



# TENAGA NASIONAL BERHAD

## PRESENTATION TO INVESTOR

January 2025

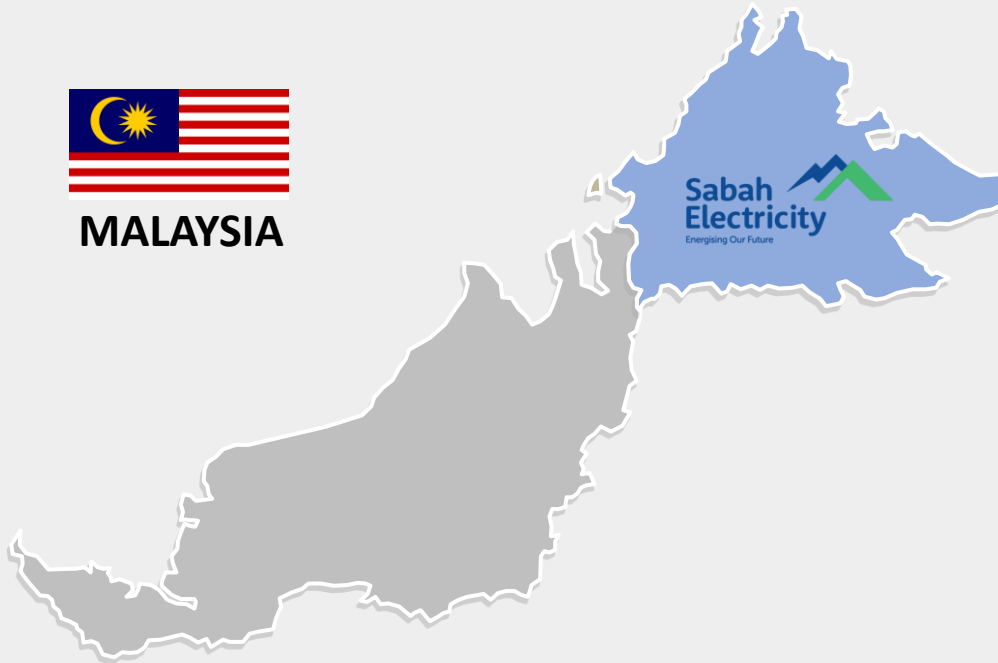


TNB is the largest electricity utility company in Malaysia and at the forefront of the country's energy transition

Tenaga Nasional Berhad (TNB)




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




Main Subsidiaries





Our Presence in Peninsular Malaysia

 Holds 53% of Domestic Generation Capacity

Our grid network and 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

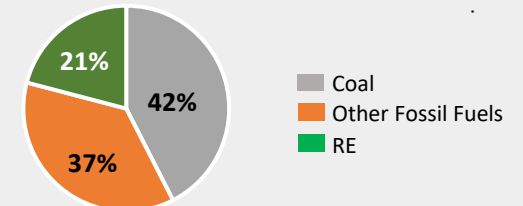
 Retail customers: 10.2 mil  
Customer Satisfaction Index (CSI): 88%

\*Data as of December 2023

Group Portfolio

Total TNB Gross Capacity: 21,370MW  
(September 2024)

- Domestic: 18,101MW
- 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
  - 365.0MW in solar (55% equity)
  - 41.5MW in offshore wind (49% equity)
  - 276.0MW in solar

### 2016 GAMA ENERJİ A.Ş.

- **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 SEPCO SWEC

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



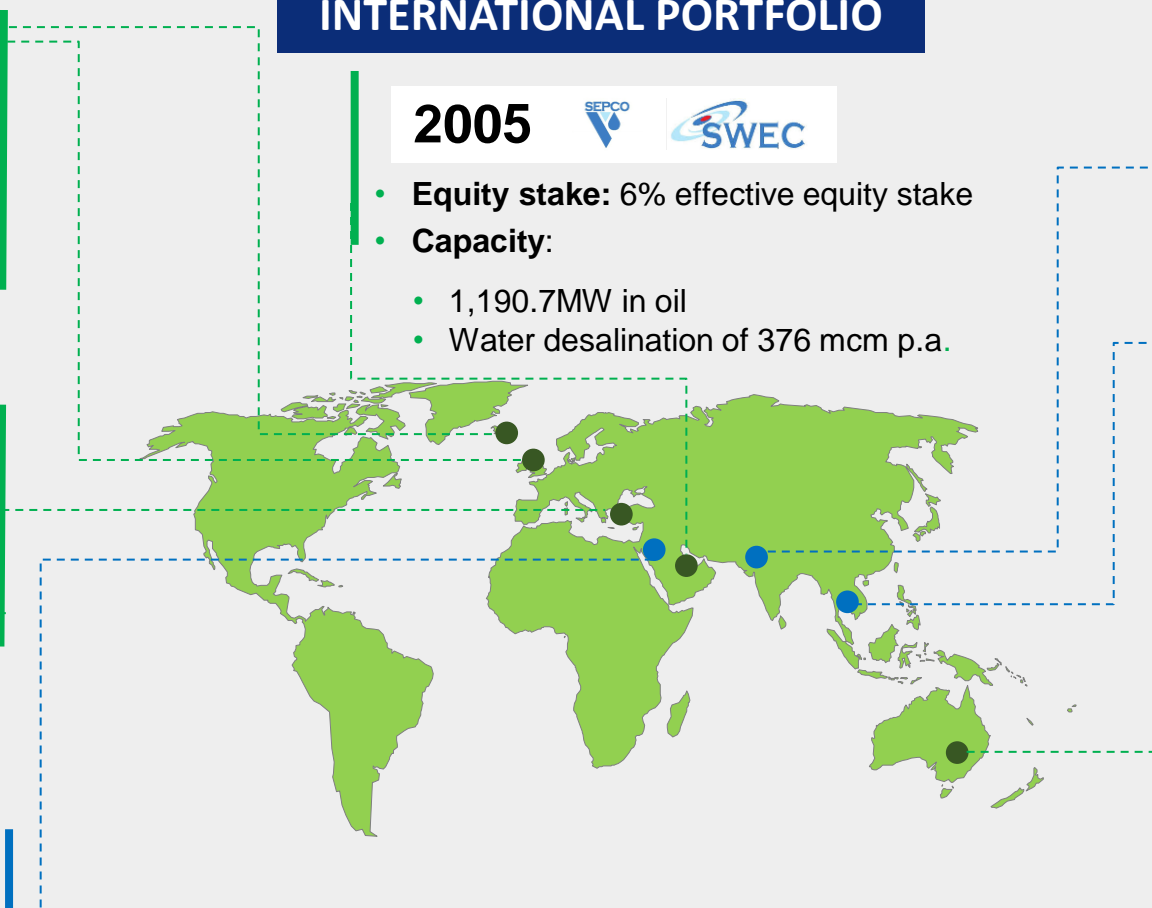
- **Operation & Management Services:**
  - TNB Remaco & Balloki Power Plant National Power Park Management Company Limited



