us a clearer understanding of the potential impacts of climate change on our operations, particularly concerning floods (riverine and surface water), extreme winds, and extreme heat whilst concurrently exploring assessments for other climate hazards.

| Acute | | Chronic | | |
|---|---|---|---|---|
| Riverine Flooding | Extreme Wind | Extreme Heat | Sea Level Increase | Soil Movement |
| Surface Water Flooding | Forest Fire | | | |

**Floods (Riverine & Surface Water)**

Malaysia is exposed to monsoon rains, particularly from November to March. Low-lying areas, especially along the east coast of Peninsular Malaysia, are highly vulnerable. Flooding can damage critical infrastructure, leading to power outages and costly repairs. Substations and transformers are particularly at risk, as water ingress can cause short circuits and equipment failure. Additionally, access to affected areas can be hindered, delaying repair and restoration efforts.

**Extreme Heat**

Extreme heat impacts our physical asset in various ways. Solar assets may operate sub-optimally in high temperatures or with insufficient sunlight, thus reducing output. For thermal power plants, rising ambient temperatures decrease gas power plant efficiency and increase fuel costs. Additionally, extreme heat may affect grid system reliability, particularly at substations, due to overloading and thermal stress (hotspots).

**Extreme Wind**

Our assets, particularly transmission and distribution networks' lattice towers and service poles, as well as solar power plants are vulnerable to extreme wind. Extreme winds can cause the collapse of lattice towers, uprooting of poles, dislodge or break solar panels, leading to costly repairs and downtime.

**Sea Inundation**

Our coastal assets are at significant risk due to rising sea levels. Seawater intrusion can contaminate freshwater supplies and corrode infrastructure. Submersion during high tides and storms can cause extensive damage, while prolonged exposure to saltwater accelerates metal erosion and compromises structural integrity.

Based on our analysis, majority of our physical assets are at low risk, reflecting their resilience:

| Physical Risk | Asset Type | % of Asset Based on Risk Exposure Level | | | |
|---|---|---|---|---|---|
| | | High | Significant | Medium | Low |
| **Flood (Riverine & Surface Water)** | HV, MV & LV substations, power plants (Coal, Gas, Hydro), large-scale solar power plants | 0.05% | 1.03% | 14.97% | 83.95% |
| **Extreme Heat** | HV, MV & LV substations | 0.06% | 0.20% | 4.93% | 94.81% |
| **Extreme Wind** | HV, MV & LV substations, power plants (Coal, Gas), large-scale solar power plants, HV Overhead Lines | 0.00% | 0.01% | 41.67% | 58.32% |
| **Sea Inundation** | HV, MV & LV substations, power plants (Coal, Gas, Hydro), large-scale solar power plants | 0.00% | 0.00% | 4.80% | 95.2% |

## CLIMATE ADAPTATION MEASURES

Proactive adaptation and mitigation measures have been implemented over the years. Through early and ongoing investments in climate resilience, many of our assets have been upgraded to withstand climate-related challenges, which have significantly reduced their vulnerability to potential climate impacts. Several adaptation measures for flood (riverine and surface water), extreme heat and extreme wind are highlighted as follows:

