

TENAGA NASIONAL BERHAD

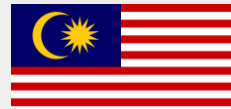
PRESENTATION TO INVESTORS





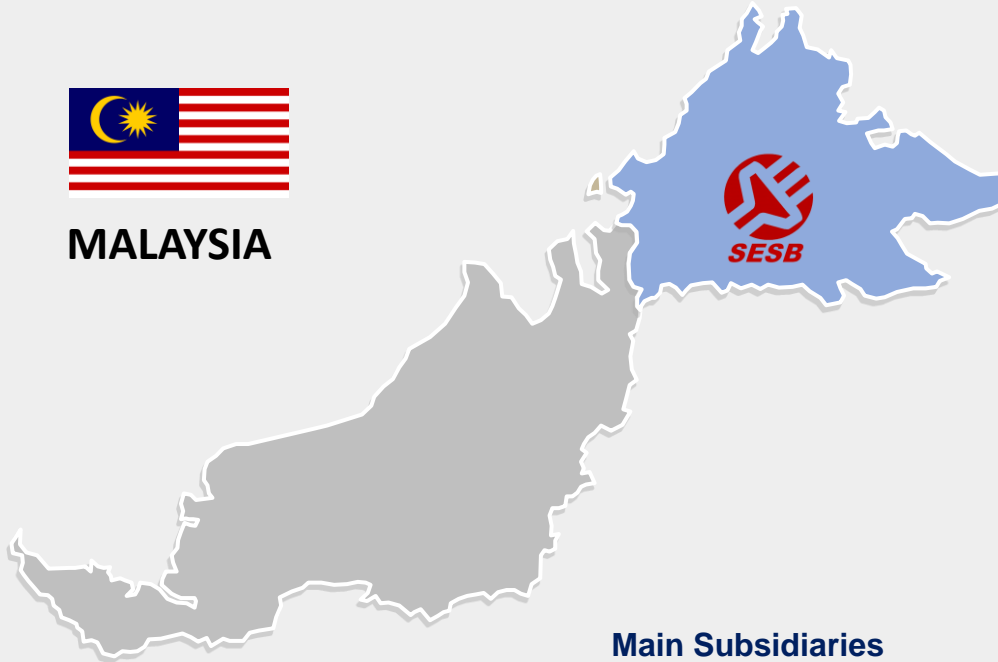
TNB is the largest electricity utility company in Malaysia and a trailblazer in the country's energy transition

Tenaga Nasional Bhd (TNB)



MALAYSIA

Sabah Electricity Sdn Bhd (SESB)
 (83% owned by TNB)
 Dependable Capacity:
 1,237MW



Sole Network & Retail Provider in Peninsular Malaysia

Our grid network & retail business are governed by the Incentive Based Regulation (IBR) framework



Transmission length: 25,186 km
 Substations: 472
 System Minutes: 0.09



Distribution Network: 723,134 km
 Substations: 86,468
 SAIDI : 42.25 minutes

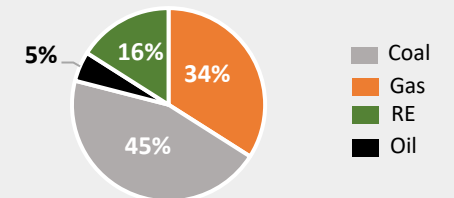


Retail customers: 9.7 mil
 Customer Satisfaction Index (CSI): 8.7

Holds 60% of Domestic Generation Capacity

Total TNB Installed Capacity: 24,013MW (Sept 2022)

- Domestic: 18,914 MW
- International: 5,099 MW



Notes:
 1. RE inclusive of large hydro and small RE
 2. Data is based on gross installed capacity (exclude SESB)

Our International Presence



Main Subsidiaries





We are also a global player; through our New Energy Division (NED), we strive to future proof our business by expanding our RE footprint and establishing strategic partnerships with leading RE players

NED'S PORTFOLIO

2021

- **Equity stake:** 100%
- **Capacity:**
 - 123.9MW in onshore wind (100% equity)
 - 365.0MW in solar (55% equity)
 - 41.5MW in offshore wind (49% equity)

2016

- **Equity stake:** 30%
- **Capacity:**
 - 1,134.1MW in gas, hydro and wind. Water conveyance in Jordan

2018

- **Equity stake:** 100%
- **Capacity:**
 - 123.0MW Large Scale Solar (LSS) parks (100% equity)
 - 3.2MW in biogas (49% equity)

2005

- **Equity stake:** 6% effective equity stake
- **Capacity:**
 - 1,190.0MW in IWPP
 - Water desalination of 1,039,000 m³/day



2016

- **Equity stake:** 30%
- **Capacity:**
 - 2,244.0MW in coal, gas, solar and hydro



