



TENAGA NASIONAL BERHAD

PRESENTATION TO INVESTORS

Investor Relations
Group Finance Division
August 2024

TNB is the largest electricity utility company in Malaysia and at the forefront of the country's energy transition

Tenaga Nasional Bhd (TNB)

Sabah Electricity Sdn Bhd (SESB)
(83% owned by TNB)



MALAYSIA

Main Subsidiaries



Our Presence in Peninsular Malaysia

Holds 52% of Domestic Generation Capacity

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

Transmission length: 26,093 km
Substations: 485
System Minutes: 0.48 minutes

Distribution Network: 761,546 km
Substations: 98,254
SAIDI: 46.1 minutes

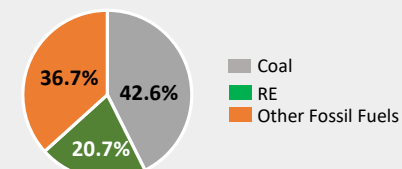
Retail customers: 10.2 mil
Customer Satisfaction Index (CSI): 88%

*Data as of December 2023

Group Portfolio

Total TNB Gross Capacity: 21,314MW
(June 2024)

- Domestic: 18,045MW
- International: 3,269MW



Notes:

1. RE inclusive of large hydro and small RE
2. Data is based on gross installed capacity
3. Solar capacity based on MWp

We are also a global player as we strive to future proof our business by expanding our RE footprint and establishing strategic partnerships with leading RE players

2021 VANTAGE RE

- **Equity stake:** 100%
- **Capacity:**
 - 123.9MW in onshore wind (100% equity)
 - 365.0MW in solar (55% equity)
 - 41.5MW in offshore wind (49% equity)
 - 276.0MW in solar (100% equity)

2016 GAMA

- **Equity stake:** 30%
- **Capacity:**
 - 1,151.5MW in gas, hydro and wind.
 - Water conveyance in Jordan



- **Operation & Management Services:**
 - Maintenance Services Agreement Mechanical Works (Doha West Plant)
 - Instrumentation & Control Systems (Shuwaikh Power Plant & Doha West Plant)

INTERNATIONAL PORTFOLIO

2005



- **Equity stake:** 6% effective equity stake
- **Capacity:**
 - 1,190.7MW in oil
 - Water desalination of 376 mcm p.a.



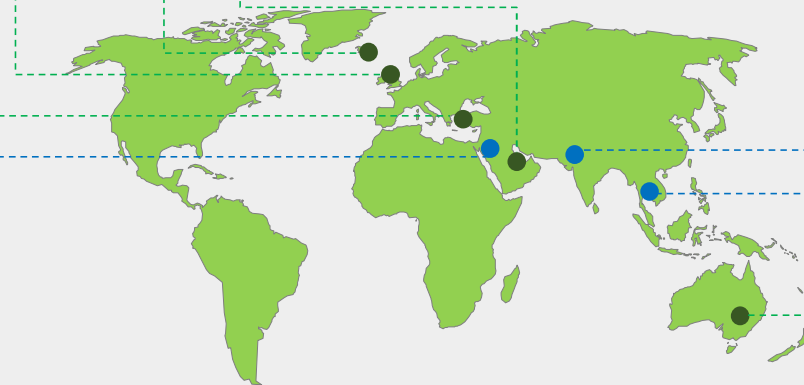
- **Operation & Management Services:**
 - TNB Remaco & Balloki Power Plant National Power Park Management Company Limited



- **Technical Advisory:**
 - Technical Advisory for Electricité du Cambodge (EDC) Heavy Fuel Oil Plant of 400MW

2023 Spark Renewables

- **Equity stake:** 100%
- **Capacity:**
 - 120.5MWp in Solar



Our International Presence



Solar Wind Hydro Gas



United Kingdom



Ireland



Australia



Turkiye



Saudi Arabia

— New Energy Division — Remaco

Composition of BOD



CHAIRMAN
TAN SRI ABDUL RAZAK BIN ABDUL MAJID



EXECUTIVE DIRECTOR / PRESIDENT / CEO
DATUK IR. MEGAT JALALUDDIN BIN MEGAT HASSAN

Senior Independent Non-Executive Director



ONG AI LIN
Expertise: Audit & Finance

Independent Non-Executive Directors



GOPALA KRISHNAN K.SUNDARAM
Expertise: Law



JUNIWATI RAHMAT HUSSIN
Expertise: Corporate Planning and Human Resource



DATO' ZULKIFLI BIN IBRAHIM
Expertise: Engineering



DATO' MERINA BINTI ABU TAHIR
Expertise: Accounting

Non-Independent Non-Executive Directors



MUAZZAM BIN MOHAMAD
Permodalan Nasional Berhad (PNB)