| Physical Risk | TNB Adaptation Measures |
|---|---|
|  Flood | • Conduct asset-level flood risk assessments to identify vulnerable assets<br>• Implement flood mitigations such as elevating asset structure, installation of flood barrier for identified asset within flood-prone area<br>• Develop and implement flood response plan, including shutdown procedures, dam water release procedure, followed by rapid response from Emergency Response Team (ERT)<br>• Collaborate with local communities, governments, and other stakeholders to ensure prompt and coordinated responses<br>• Implement Integrated Community-Based Disaster Management (ICBDM) programme<br>• Secure adequate insurance coverage for flood-related damages |
|  Extreme Heat | • Conduct asset-level extreme risk assessments to identify vulnerable assets<br>• Incorporate climate change factors into new site assessments and adopt new design standards considering projected increasing extreme heat, e.g., increase equipment rating to mitigate over loading/hotspot<br>• Implement demand response programmes to manage peak load during extreme heat event<br>• Promote energy efficiency programmes to reduce overall demand during heat waves |
|  Extreme Wind | • Conduct asset-level wind risk assessments to identify vulnerable asset<br>• Strengthen infrastructure such as enhance tower safety factor to withstand extreme wind, switch from electric poles to underground cable, etc<br>• Develop and regularly update emergency response plans for extreme wind events<br>• Implement vegetation management, e.g., removal of dangerous tree to keep trees and branches away from power lines |
|  Sea Inundation | • Conduct asset-level sea inundation risk assessments to identify vulnerable asset<br>• Implement routine maintenance of corroded asset which includes regular inspections, repairs and upgrades of material that are resistant to saltwater corrosion |

## RISK MANAGEMENT

We integrate the assessment of transition risks and opportunities into our comprehensive risk management strategy, guided by our TNB Risk Management Framework. The management of climate-related physical and transition risk, including assessment, review and monitoring are embedded in our business operations and decisions regarding business growth, enabling us to navigate challenges effectively while seizing opportunities for a sustainable future.

*(Refer to the SORMIC in page 219)*

We recognise the importance of cultivating cross-functional capabilities and enhancing resilience across all areas of our business to support long-term strategic decision-making. Key capabilities include foresight and crisis preparedness. To achieve this, we employ a 4+1 approach—scan, assess, identify, mitigate, and repeat—allowing us to continuously monitor potential issues, evaluate their impacts, pinpoint specific risks, implement effective mitigation strategies, and iterate the process to stay ahead of emerging threats and prevent crises

# OUR RESPONSE TO CLIMATE CHANGE

## BUSINESS CONTINUITY MANAGEMENT (BCM)

In the event of a crisis, we are fully committed to preparing and responding effectively, guided by the TNB Business Continuity Management (BCM) Framework. Developed in alignment with ISO 22301, our BCM Framework provides a structured approach to managing business continuity within the Group. This enables us to respond quickly and effectively to any crisis while ensuring the continuity of our operations towards greater resilience.

Across the Group, proactive pre-crisis preparedness is continually emphasised to prevent crisis from occurring or becoming more severe. For instance, in preparation for floods during monsoon season, a range of crisis preparedness measures is proactively taken, including:

**01**

Flood forecasts are generated using Flood Inundation Maps, Substation Elevation data, and Contour Gap Analysis. Based on these forecasts, warning alerts are issued to the operations team to enhance preparedness.

**02**

Review and enhancement of Business Impact Analysis (BIA) and Emergency Response Plans (ERP).

**03**

Identification and implementation of flood mitigations on asset infrastructure.

**04**

Communication and engagement with local authorities and state governments aim to strengthen a prompt and coordinated response during crises.

Our crisis management is led by the TNB Crisis Management Team (CMT), which includes the President/CEO and C-Suites, playing a vital role in ensuring efficient recovery and effective communication with stakeholders. At the operations level, Emergency Response Teams (ERT) activate respective ERP for immediate response such as medical care and rescue operations, prioritising the safety of both our assets and those affected. We strategically plan and execute stakeholder communications through official channels, including the TNB Careline Facebook page. Additionally, targeted engagements with stakeholders are led by TNB State Stakeholder Affairs or Head of Retail at the state to strengthen stakeholder confidence during a crisis.

## METRICS AND TARGET

We identify and set climate-related quantitative targets and monitor related metrics to ensure the realisation of our Net Zero by 2050 aspiration.

*Refer to Material Matter on Climate Change and Emissions on pages 84-94*

# Statement of Assurance for FY2024 Sustainability Statement

## ASSURANCE UNDERTAKEN

TNB's Sustainability Statement for FY2024 has undergone an internal review by the internal audit function to enhance the credibility of the statement.