CHAIRMAN
DATO' SRI HASAN BIN ARIFIN



EXECUTIVE DIRECTOR/CEO
DATO' INDERA IR. BAHARIN BIN DIN

Senior Independent
Non-Executive Directors



ONG AI LIN
Expertise: Audit & Finance

Independent Non-Executive Directors



**GOPALA KRISHNAN
A/L K.SUNDARAM**
Expertise: Law



**DATO' Ir. NAWAWI
BIN AHMAD**
Expertise: Engineering



**JUNIWATI BINTI
RAHMAT HUSSIN**
Expertise: Corporate
Planning and Human
Resource



**DATO' ROSLINA BINTI
ZAINAL**
Expertise: Engineering
& Business

Non-Independent
Non-Executive Directors



**DATUK SERI ASRI
BIN HAMIDIN @
HAMIDON**
Ministry of Finance



**DATUK
RAWISANDRAN A/L
NARAYANAN**
Expertise: Business



**DATUK LAU
BENG WEI**
Expertise: Engineering
& Business



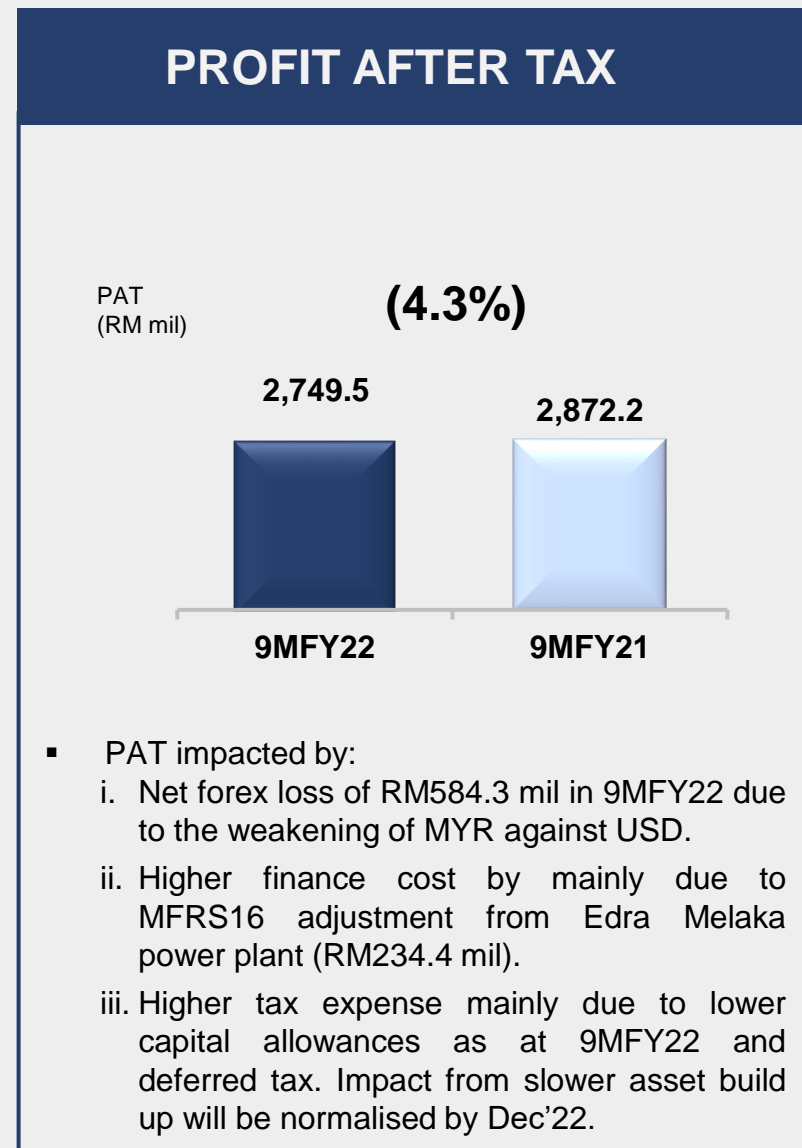
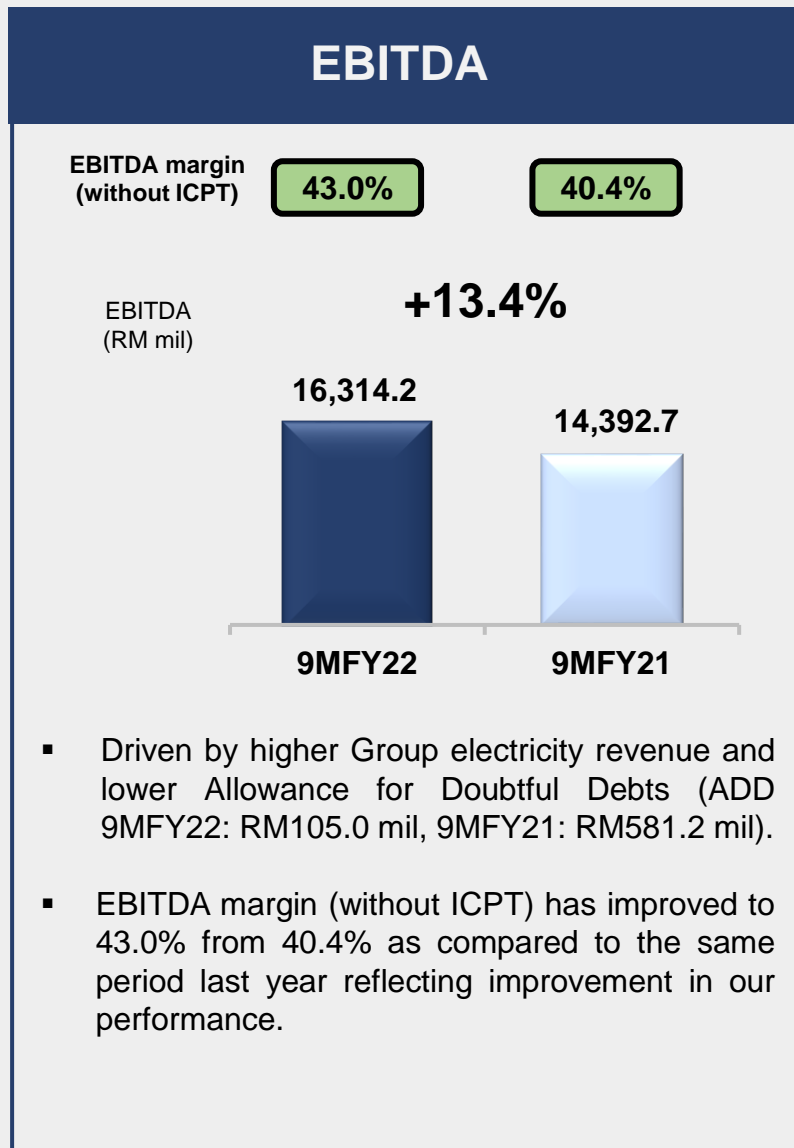
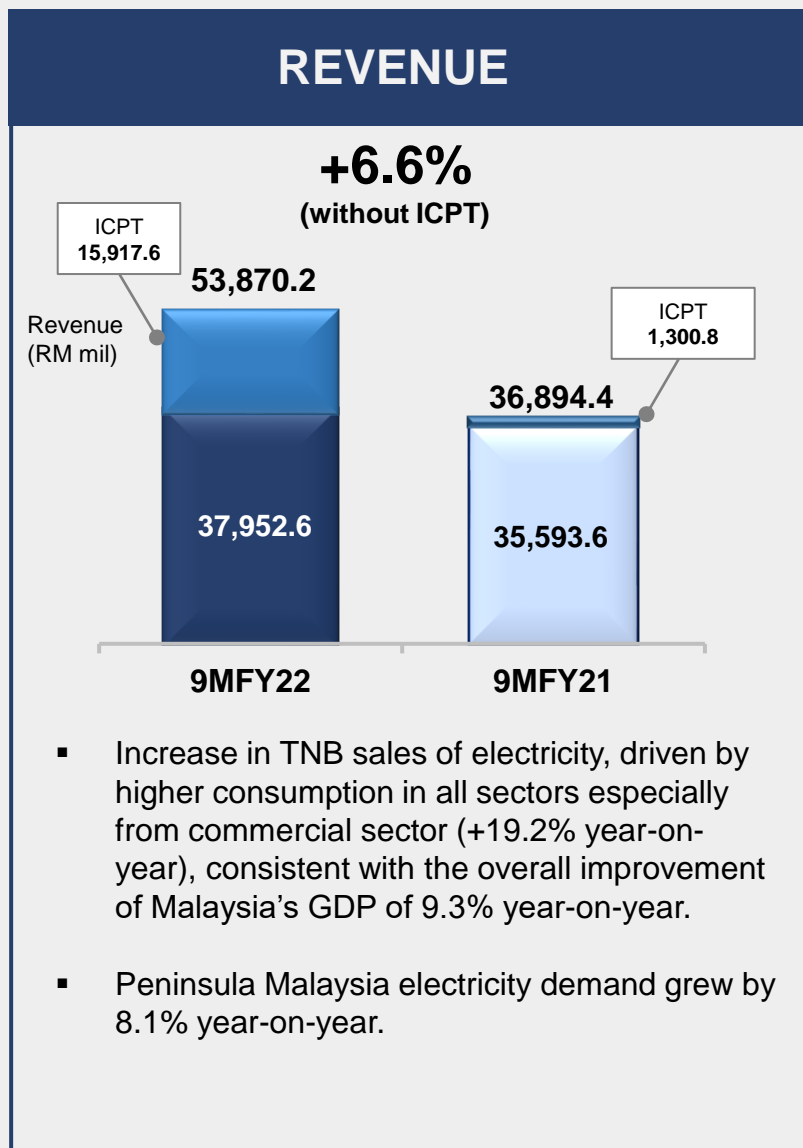
**DATO' MERINA BINTI
ABU TAHIR**
Expertise: Accounting