YB. TUAN RAMZI BIN MANSOR
Ministry of Finance (MOF)



ROHAYA BINTI MOHAMMAD YUSOF
Employees Provident Fund (EPF)



SELVENDRAN KATHEERAYSON
Khazanah Nasional Berhad



ELAINE ONG YEE LYNN
Khazanah Nasional Berhad
Alternate Director

Group earnings supported by;

- Improved generation performance
- World-class network performance

Equivalent Plant
Availability Factor, EAF
(Generation)
%



1HFY2024
78.7%
2024 Target: 78.6%



Improved overall
performance by power plants

System Minutes
(Transmission)
Minutes



1HFY2024
0.0001
2024 Internal Threshold: 1.5



World class network
performance safeguarded our
regulated business earnings

SAIDI
(Distribution Network)
Minutes

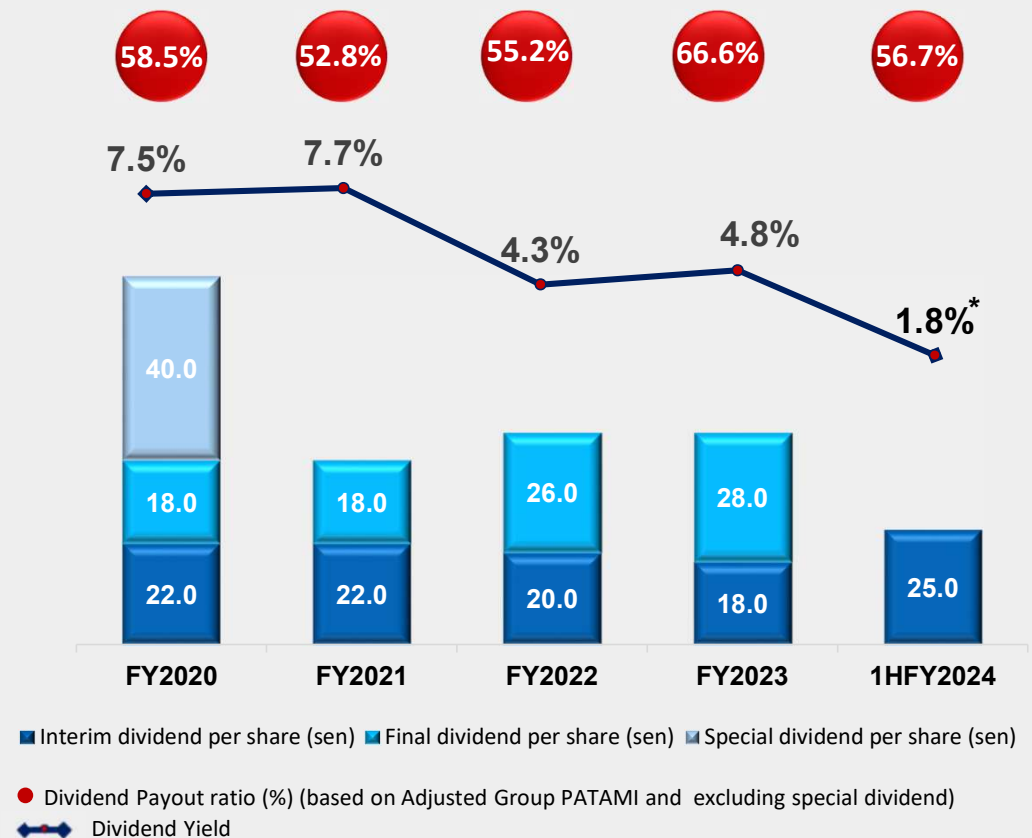


1HFY2024
23.92
2024 Internal Threshold: 50.0

Our resilient performance enables us to continue rewarding shareholders with commendable interim dividend payouts while maintaining a prudent capital structure