- **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



**NON-INDEPENDENT NON-EXECUTIVE 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**



**DATO' MERINA BINTI  
ABU TAHIR**

Expertise: Accounting



**GOPALA KRISHNAN  
K.SUNDARAM**

Expertise: Law



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



**ALAN HAMZAH BIN  
SENDUT**

Expertise: Accounting



**DATO' ZULKIFLI BIN  
IBRAHIM**

Expertise: Engineering

**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

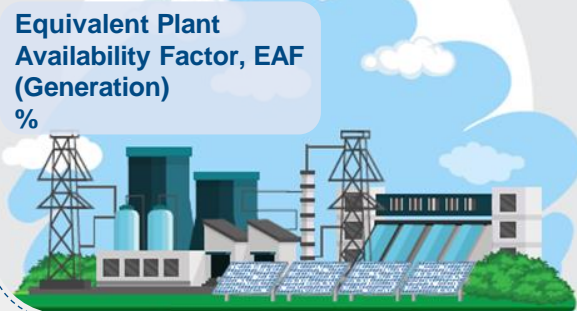


**ELAINE ONG  
YEE LYNN**

Khazanah Nasional Berhad  
Alternate Director

Group earnings supported by;

- i. Improved generation performance
- ii. World-class network performance



9MFY2024  
**80.0%**  
2024 Target: 78.6%



Stable overall performance by power plants



9MFY2024  
**0.0001**

2024 Internal Threshold: 1.5



World class network performance safeguarded our regulated business earnings



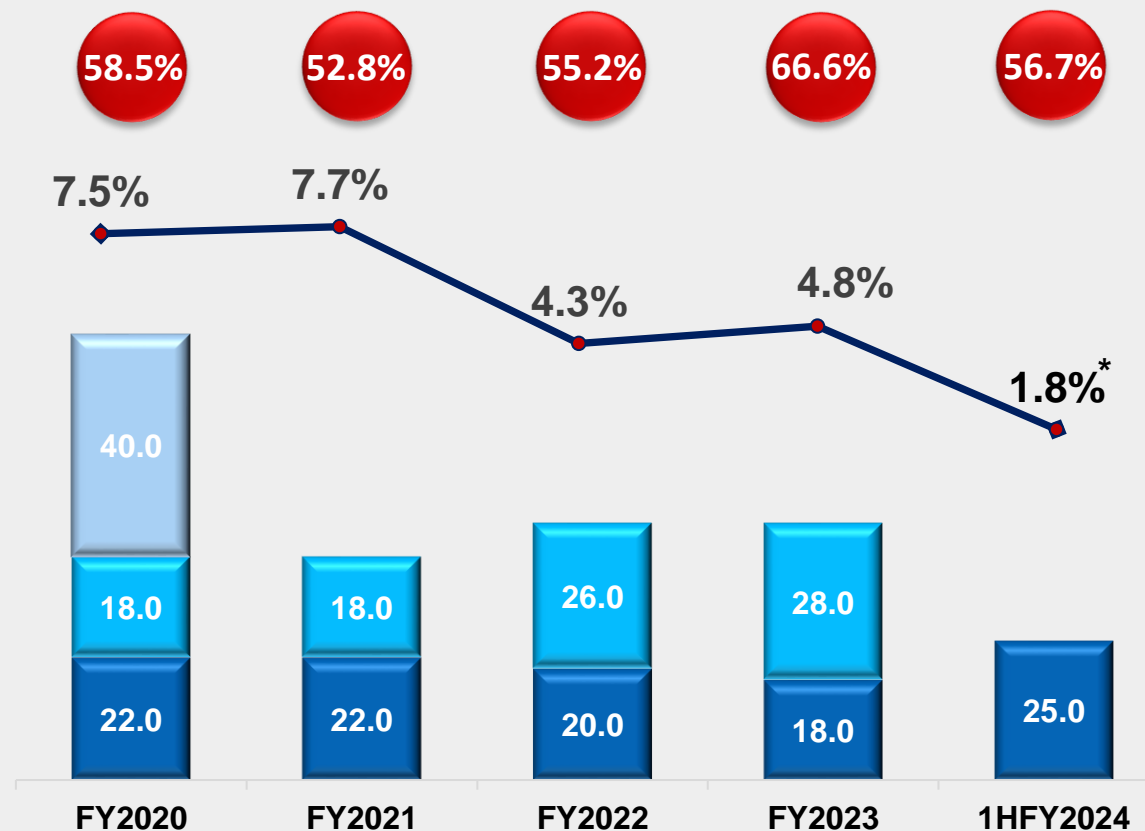
9MFY2024  
**35.72**

2024 Internal Threshold: 48.0

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



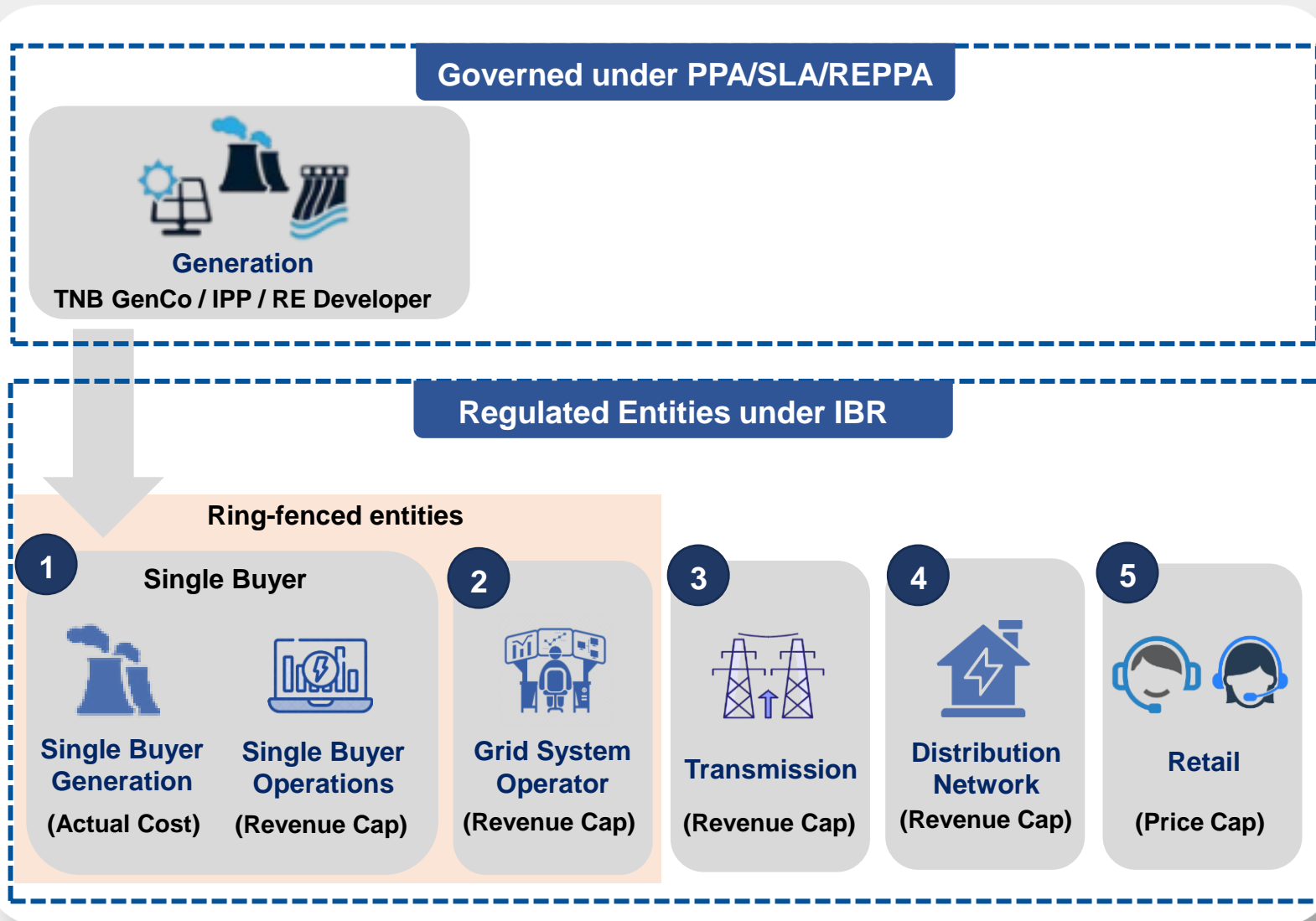
■ Interim dividend per share (sen) ■ Final dividend per share (sen) ■ Special dividend per share (sen)

● Dividend Payout ratio (%) (based on Adjusted Group PATAMI and excluding special dividend)

◆◆◆ Dividend Yield

\* 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.