**DATUK AMRAN HAFIZ
BIN AFFIFUDIN**
Khazanah



Fair 9MFY22 financial performance supported by the higher Group electricity demand of 7.2% year-on-year, in line with Malaysia economic growth

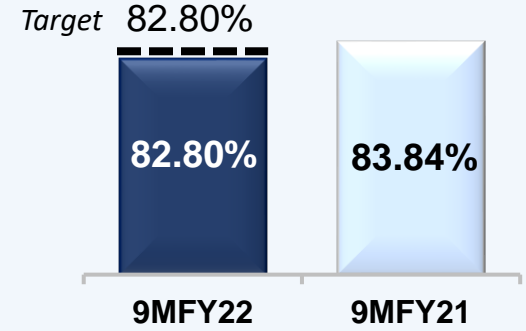




Solid generation and world-class network performance support our Group earnings



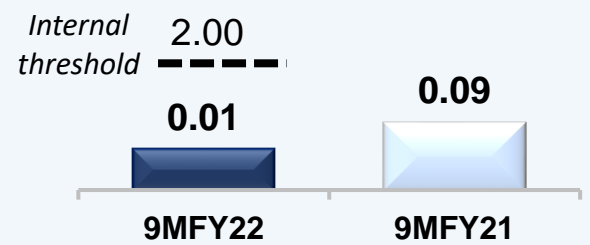
**Equivalent Plant Availability Factor, EAF
(Generation)**
%



EAF performance secured **generation assets' capacity revenue**



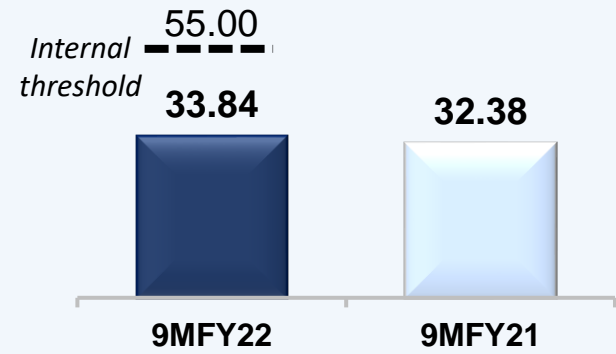
**System Minutes
(Transmission)**
Minutes



World class network performance safeguarded our regulated business earnings



**SAIDI
(Distribution Network)**
Minutes

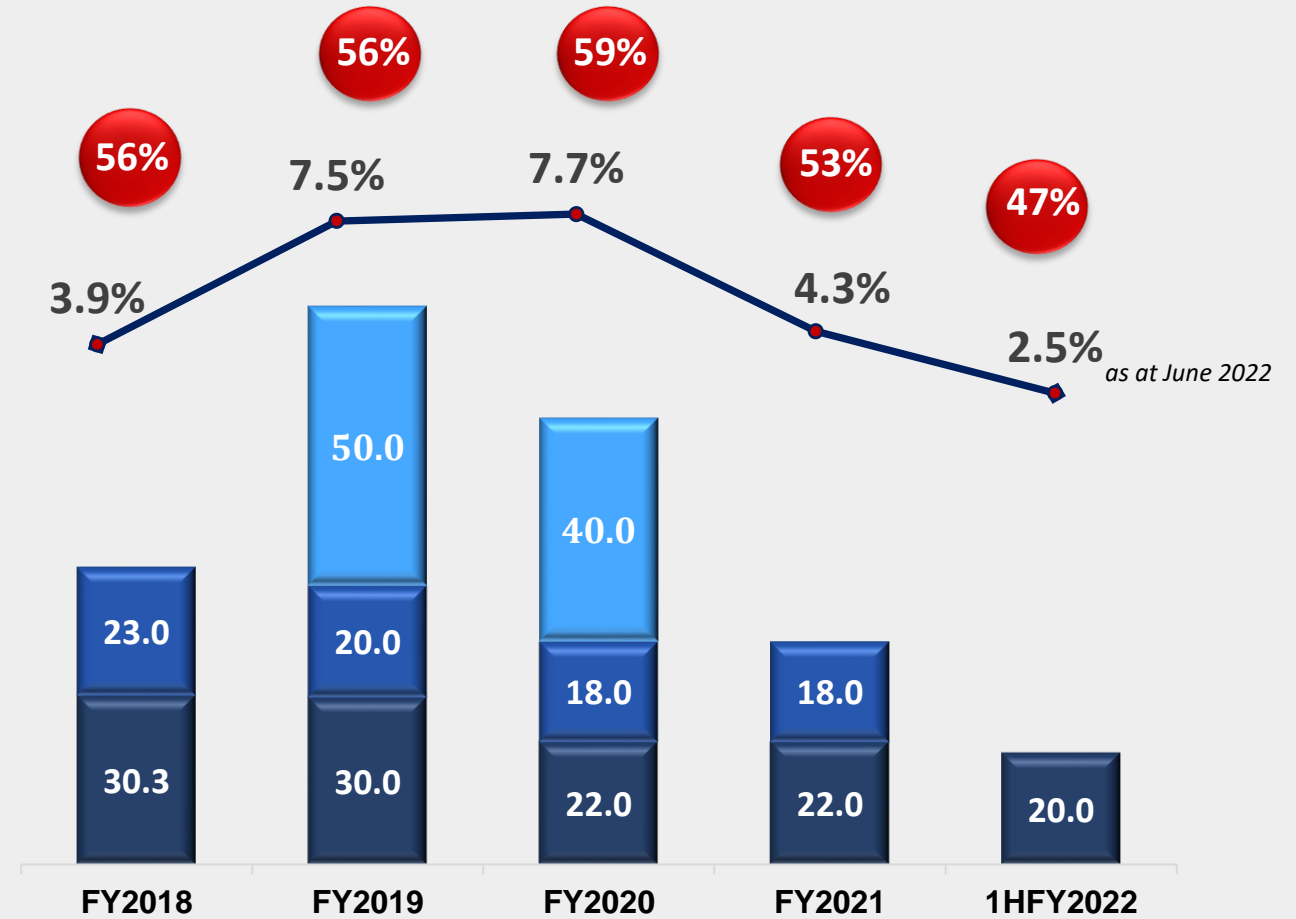




We continue to offer long-term value for our shareholders by delivering sustainable dividends