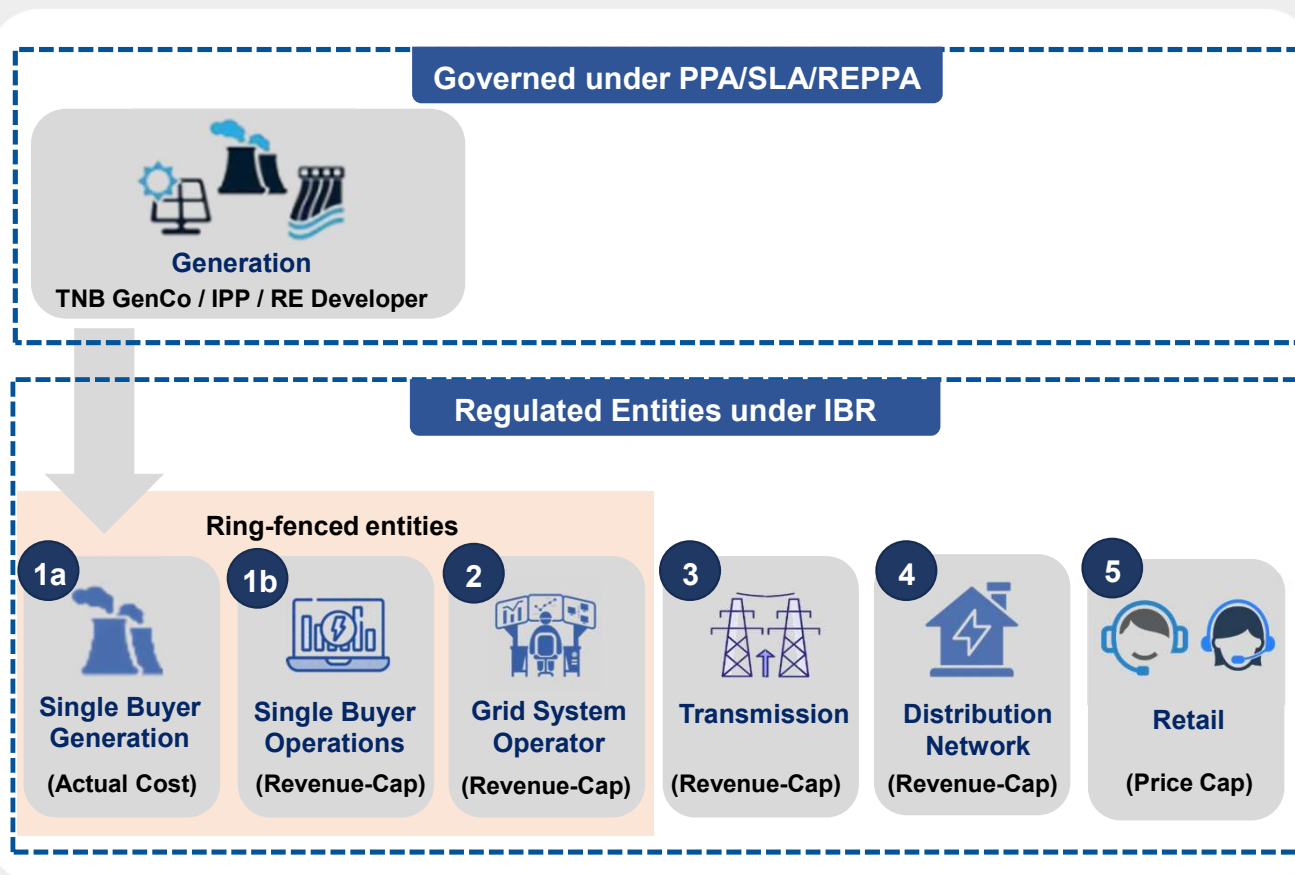
DIVIDEND POLICY

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



* Dividend yield as of 30 June 2024

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 revenue.
- **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.