## We secured our returns and sufficient expenditure allowance for the next 3 years

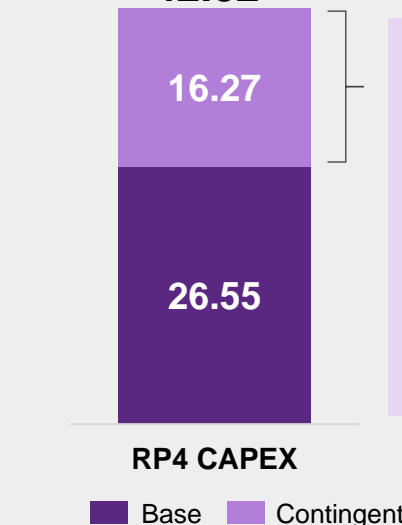
### Tariff Parameters

	Regulatory Period 3 (RP3)	Regulatory Period 4 (RP4)
<b>Average Sales</b> (TWh)	116.8	141.7
<b>Coal price</b> (USD/MT)	79	97
<b>FOREX</b> (RM/USD)	4.123	4.400
<b>Gas price</b> (RM/mmBTU)	T1: RM26 - RM30 (800mmscfd) T2: RM33	T1: RM24 - RM35 (800mmscfd) T2: RM46
<b>OPEX</b> (RM bil)	17.9	20.8
<b>BASE CAPEX</b> (RM bil)	20.6	26.6 <i>(with RM16.3 bil Contingent CAPEX)</i>
<b>WACC</b>	7.3%	7.3%

### Key Highlights of RP4 Tariff Determination

- ✓ **Total allowed RP4 CAPEX of RM42.82 billion**, split into 2 categories:
  - Base CAPEX (for base tariff);** and
  - Contingent CAPEX.**

RM bil **42.82**



#### RP4 Contingent CAPEX

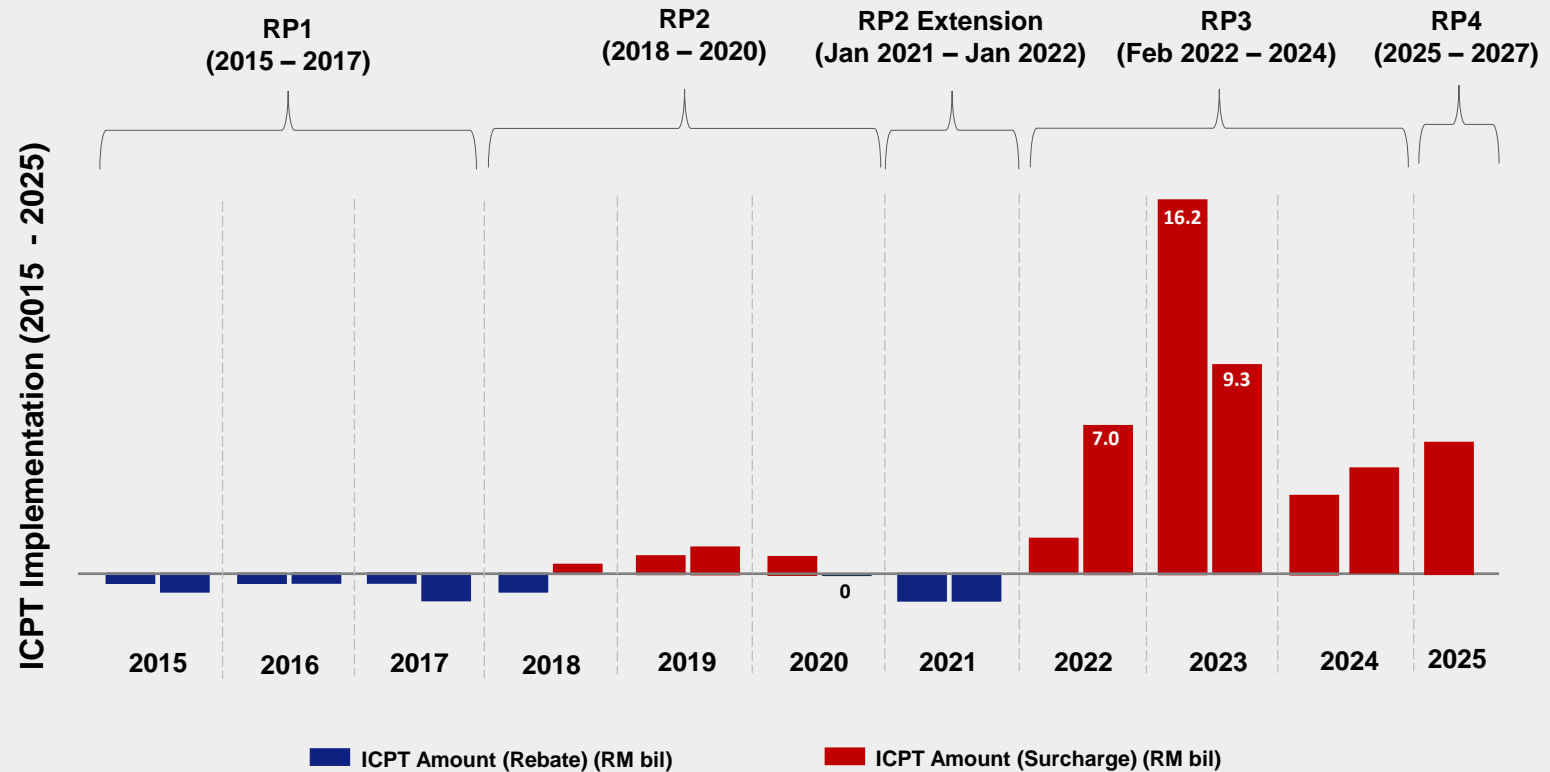
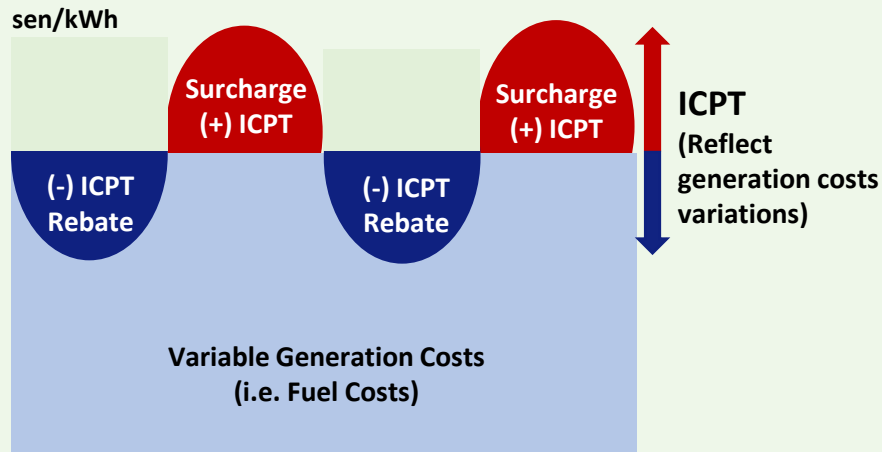
- To cater for potential additional demand (such as data centres) and Energy Transition (ET) related projects.
- The list of projects has been pre-approved by ST and will be implemented once triggers occur.