## SUBJECT MATTER

The review covered the adequacy and effectiveness of materiality assessment process. Additionally, the accuracy and completeness of performance data for eight (8) subject matters (comprising 15 Bursa Malaysia common indicators) were also assessed, as follows:

| | Subject Matters | Indicators |
|---|---|---|
| 1 | Anti-Corruption | • % of employees who received training on anti-corruption<br>• % of operations assessed for corruption-related risks |
| 2 | Health and Safety | • Number of work-related fatalities<br>• Lost time incident rate<br>• Number of employees trained on health and safety standards |
| 3 | Diversity | • % of employees by gender and age group, for each employee category<br>• % of directors by gender and age group* |
| 4 | Energy Management | • Total energy consumption |
| 5 | Labour Practices and Standards | • % of employees that are contractors or temporary staff<br>• Total number of employee turnover by employee category |
| 6 | Supply Chain Management | • Proportion of spending on local suppliers |
| 7 | Data Privacy and Security | • Number of substantiated complaints concerning breaches of customer privacy and losses of customer data |
| 8 | Emissions Management | • Scope 1 emissions<br>• Scope 2 emissions<br>• Scope 3 emissions (Category 6 and 7) |

**Note: The internal review covers only TNB Company*

## SCOPE

The boundary of the internal review includes Tenaga Nasional Berhad (TNB) Company's level and TNB Power Generation Sdn. Bhd. (Genco) for the period from 1 January 2024 to 31 December 2024.

# Bursa Malaysia Common Sustainability Matters and Indicators

| Indicator | Measurement Unit | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| **Bursa (Anti-corruption)** | | | | |
| Bursa C1(a) Percentage of employees who have received training on anti-corruption by employee category | | | | |
| Senior Management | Percentage | 1.57 * | 1.01 | 1.26 |
| Executive | Percentage | 7.74 * | 17.39 | 27.16 |
| Non-executive | Percentage | 31.72 * | 56.09 | 71.58 |
| Bursa C1(b) Percentage of operations assessed for corruption-related risks | Percentage | 0.00 | 97.00 | 100.00 |
| Bursa C1(c) Confirmed incidents of corruption and action taken | Number | 1 | 5 | 4 |
| **Bursa (Energy management)** | | | | |
| Bursa C4(a) Total energy consumption | Megawatt | 863,462.69 * | 404,523,322.00 * | 320,997,148.00 |
| **Bursa (Emissions management)** | | | | |
| Bursa C11(a) Scope 1 emissions in tonnes of CO2e | Metric tonnes | 38,580,000.00 * | 38,920,000.00 * | 38,750,000.00 |
| Bursa C11(b) Scope 2 emissions in tonnes of CO2e | Metric tonnes | 292,000.00 * | 331,000.00 * | 321,000.00 |
| Bursa C11(c) Scope 3 emissions in tonnes of CO2e (at least for the categories of business travel and employee commuting) | Metric tonnes | - | 100,000.00 * | 98,000.00 |
| **Bursa (Health and safety)** | | | | |
| Bursa C5(a) Number of work-related fatalities | Number | 2 | 5 * | 4 |
| Bursa C5(b) Lost time incident rate ("LTIR") | Rate | 0.82 | 0.74 | 0.87 |
| Bursa C5(c) Number of employees trained on health and safety standards | Number | 18,986 | 12,192 * | 13,973 |
| **Bursa (Waste management)** | | | | |
| Bursa C10(a) Total waste generated | Metric tonnes | 74,150.00 * | 929,123.00 * | 895,996.00 |
| Bursa C10(a)(i) Total waste diverted from disposal | Metric tonnes | - | 440,595.00 * | 497,578.91 |
| Bursa C10(a)(ii) Total waste directed to disposal | Metric tonnes | - | 488,528.00 * | 398,417.09 |
| **Bursa (Water)** | | | | |
| Bursa C9(a) Total volume of water used | Megalitres | No Data Provided * | 10,096.000000 | 9,234.000000 |
| **Bursa (Community/Society)** | | | | |
| Bursa C2(a) Total amount invested in the community where the target beneficiaries are external to the listed issuer | MYR | 12,200,000.00 | 99,037,559.50 | 63,780,000.00 |
| Bursa C2(b) Total number of beneficiaries of the investment in communities | Number | 0 | 6,635 | 79,581 |
| **Bursa (Supply chain management)** | | | | |
| Bursa C7(a) Proportion of spending on local suppliers | Percentage | 95.10 | 46.45 | 52.81 |
| **Bursa (Data privacy and security)** | | | | |
| Bursa C8(a) Number of substantiated complaints concerning breaches of customer privacy and losses of customer data | Number | 0 | 0 | 0 |