2024 is the final year for RP3 while we seek for a fair outcome for RP4 (2025-2027)

RP3 determination (2022 -2024)



Base Tariff,
sen/kWh

39.95
RP2: 39.45



WACC, %

7.3
RP2: 7.3



CAPEX, RM bil

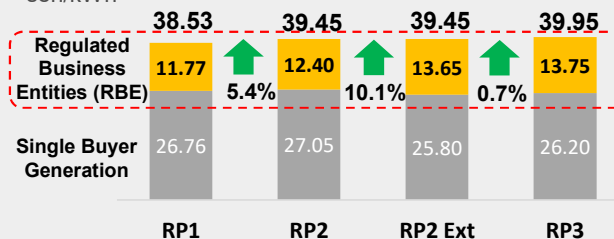
20.55
RP2: 18.8



RAB, RM bil

70.8
estimated closing
2024 RAB

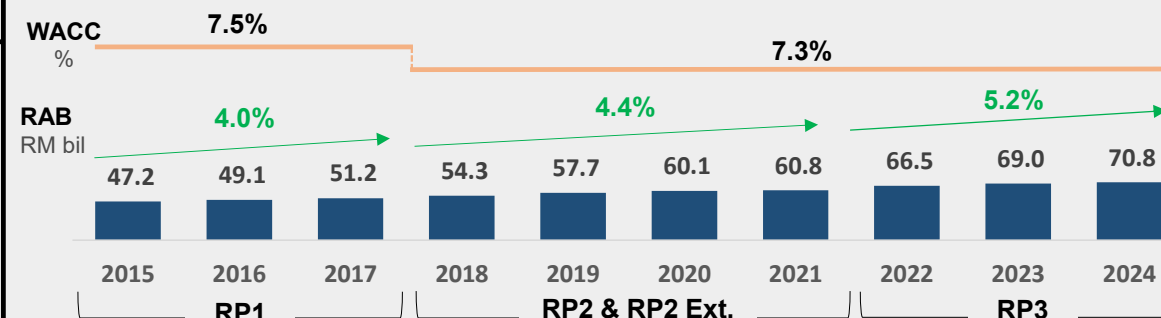
Base Tariff
sen/kWh



Upward trend of RBE tariffs since RP1 ensure continuous growth of regulated revenue

- 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

WACC
%

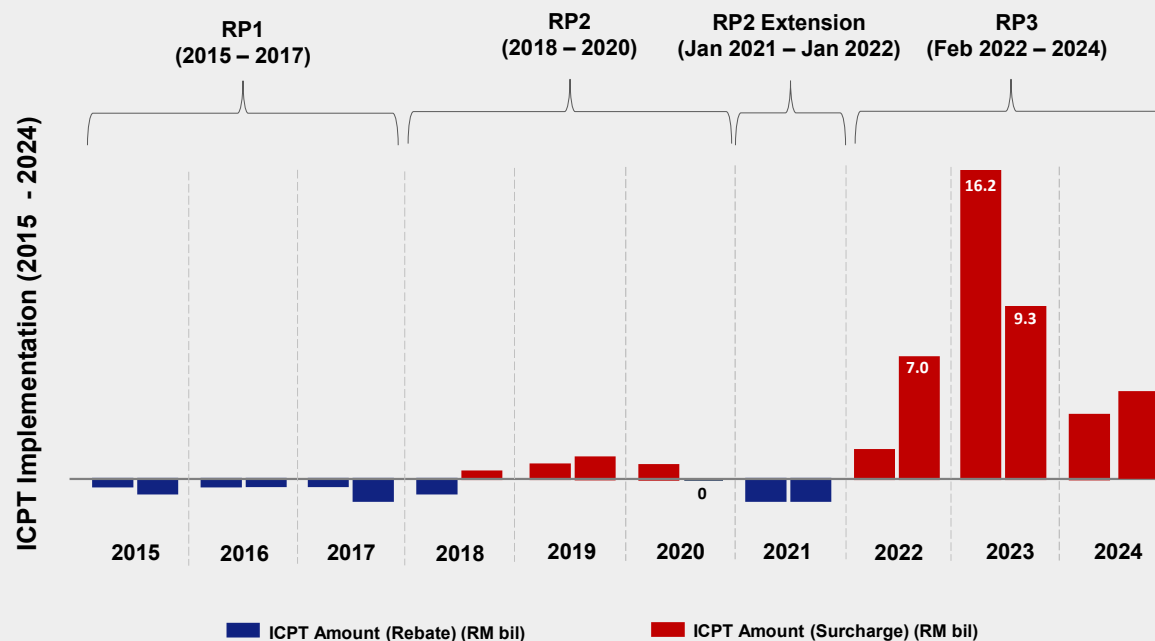
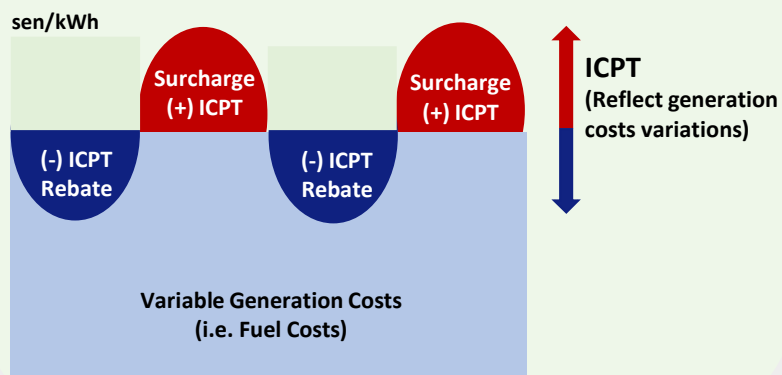