- ✓ **No change in existing tariff schedule until 30 June 2025.** The new tariff schedule with base tariff of 45.62 sen/kWh will be implemented starting 1 July 2025.
- ✓ **The difference between new base tariff with current base tariff (period Jan-Jun 2025) will be funded through the industry fund, Kumpulan Wang Industri Elektrik (“KWIE”).**



Regulatory certainty; the Government has successfully managed the impact of fuel prices volatility for the past 21 ICPT cycles since 2015 with the highest ICPT cost recovery in 2023

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

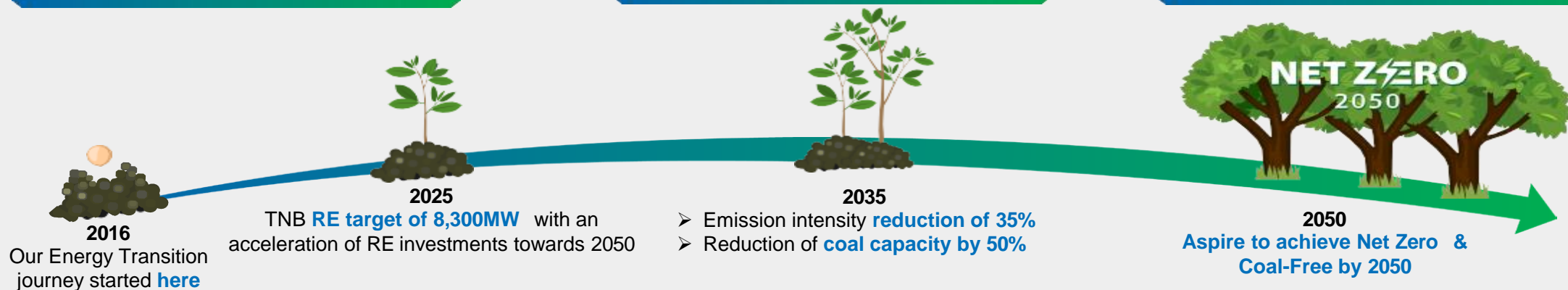
- Build scale in renewable generation
- Improve thermal plant efficiency

#### Our Commitment to 2035

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

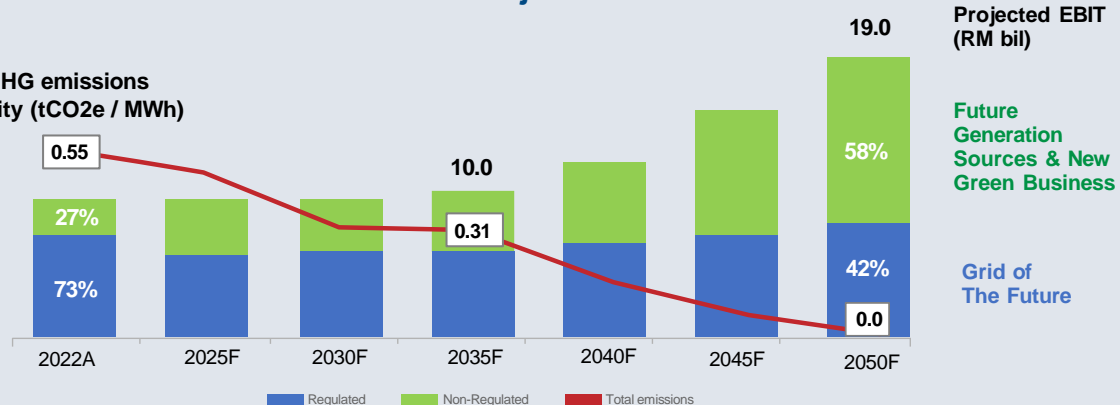
#### Our Aspiration to 2050

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



### EBIT Projection

TNB GHG emissions intensity (tCO<sub>2</sub>e / MWh)



Ranked 1<sup>st</sup> 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.