DIVIDEND POLICY

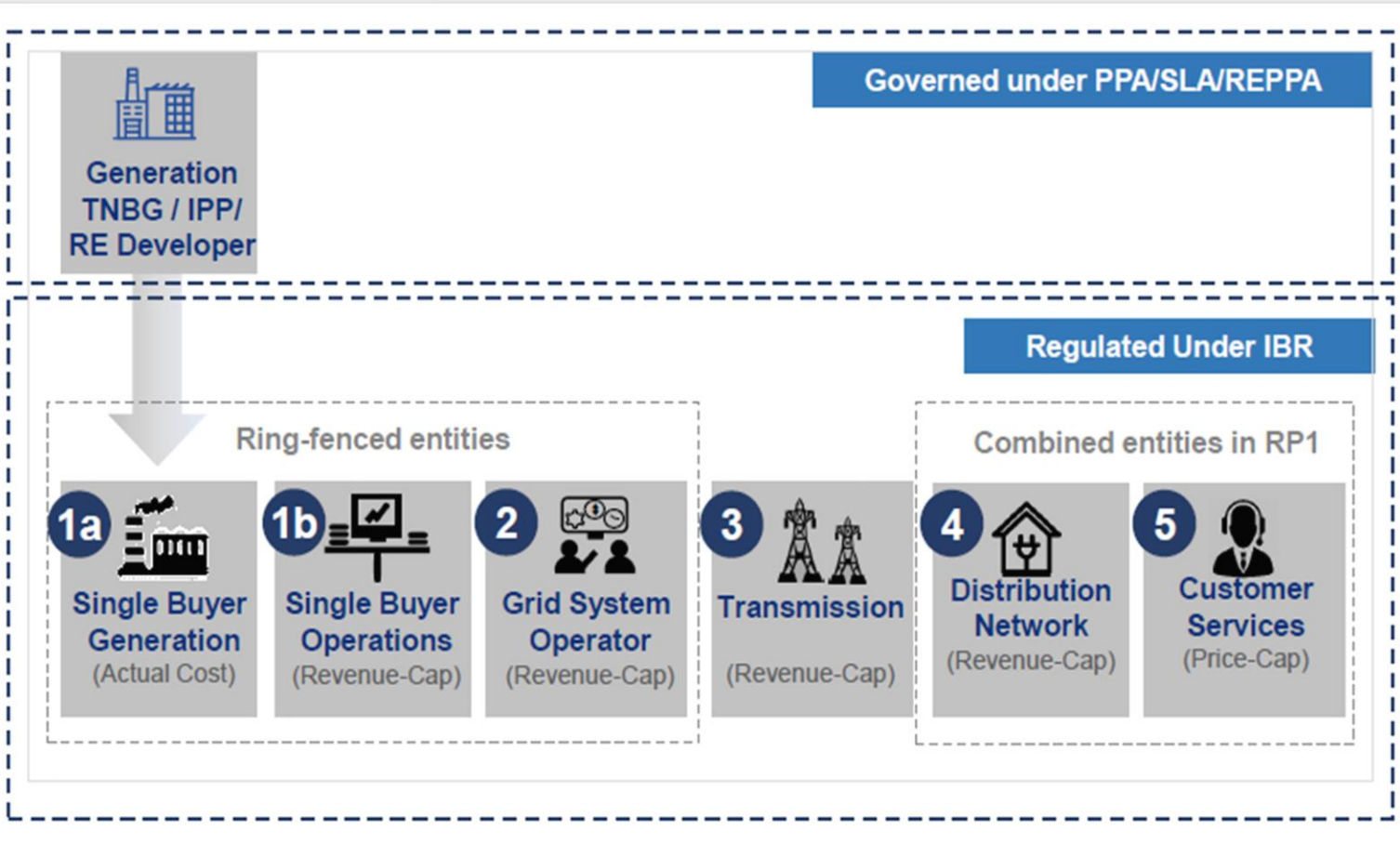
We will continue to honour our dividend policy of 30% to 60% dividend payout ratio, based on the reported Consolidated Net Profit Attributable to Shareholders After Minority Interest, excluding Extraordinary, Non-Recurring items



■ Interim dividend per share (sen) ■ Final dividend per share (sen) ■ Special dividend per share (sen)
 ● Dividend Payout ratio (%) (based on Adjusted Group PATAMI and excluding special dividend)
 ◆ Dividend Yield



Our regulated business is governed by the Incentive-Based Regulation (IBR) framework which provides stable returns to the Group while ensuring a more efficient energy sector



The IBR mechanism provides:

- Clear and transparent regulatory framework
- Consistent and stable returns
- Shield against uncontrollable swings
- Incentives for operational efficiencies

- Regulated business made up more than 70% of the overall Group earnings.

- **Revenue cap:** Allowed annual revenue based on approved demand growth. Any excess/shortfall is adjusted through revenue adjustment mechanism.

- **Price cap:** Any excess/shortfall of revenue made due to higher/lower average selling price compared to base tariff is adjusted through revenue adjustment mechanism.



The Government has approved the RP3 parameters and we have secured higher CAPEX with a fair WACC for the next 3 years (2022-2024)

RP3 determination (2022 -2024)