Regulatory Period 4 (2025 -2027)

- Submitted RP4 proposal to regulator in early December 2023.
- Theme:** Delivering our customers' energy needs and facilitating Malaysia's Energy Transition
- Tariff Reform:** Towards cost reflectivity to ensure that the tariff is fair and equitable for the sustainability of the ecosystem

Regulatory certainty; the Government has successfully managed the impact of fuel prices volatility for the past 20 ICPT cycles since 2015 with the highest ICPT cost recovery in FY2023

ICPT is a mechanism under the IBR framework which **allows TNB to reflect changes (either increase or reduction)** in fuel and other generation-related costs in the electricity tariff every six (6) months in the form of **rebate or surcharge**.



ICPT mechanism remained intact; ICPT receivables is expected to stabilise amid moderating coal prices, relieving working capital pressure with positive improvements in our cash flow position and gearing levels.

Our journey towards Net Zero 2050 Aspiration will bring positive business growth and enhance value to our shareholders, as well as support the nation's aspiration

Net Zero 2050 Aspiration

Our Target for 2025

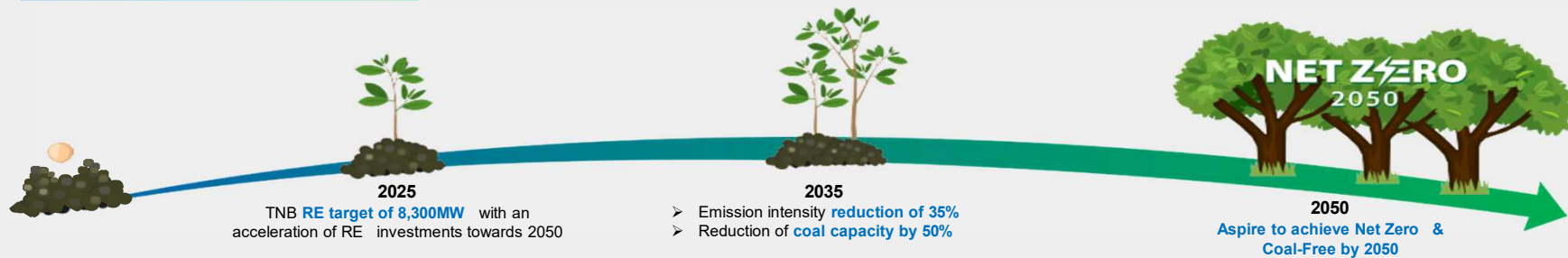
- Build scale in renewable generation
- Improve thermal plant efficiency

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 & Utilisation (CCU)



EBIT Projection

TNB GHG emissions intensity (tCO₂e / MWh)



Ranked 1st in Malaysia in ESG Transparency Reporting by Global ESG Monitor (2023)

We believe our pathway will bring positive business growth to the Group while **creating long-term value to our shareholders** through earnings growth.

Our Energy Transition Plan cuts across the electricity supply value chain, anchoring on three (3) key levers: Decarbonisation, Digitalisation & Electrification

Deliver Clean Generation



ENERGY SOURCES

Renewable Capacity Growth

- Capture RE growth potential in domestic and international markets
- Embark on strategic partnership for new technology
- Adopt commercial capabilities in foreign markets to drive domestic RE growth

Carbon Management

- Reduce scope 1,2,3 GHG emissions
- Capture emissions (CCS, CCU)
- Trade/offset
- Manage carbon pricing

Coal Generation Capacity Reductions

- Uplift value of existing plants
- Reduce coal generation capacity
- Increase gas generation capacity