Note: The announcement of the target was made in 2021, with 2020 as the base year

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 VRE<sup>1</sup>, DER<sup>2</sup> and 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

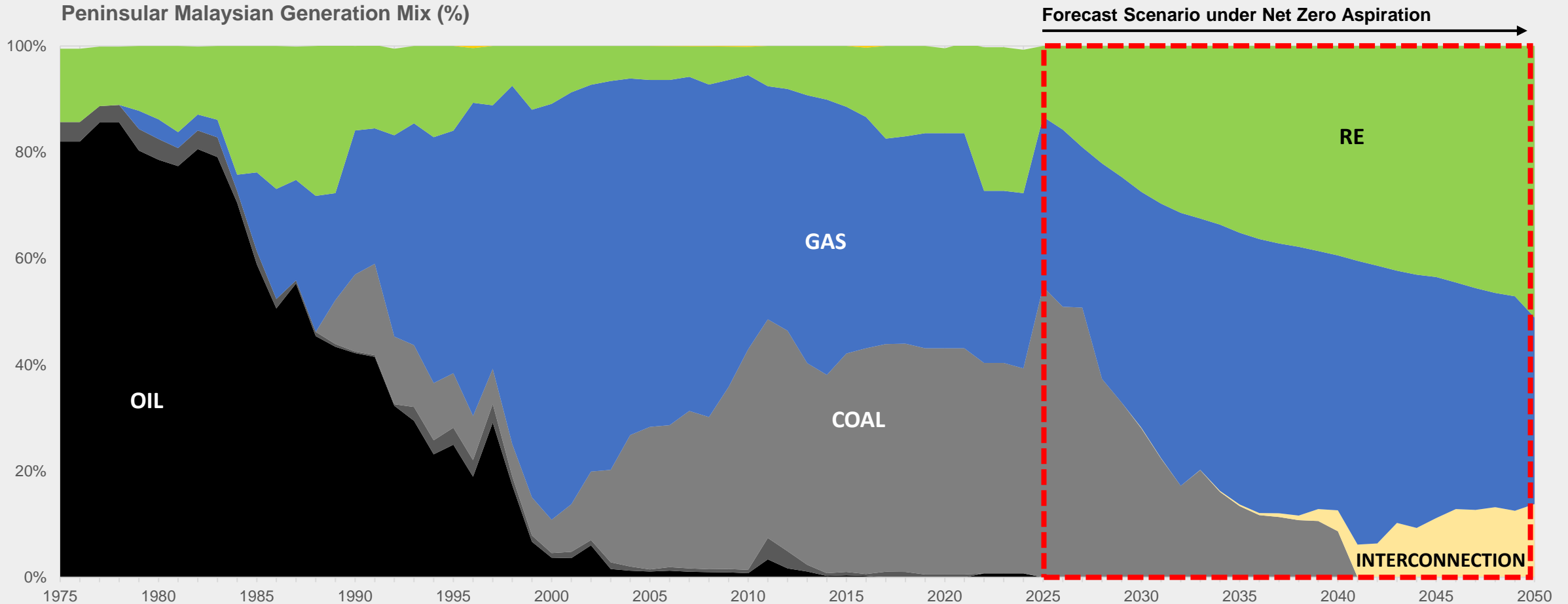
##### Digital Platforms

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

<sup>1</sup> Variable Renewable Energy

<sup>2</sup> 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**

**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 ~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



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

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

**Develop Energy Transition Network**

**Energy Vectors**

Regulated asset base (RAB) to grow to ~RM100 bil by 2050

- 1 Renewable Energy (VRE) and Distributed Energy Resources (DER)
- 2 Propelling growth of transportation and industrial customers electrification
- 3 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**

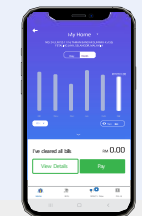
We will invest RM90 mil to support BEV ecosystem with the following key strategic moves:

- 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 Sep 2024, ~500k users have subscribed