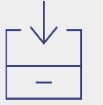
Base Tariff, sen/kWh

39.95
RP2: 39.45

7.3
RP2: 7.3

20.555
RP2: 18.8

70.8
estimated closing
2024 RAB



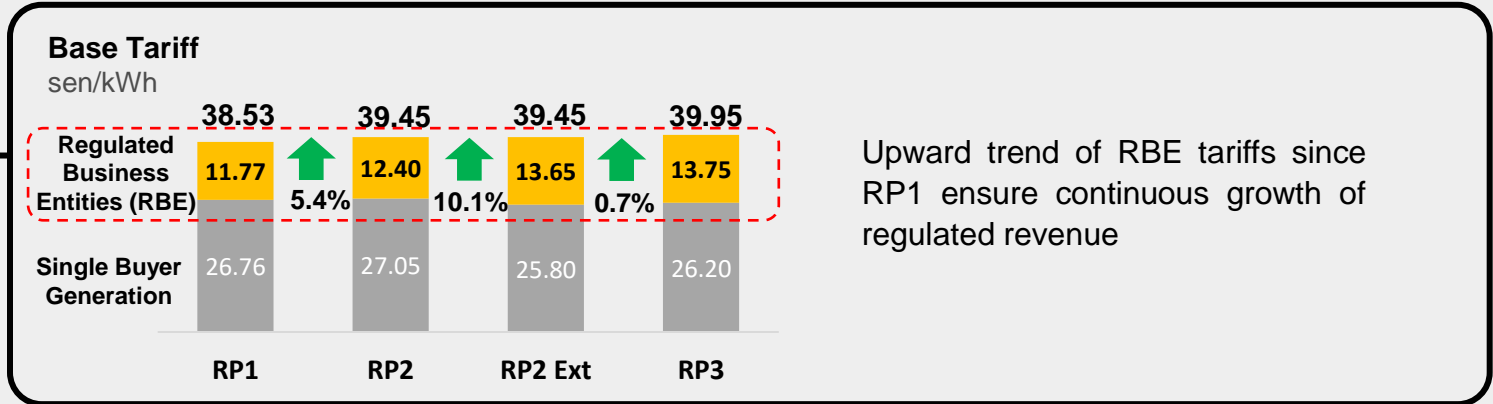
WACC, %



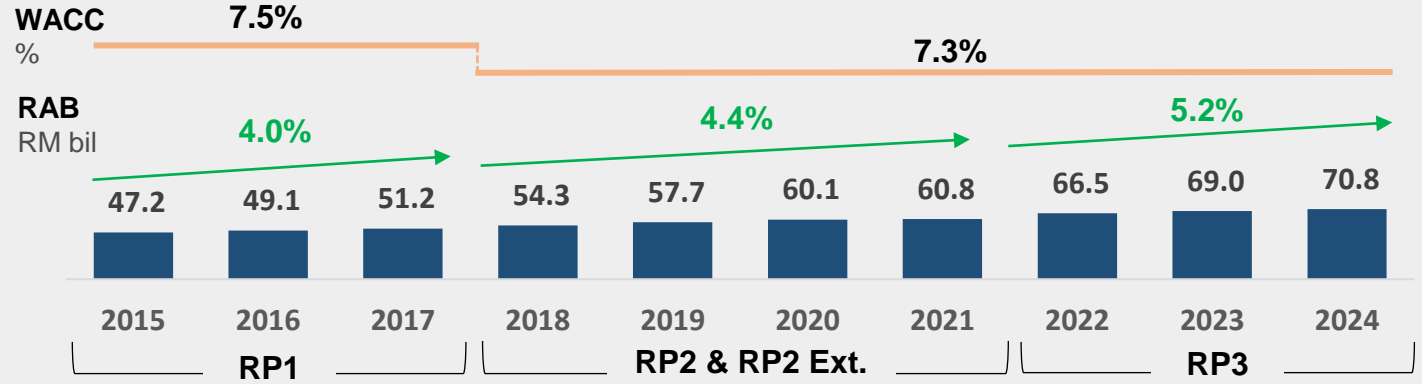
CAPEX, RM bil



RAB, RM bil

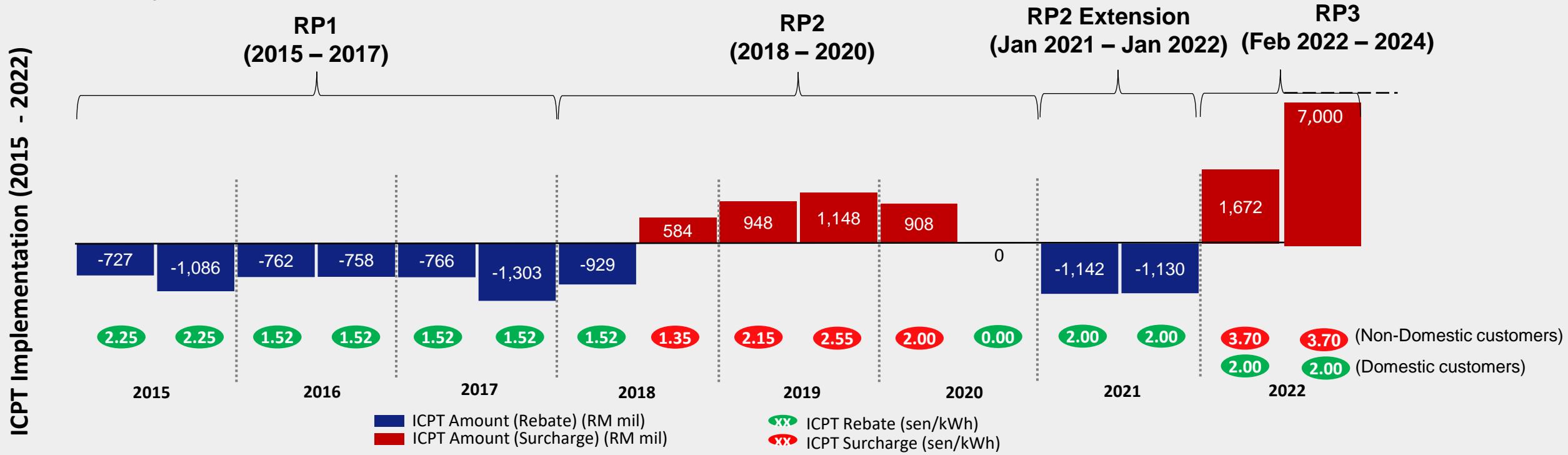


- WACC and return on regulated asset base (RoRAB) maintained at 7.3% since RP2
- Higher approved CAPEX guaranteed continuous growth in Regulated Asset Base (RAB) and earnings





To date, the Government has successfully managed the impact of fuel prices volatility for the past 16 ICPT* cycles since 2015



Amidst the high global fuel price environment, TNB managed to recover the additional costs with government support:



ICPT Cost Recovery

Total RM5.8 billion claimed for July to December 2022

RM4.8 bil received for period July to Nov 2022



Government Guarantee

The Government has provided Government guarantee of RM6.0 billion to support TNB's working capital

*Imbalance Cost Pass-Through



The Malaysian Government's commitment towards net zero at COP26; our Energy Transition Plan supports the nation's climate commitments



Malaysia Climate Commitments

- ❑ Committed to **45% reduction of GHGs by 2030**
- ❑ Committed to become **carbon neutral as early as 2050**
- ❑ Established the **Joint Committee on Climate Change** to build climate resilience within Malaysian financial sector
- ❑ Established a mandate to develop a **voluntary carbon market to promote offsetting**

Key focus areas to facilitate the transition to carbon neutrality

Encourage low-carbon economy transition

- Implement carbon pricing policy
- Implement the Low Carbon Mobility Blueprint 2021-2030 which outlines low-carbon alternatives
- Increase renewable energy generation capacity to 31% in 2025 and 40% in 2035
- Transform cities toward low-carbon pathway outlined in the National Low Carbon Cities Masterplan

Protect the environment and biodiversity

- Implement nature-based solutions to lower GHG with planting up to 100 million trees
- Maintain at least 50% forest cover
- Adopt Zero Waste through the Waste to Energy programme and improve recycling rate to 40% by 2025

Climate change adaption

- National resilience to climate change through the National Adaptation Plan



To future proof our business; Energy Transition Plan 2050 was launched in August 2021 outlining our bold aspiration to achieve net zero emissions and be coal free by 2050

Our Target for 2025

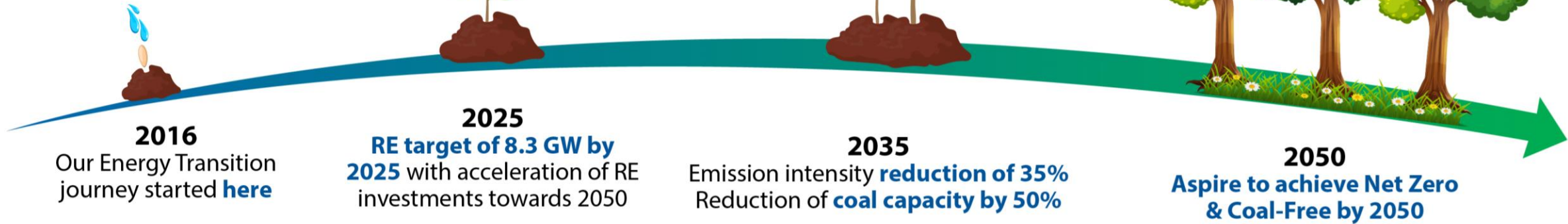
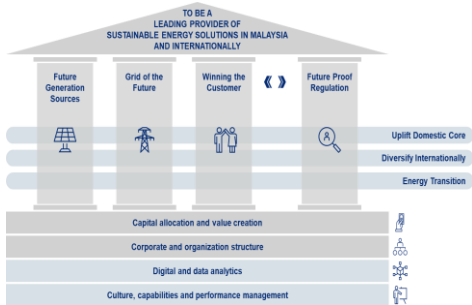
- Build scale in renewable generation
- Improve thermal plant efficiency

Our Commitment to 2035

- Significant renewable generation growth
- 50% reduction in coal generation capacity