Develop Energy Transition Network



ENERGY VECTORS

Smart Grid

- Enhance grid & network flexibility to enable higher penetration of VRE¹, DER² & electrification

Hydrogen

- Produce for applications in domestic power, industrial and mobility sectors, and for export market

Energy Storage

- Stabilise the grid
- Manage grid's peak demand
- Enable off-grid supply and peer-to-peer generation among prosumers

Dynamic Energy Solutions



ENERGY USAGE

Electrification

- Spur the development of low-carbon mobility ecosystem

Energy Efficiency

- Provide energy audit services and integrate energy efficiency improvements on machinery, equipment & appliances
- Deploy energy monitoring system

Prosumers

- Provide rooftop solar + storage solution

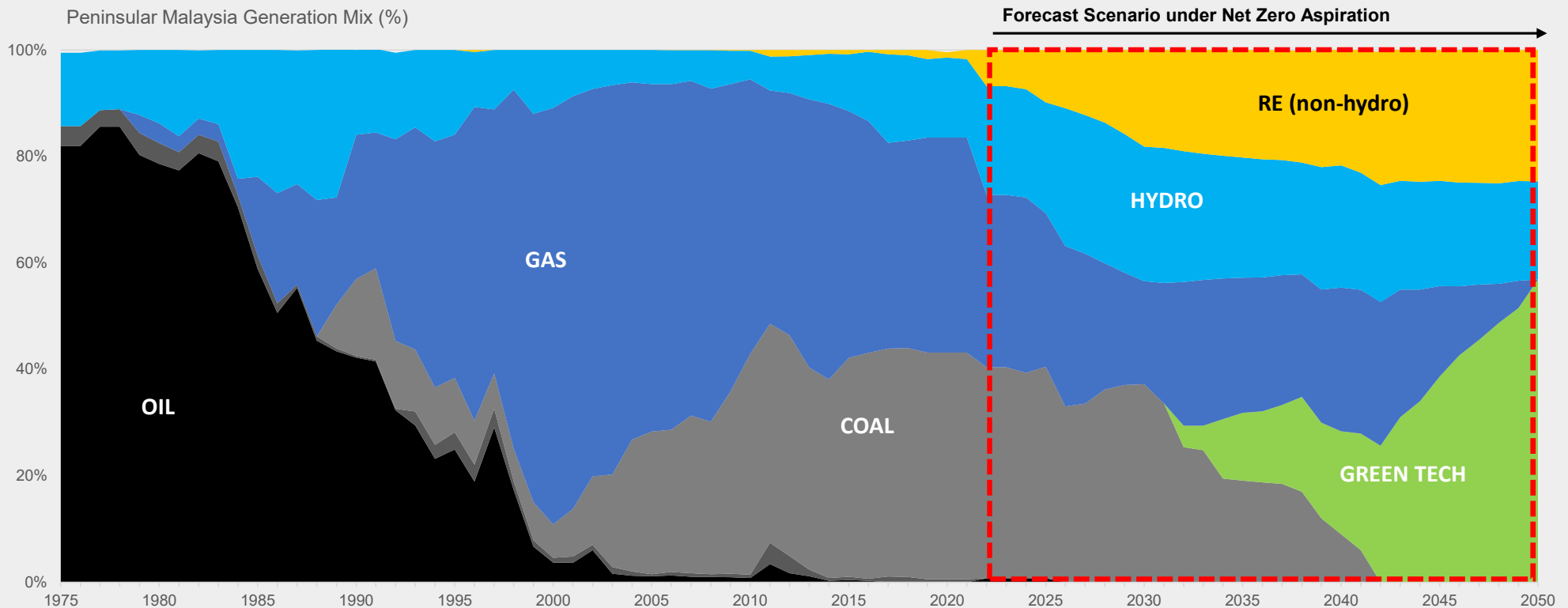
Digital Platforms

- Complement Energy Transition (ET) initiatives with digital platforms such as myTNB apps, Electric Vehicle (EV) charging platform, digital marketplace and green energy aggregation and trading platform

¹ Variable Renewable Energy

² Distributed Energy Resources

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 bring major shifts across the value chain, ensuring business growth while meeting our ESG commitment