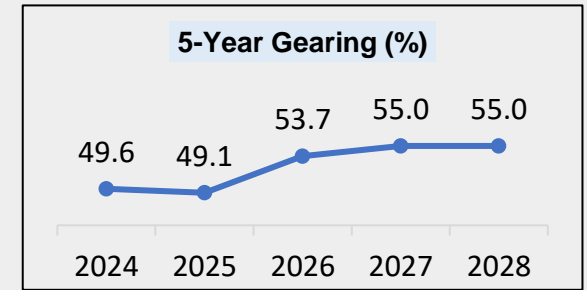
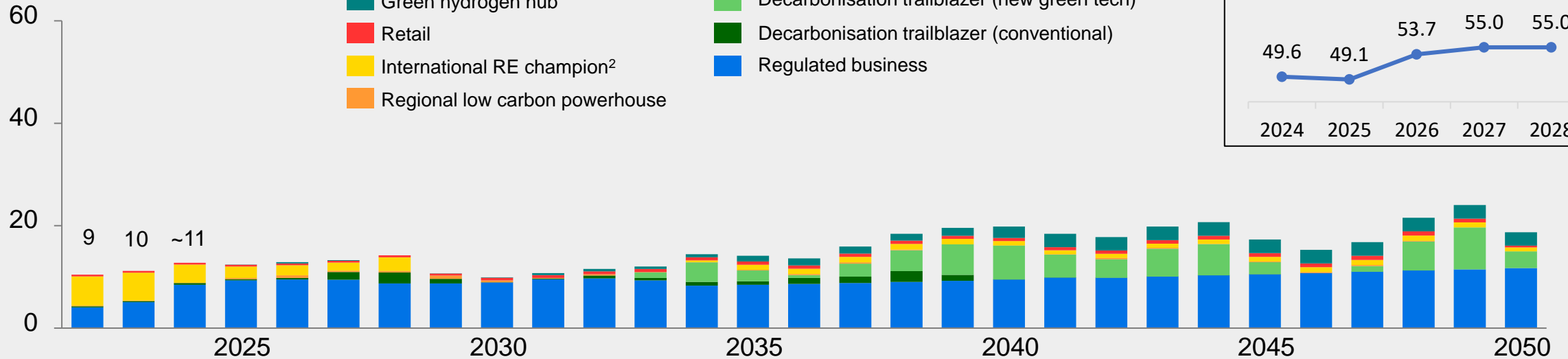
• 19,065.53 tonnes of CO<sub>2</sub> avoided from the potential savings of ~27GWh in household energy consumption

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

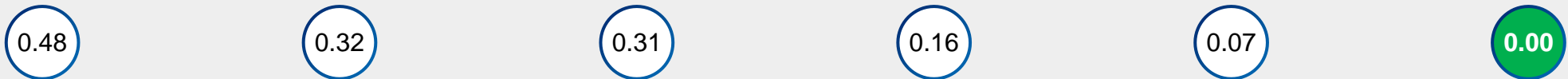
Indicative TNB CAPEX<sup>3</sup> (RM bil)

Legend

- Green hydrogen hub
- Retail
- International RE champion<sup>2</sup>
- Regional low carbon powerhouse
- Decarbonisation trailblazer (new green tech)<sup>1</sup>
- Decarbonisation trailblazer (conventional)
- Regulated business



Emissions intensity (tCO<sub>2</sub>e/MWh)



Key investment drivers

- | 2020s  | 2030s  | 2040s  |
|--|--|--|
| <ul style="list-style-type: none"> <li>▪ Pursue RE in Malaysia &amp; globally (RE growth to offset plant expiry / early retirement)</li> </ul> | <ul style="list-style-type: none"> <li>▪ Begin repowering into new green techs in 2035</li> <li>▪ Rely on gas plants as transition fuel while waiting for new green techs to scale up</li> <li>▪ Retire newer coal plants earlier</li> <li>▪ Establish and grow adjacent businesses (e.g., green H<sub>2</sub> production, EV charging)</li> </ul> | <ul style="list-style-type: none"> <li>▪ Pursue new green techs more aggressively as economics improve and CAPEX headroom increases from returns in earlier investments</li> <li>▪ Phase out gas plants by 2049</li> <li>▪ Expand green H<sub>2</sub> business to tap into rapidly increasing domestic demand</li> </ul> |

Indicative

Annual CAPEX

RM 9-14 bil

RM 10-20 bil

RM 15-24 bil

Total CAPEX

RM 90-120 bil

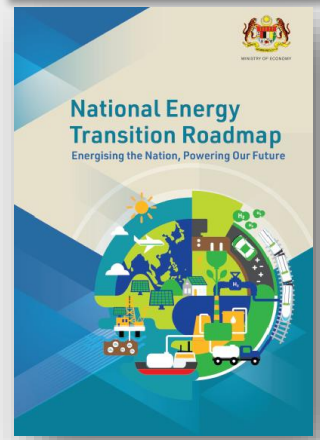
RM 140-145 bil

RM 210-215 bil

1. New green tech includes nuclear SMR, CCGT + CCUS, and green H<sub>2</sub> 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