Our Aspiration to 2050

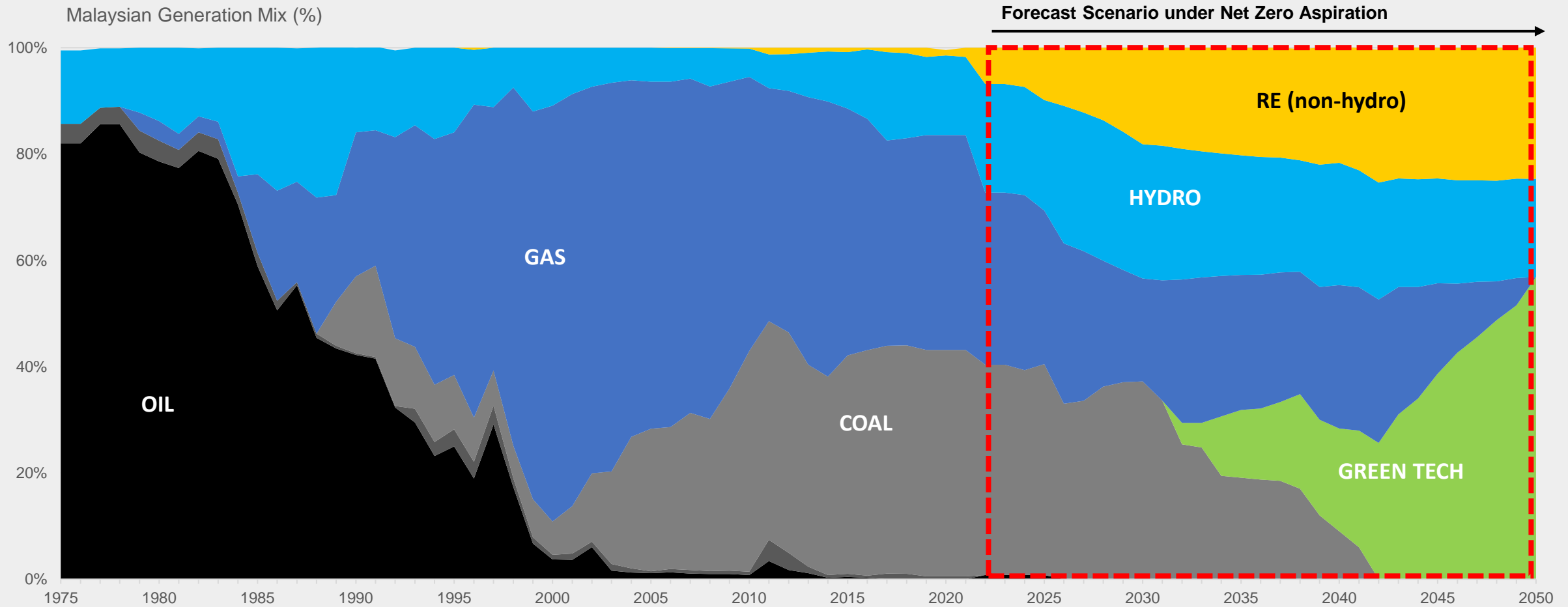
Invest and grow our emerging green technologies including Hydrogen and Carbon Capture & Utilization (CCU)



TNB's sustainability journey is anchored on "Reimagining TNB" with ESG considerations at the core, ensuring the future proofing of TNB's business:
balancing the Energy Transition with financial sustainability and protection of shareholder value



The nation's current generation mix reflects the diversification required for security of supply, and will continue to shift as we take a responsible approach towards energy transition



- Historically, Malaysia's generation mix was dominated by the use of oil as we transitioned into gas and then coal
- **Moving forward, RE will grow significantly as costs rapidly decline**
- **Green Tech (Green Hydrogen, Gas + CCUS) will be a key lever in decarbonisation**



TNB's fast-track sustainability agenda will see major shifts across the value chain in meeting our ESG commitment while ensuring business growth

GenCo

GenCo aims to capture estimated RM40 bil revenue from domestic market by 2050

Fast track decarbonisation

- 1 Coal plants early retirement
- 2 Repowering plants with cleaner fuel and green tech
- 3 Strategic partnership technology partnership

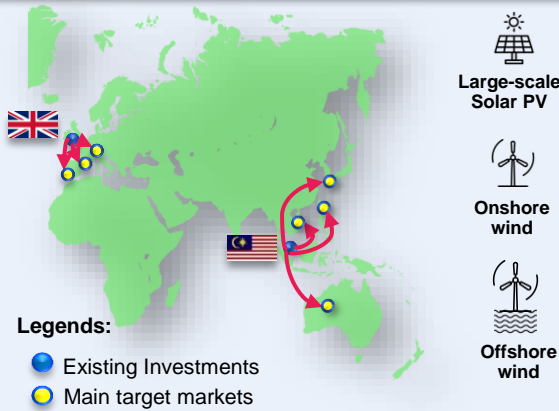
Explore opportunities in ASEAN



- Increase enterprise value and sustainability position of GenCo
- Possibility of an IPO of GenCo

NED

~USD7 bil equity investment by 2050



FOCUS MARKETS



14.3GW by 2050
 (Average portfolio return of 7% – 9%)

Grid

Regulated asset base (RAB) for Grid + DN to grow to ~RM100 bil by 2050

- Spurring growth of Variable Renewable Energy (VRE) and Distributed Energy Resources (DER)
- Propelling growth of transportation and industrial customers electrification
- Reducing carbon footprint and preserving the forestry & natural environment

Regional Interconnection

To strengthen security of supply and open investment opportunities



Potential Earnings by 2050: ~RM7 bil

EV

We will invest RM90 mil to support BEV ecosystem over the span of 3 years with the following key strategic moves:

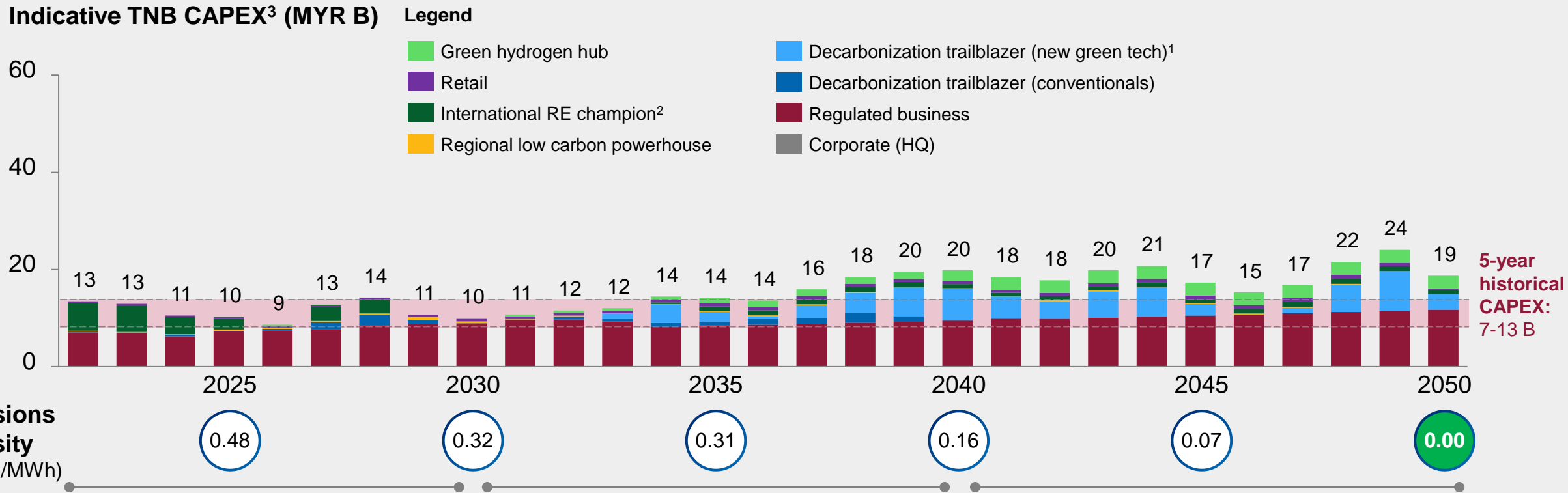
- 1 Build charging infrastructure
- 2 Reskill & upskill workforce
- 3 Lead by example through TNB Fleet electrification
- 4 Sponsor EV-related studies
- 5 Foster coalition among EV sector players