Deliver Clean Generation

Energy Sources

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

NED aims ~USD7 bil Equity investment by 2050

Fast track decarbonisation

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

Explore opportunities in ASEAN



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



FOCUS MARKETS



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

Develop Energy Transition Network

Energy Vector

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

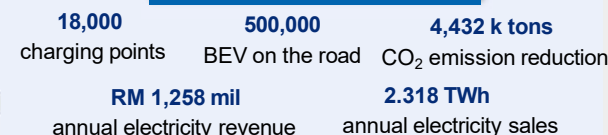
Dynamic Energy Solutions

Energy Usage

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



Driving changes in customer behaviour via myTNB



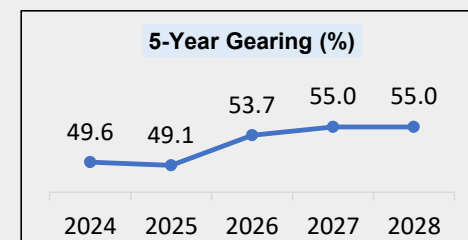
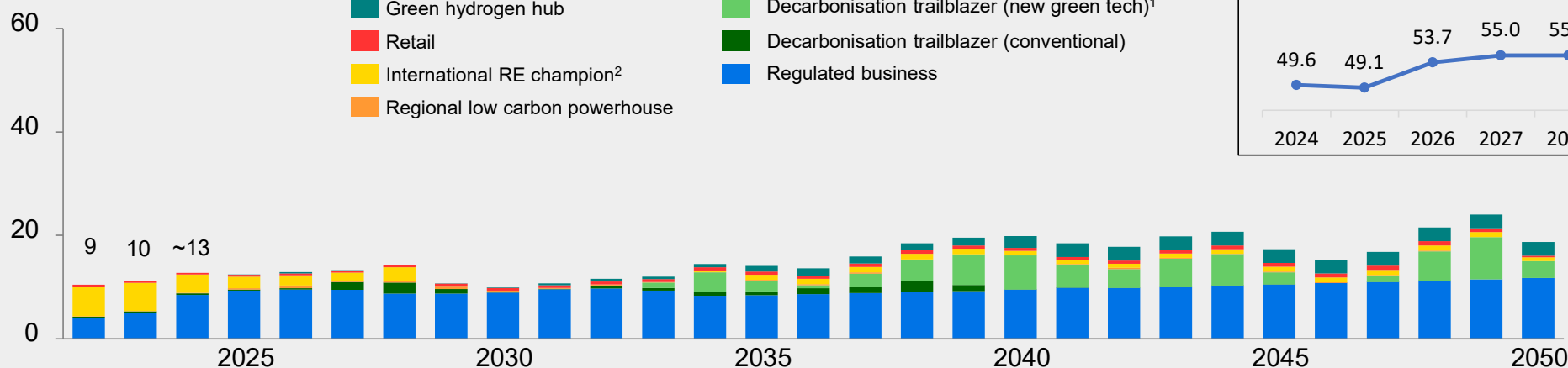
- 100% increase to ~250k users of Energy Budget features via myTNB (2025)
- As of June 2024, ~300k users have subscribed
- 8,071 tonnes of CO₂ avoided from the potential savings of ~11GWh in household energy consumption

Pathway will require investment of RM10-20 bil yearly over the next 30 years

Indicative TNB CAPEX³ (RM bil)

Legend

- Green hydrogen hub
- Retail
- International RE champion²
- Regional low carbon powerhouse
- Decarbonisation trailblazer (new green tech)¹
- Decarbonisation trailblazer (conventional)
- Regulated business



Key investment drivers

- 2020s**
 - Pursue RE in Malaysia & globally (RE growth to offset plant expiry / early retirement)
- 2030s**
 - 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
 - Establish and grow adjacent businesses (e.g., green H₂ production, EV charging)
- 2040s**
 - 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

Indicative

Annual CAPEX

RM 9-14 bil

RM 10-20 bil

RM 15-24 bil

Total CAPEX

RM ~90 bil

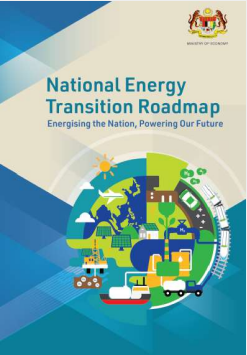
RM 140-145 bil

RM 210-215 bil

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

The National Energy Transition Roadmap (NETR) aims to shift Malaysia from a traditional fossil fuel-based economy to a high-value green economy

Responsible Transition (RT) Pathway 2050
to shift Malaysia's energy systems from fossil fuel-based to greener and low-carbon systems



Aligned with the national aspirations and commitments to sustainable development

The **Twelfth Malaysia Plan 2021-2025** which outlines aspirations for the nation to achieve net zero emissions by 2050.