Internal assurance | External assurance | No assurance | (*)Restated

| Indicator | Measurement Unit | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| **Bursa (Labour practices and standards)** | | | | |
| Bursa C6(a) Total hours of training by employee category | | | | |
| Senior Management | Hours | 11,642 | 15,469 | 15,884 |
| Executive | Hours | 313,836 | 421,416 | 416,946 |
| Non-executive | Hours | 792,874 | 907,736 | 825,924 |
| Bursa C6(b) Percentage of employees that are contractors or temporary staff | Percentage | 10.29 * | 10.07 * | 9.19 |
| Bursa C6(c) Total number of employee turnover by employee category | | | | |
| Senior Management | Number | 61 | 44 | 40 |
| Executive | Number | 369 | 342 | 327 |
| Non-executive | Number | 933 | 756 | 701 |
| Bursa C6(d) Number of substantiated complaints concerning human rights violations | Number | 0 | 0 | 0 |
| **Bursa (Diversity)** | | | | |
| Bursa C3(a) Percentage of employees by gender and age group, for each employee category | | | | |
| Age Group by Employee Category | | | | |
| Senior Management Under 35 | Percentage | 0.50 * | 0.00 | 0.00 |
| Senior Management Between 35-50 | Percentage | 47.60 * | 51.50 * | 48.30 |
| Senior Management Above 50 | Percentage | 51.90 * | 48.50 * | 51.70 |
| Executive Under 35 | Percentage | 35.80 * | 34.40 * | 33.50 |
| Executive Between 35-50 | Percentage | 55.70 * | 56.90 * | 57.60 |
| Executive Above 50 | Percentage | 8.60 * | 8.70 * | 8.90 |
| Non-executive Under 35 | Percentage | 37.50 * | 32.50 * | 29.30 |
| Non-executive Between 35-50 | Percentage | 49.30 * | 54.60 * | 58.20 * |
| Non-executive Above 50 | Percentage | 13.20 * | 12.90 * | 12.50 |
| Gender Group by Employee Category | | | | |
| Senior Management Male | Percentage | 75.71 * | 73.68 * | 75.17 |
| Senior Management Female | Percentage | 24.29 * | 26.32 * | 24.83 |
| Executive Male | Percentage | 59.69 * | 59.27 * | 58.76 * |
| Executive Female | Percentage | 40.31 * | 40.73 * | 41.24 |
| Non-executive Male | Percentage | 85.21 * | 85.38 * | 85.63 |
| Non-executive Female | Percentage | 14.79 * | 14.62 * | 14.37 |
| Bursa C3(b) Percentage of directors by gender and age group | | | | |
| Male | Percentage | 63.60 * | 54.55 * | 66.67 |
| Female | Percentage | 36.40 * | 45.45 * | 33.33 |
| Under 50 | Percentage | 9.10 | 9.10 * | 8.33 |
| Between 50-60 | Percentage | 54.54 * | 45.45 * | 41.67 |
| Above 60 | Percentage | 36.36 * | 45.45 * | 50.00 |

Internal assurance | External assurance | No assurance | (*)Restated