2030 EV Market Potential

18,000 charging points
 500,000 BEV on the road
 4,432 k tons CO₂ emission reduction
 2.318 TWh annual electricity sales
 RM 1,258 mil annual electricity revenue



Pathway will require investment of 10-20 B MYR yearly over next 30 years



Emissions intensity (tCO₂e/MWh)

Key investment drivers

Indicative

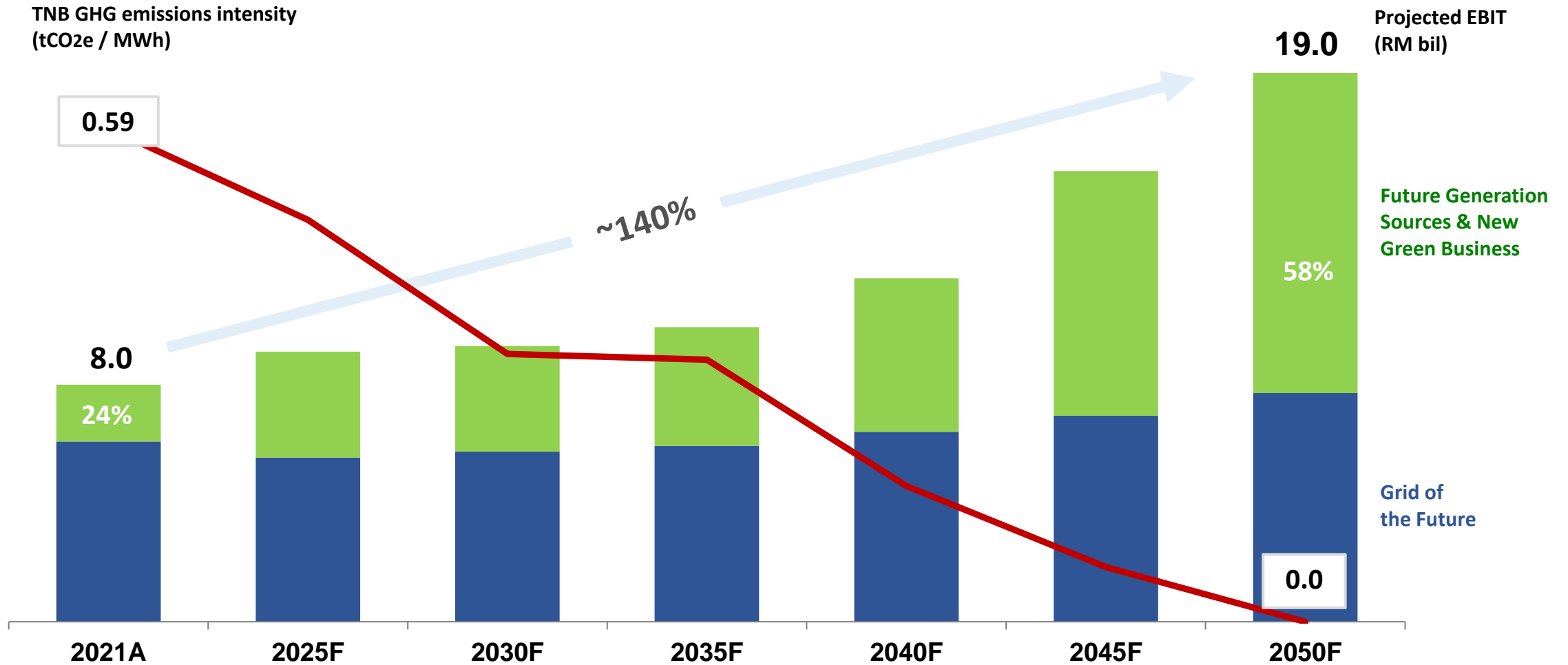
Annual CAPEX
Total CAPEX

- | 2020s | 2030s | 2040s |
|---|--|--|
| <ul style="list-style-type: none"> Pursue RE in MY & globally (RE growth to offset plant expiry / early retirement) Use proceeds of coal partnership (2025) and NE-co IPO (2028) to fund RE | <ul style="list-style-type: none"> Begin repowering into new green techs in 2035 Rely on gas plants as transition fuel while waiting for new green techs to scale up Retire newer coal plants earlier (4 years) Establish and grow adjacent businesses (e.g., green H₂ production, EV charging) | <ul style="list-style-type: none"> Pursue new green techs more aggressively as economics improve and CAPEX headroom increases from returns in earlier investments Phase out gas plants by 2049 Expand green H₂ business to tap into rapidly increasing domestic demand |
| MYR 9-14 B | MYR 10-20 B | MYR 15-24 B |
| MYR ~90 B | MYR 140-145 B | MYR 210-215 B |

1. New green tech includes nuclear SMR, CCGT + CCUS, and green H₂ CCGT; 2. RE includes solar and wind; 3. CAPEX accounts for equity stake; Source: Internal analysis,



We will bring our emissions intensity to net zero while growing our EBIT by ~140%





Latest Development Future Generation Sources & New Green Business

To date, our future generation sources have made significant progress through healthy pipeline of projects; ensuring business growth while supporting the Group's decarbonisation agenda

		COD	Emission Avoidance (Equivalent to CO2 emission)
TNB Bukit Selambau 2 (Large Scale Solar 4 scheme) 50 MW	<ul style="list-style-type: none"> In view of high PV panel price, Energy Commission has approved the extension of PPA tenure from 21 to 25 years for all LSS4 operators in August 2022; ensuring commercial viability of projects. The project has achieved financial close on 30 September 2022. Commencement of work has started since September 2022. 	2023	0.08 million tCO ₂ -e/ year <i>(~17,000 cars/year)</i>
Sungai Perak Hydro Life Extension Programme 650.75 MW	<ul style="list-style-type: none"> Uprate and upgrade the Sungai Perak Hydroelectric Scheme which consists of Stesen Janaelektrik (SJ) Temengor, SJ Bersia, SJ Kenering, SJ Chenderoh and SJ Sungai Piah with eighteen (18) generating units. with the latest technology. The project will commence in Q3 of year 2024. 	Q3 2025	0.5 million tCO ₂ -e/ year <i>(~100,000 cars/year)</i>
Nenggiri Hydro Project 300 MW	<ul style="list-style-type: none"> Commencement of work has started since 1 March 2022. The project has achieved financial close on 8 July 2022, approved under the sustainable Sukuk Framework with "Gold" rating assigned by MARC. Sukuk programme up to RM10 bil, first issuance of RM1.5 bil over-subscribed by 3.41x. 	Q2 2027	0.3 million tCO ₂ -e/ year <i>(~70,000 cars/year)</i>
Paka Repowering 1,400 MW	<ul style="list-style-type: none"> Brownfield project to repower the retired SJSI PAKA using highly efficient CCGT with hydrogen ready technology by 2030. This project serves as a unique pioneering project in deploying green technologies that may be utilised in future power plants. 	2030	3.2 million tCO ₂ -e/ year <i>(~700,000 cars/year)</i>
New Combined Cycle Power Plant, Kapar 2,100 MW	<ul style="list-style-type: none"> Greenfield project that is marked for combined cycle gas-fired plant with hydrogen-fired combustion capability; replacing KEV coal capacity and supplying cleaner electricity. 	2031	4.7 million tCO ₂ -e/ year <i>(~1,000,000 cars/year)</i>