The **National Energy Policy (DTN)** launched in September 2022 with aspirations to become a low carbon nation in 2040.

Review of RE policies

- 1 To increase the country's installed RE capacity from **40% in 2035** to **70% by 2050**,
- 2 To introduce the concept of a **self-contained system according to the "willing buyer, willing seller" principle** to the RE development framework,
- 3 To increase **the installation of solar systems on government buildings**, and
- 4 To allow **cross-border RE trade** through the establishment of an electricity exchange system, complementing the ASEAN power grid initiative.


NETR Part 1
(6 energy transition levers)

Optimise




Energy efficiency


Shift to Renewables




Renewable energy



Bioenergy




Hydrogen



Green mobility

Abate



Carbon capture utilisation and storage (CCUS)

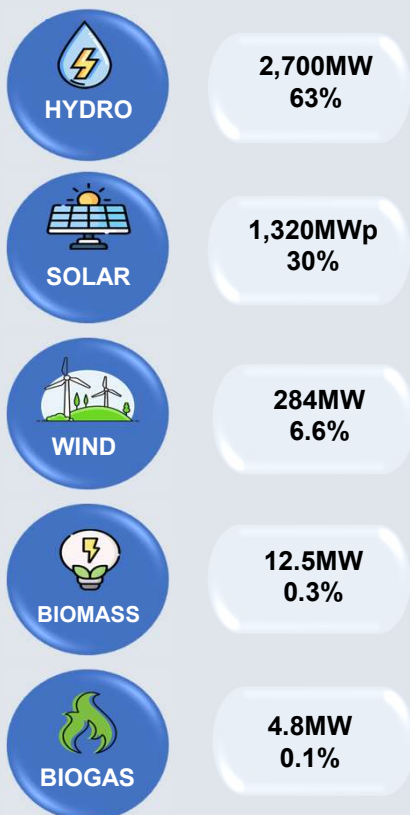
NETR Part 2
(Focus on biomass, waste-to-energy usage, CCS and hydrogen integration)

- 1 Establish the National Energy Council
- 2 Set up the National Energy Transition Facility (NETF) with a seed fund of RM2 billion
- 3 Establish and launch a RE exchange in 2024

We remain resolute in delivering our RE target capacity of 14.3GW by 2050

RE portfolio

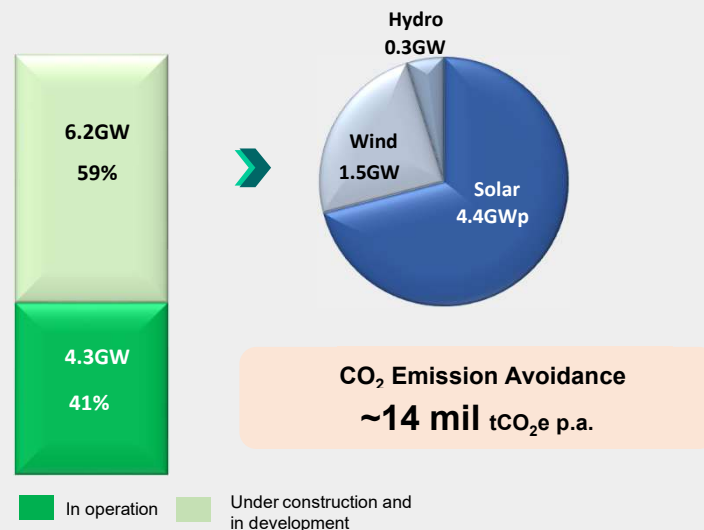
4.3GW as at June 2024



Champion for 3 flagship catalyst projects

- Establishment of Large-Scale Solar Parks over 5 sites, each with 100MW capacity,
- Development of Hybrid Hydro-Floating Solar (HHFS) at existing dams with a capacity of 2,500MW, and
- Co-firing of Hydrogen and Ammonia at our power plants.

10.5GW Secured RE Capacity (as at June 2024)



Note: Solar gross capacity is quoted in MWp

Thank you

INVESTOR RELATIONS GROUP FINANCE DIVISION

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