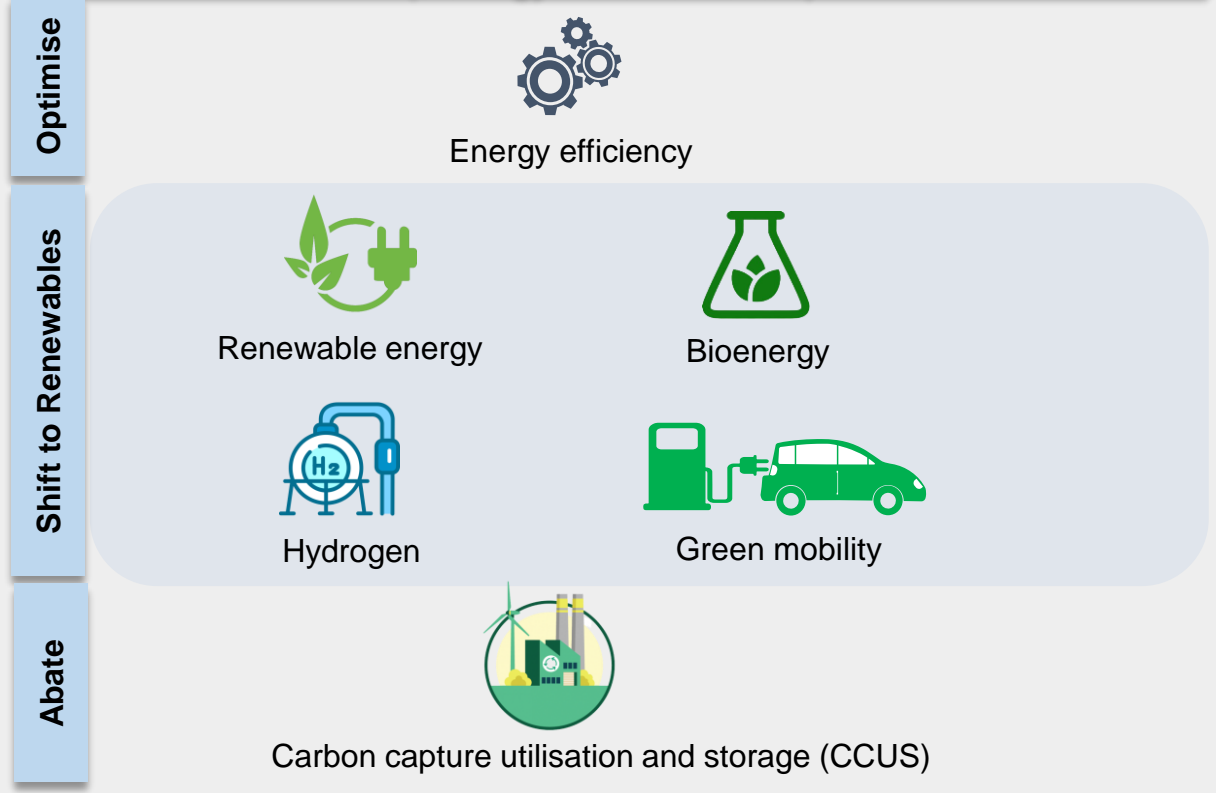
**Aligned with the national aspirations and commitments to sustainable development**

- 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)



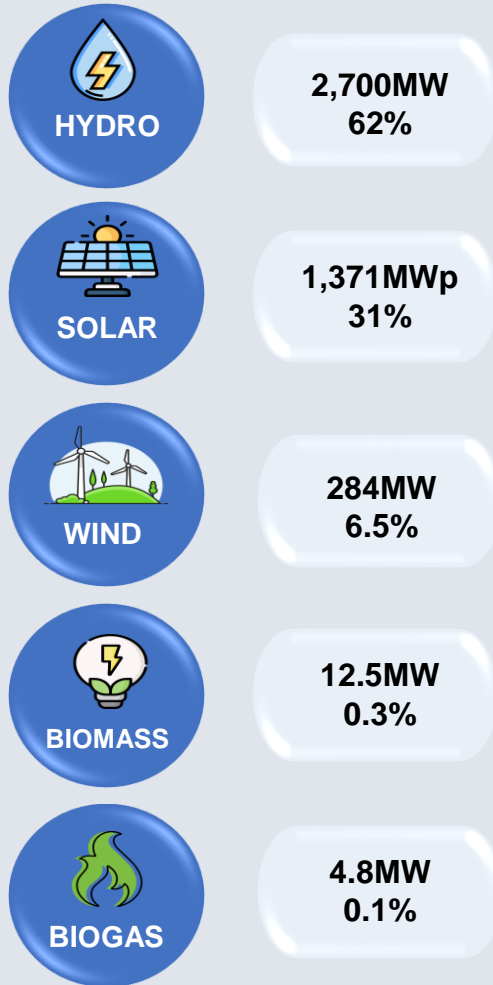
## NETR Part 2 (Focus on biomass, waste-to-energy usage, CCS and hydrogen integration)

- 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**

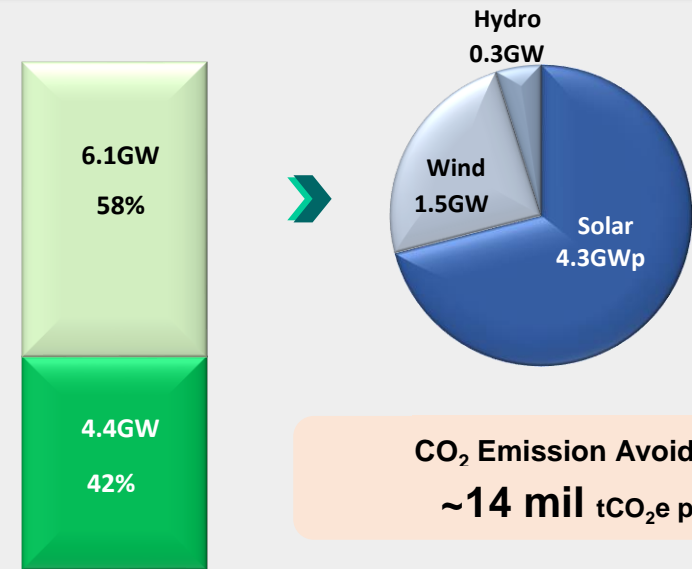
**4.4GW as at September 2024**



**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 September 2024)**



**CO<sub>2</sub> Emission Avoidance**  
~14 mil tCO<sub>2</sub>e p.a.

■ In operation ■ Under construction and in development

Notes:  
 1. Solar gross capacity is quoted in MWp  
 2. Numbers manually computed will not match due to decimal variance



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