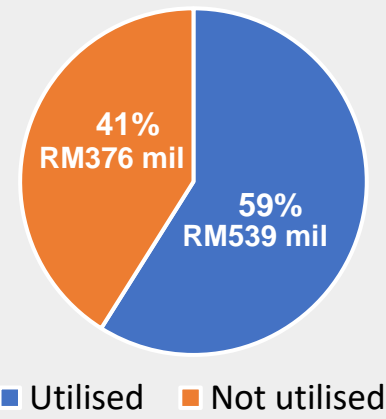


As for the network infrastructure, our continuous investment in grid modernisation will spur regional interconnection expansion while further strengthen our position in the Energy Transition space

RP3 Approved CAPEX **13% (RM2.54 bil)** Supporting the Energy Transition (ET) and RAB growth

Progress as of September 2022:

2022 ET related CAPEX (Total: RM915 mil)



Key Projects:

Smart Meter Installation progress: **98%** Target of 2.4 mil units installed by end 2022

LED Relamping Installation progress: **75%** Target of 0.7 mil units by end 2022

Volt-Var Optimisation (VVO) progress: **91%** Target of 700 MVAR by end 2022

Regional interconnections

Benefits of regional interconnection:

- a) Support GenCo expansion plan in regional countries as it aims to explore hydro and gas opportunities in ASEAN.
- b) Provide access to RE capacities from neighbouring countries by enabling more offtakers to purchase power across ASEAN.
- c) Strengthen grid security of supply.

Key development:

Malaysia – Singapore interconnection

- i. In October 2022, Malaysia and Singapore have completed the upgrading of the electricity interconnector between both countries to enable mutual energy transfer in times of power outage.
- ii. The interconnector can now accommodate bidirectional electricity flows of around 1,000 megawatts between Malaysia and Singapore.

Towards becoming a Smart Utility by 2025

85% TNB Smart Grid Index (SGI) target by 2025

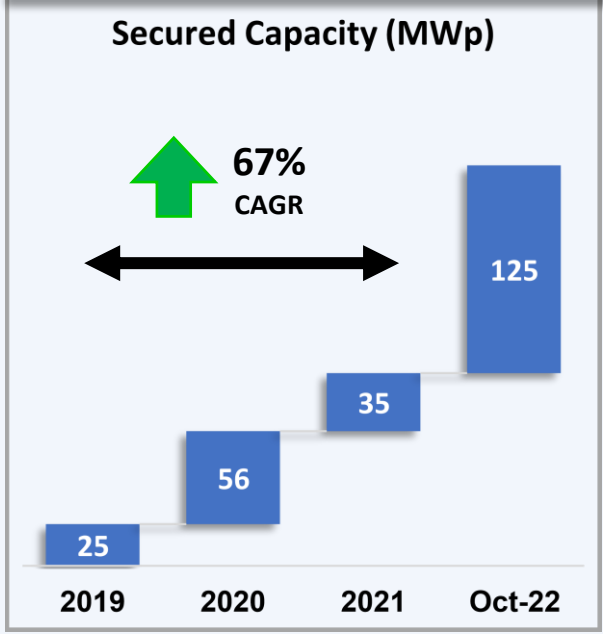
2021 SGI: 67.9%



We continue to win customers trust, evidenced through robust growth seen in GSPARX and exciting developments in the Electric Vehicle (EV) space

GSPARX

GSPARX is committed in generating new revenue stream to the Group as an established preferred choice for one-stop rooftop solar solutions in the country



Key developments

- MoU with SP Setia**
- GSPARX to install 10MW of solar panels at SP Setia HQ building with additional capacity expected at 6 other commercial assets.
- Collaboration with Sime Darby Property (SDP)**
- GSPARX has completed solar installation for 508 units at Elmina F4 Shah Alam.
 - GSPARX is actively engaging SDP to expand this collaboration.
- Collaboration with AEON**
- Solar installation at 40 sites (AEON mall & AEON Big), 78MWp.

241 MWp
 Secured Capacity as of Oct 2022
 36MWp Pipeline Projects
 (Government buildings, universities, commercial & industrial segments)

319 MWp
 Targeted Capacity by 2025

EV (Charging Infrastructure & Platform)

TNB aims to accelerate the development of EV ecosystem with projection of 500k BEVs by 2030, uplifting the demand side by approximately 2.318 TWh (RM1.26 billion)

Key developments



- MoU with Gamuda Land**
- To build the nation's first solar-powered electron stations for electric vehicle (EV) at Gamuda Cove and Gamuda Gardens in Klang Valley with a host of services such as food and beverage outlets and convenience stores.
- MoU with PLUS**
- To set up fast charging points with PLUS Malaysia by leveraging its strategically located Rest & Recreation (R&R) areas along the major highways.

TNB initiates ~RM90 mil investment over the span of 3 years to uplift the EV development and ecosystem in Malaysia

- Build Electron Hubs along high volume traffic highways
- Build Direct Current Fast Chargers (DCFCs) along highways and trunk roads
- Build Destination Charges in TNB premises across Peninsular Malaysia for public usage



To support the nation's aspiration of having **10,000 charging stations by 2025** (Current: ~700 installed)

Disclaimer

This presentation and discussion may contain forward looking statements by Tenaga Nasional Berhad related to financial trends for future periods. Some of the statements contained in this presentation or arising from this discussion which are not of historical facts are statements of future expectations with respect to financial conditions, results of operations and businesses, and related plans and objectives. Such forward looking statements are based on Tenaga Nasional Berhad's current views and assumptions including, but not limited to, prevailing economic and market conditions and currently available information. These statements involve known and unknown risks and uncertainties that could cause actual results, performance or achievements to differ materially from those in the forward-looking statements. Such statements are not and, should not be construed, as a representation as to future performance or achievements of Tenaga Nasional Berhad. It should be noted that the actual performance or achievements of Tenaga Nasional Berhad may vary significantly from such statements.


All information contained herein is meant strictly for the use of this presentation only and should not be used or relied on by any party for any other purpose and without the prior written approval of Tenaga Nasional Berhad. The information contained herein is the property of Tenaga Nasional Berhad and it is privileged and confidential in nature. Tenaga Nasional Berhad has the sole copyright to such information, and you are prohibited from disseminating, distributing, copying, re-producing, using and/or disclosing this information.


THANK YOU


For further enquiries, kindly contact us at:

Investor Relations Office:

Investor Relations
Group Finance Division
Tenaga Nasional Berhad
4th Floor, TNB Headquarters
No.129, Jalan Bangsar,
59200 Kuala Lumpur, MALAYSIA

 +603 2108 2128


 +603 2108 2034

 tenaga_ird@tnb.com.my

 www.tnb.com.my


Investor Relations Team:

Ms. Sarah Keok Chui San

 +603 2108 2126


 sarahk@tnb.com.my


Ms. Sakinah Mohd Ali

 +603 2108 2840

 sakinah.ali@tnb.com.my

Ms. Intan Nur Najihah Basiron

 +603 2108 2134

 najihah.basiron@tnb.com.my

