



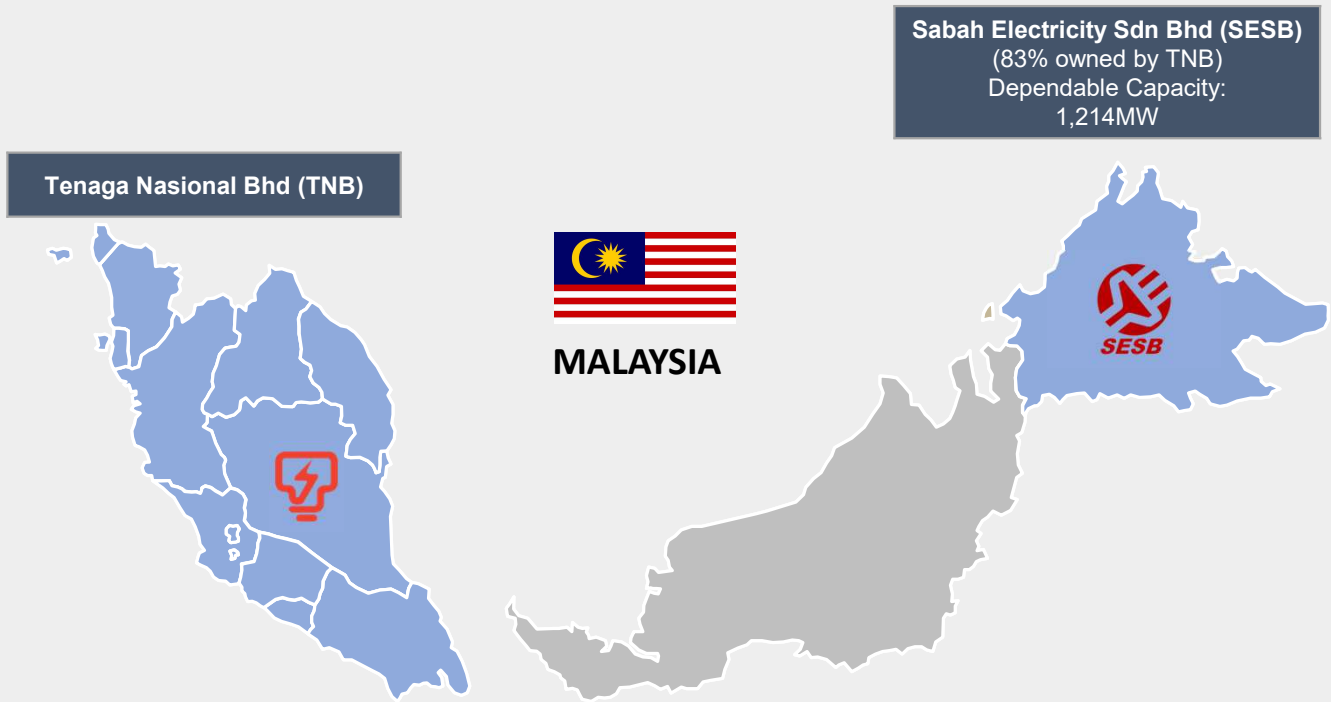
TENAGA NASIONAL BERHAD PRESENTATION TO INVESTORS

Investor Relations
Group Finance Division
January 2024








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



Sole Network & Retail Provider in Peninsular Malaysia*

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

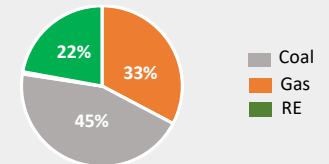
-  Transmission length: 25,838 km
Substations: 480
System Minutes: 0.01 minutes
-  Distribution Network: 741,764 km
Substations: 87,947
SAIDI : 9.49 minutes
-  Retail customers: 9.9 mil
Customer Satisfaction Index (CSI): 87%

*Data as of Dec 2022

Holds 53% of Domestic Generation Capacity

Total TNB Equity Capacity: 16,211MW (September 2023)

- Domestic: 14,707MW
- International: 1,505MW



Notes:

1. RE inclusive of large hydro and small RE
2. Data is based on equity installed capacity (exclude SESB)
3. Solar capacity based on MWp

Main Subsidiaries





We are also a global player and 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)

2016 **GAMA**
ENERJİ A.Ş.

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

Our International Presence

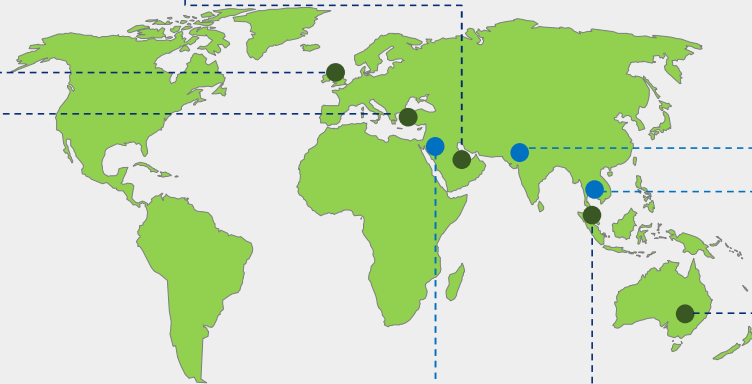


— NED — Remaco

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



- **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

2018 **TNB RENEWABLES**

- **Equity stake:** 100%
- **Capacity:**
 - 123.8MW Large Scale Solar (LSS) parks (100% equity)
 - 4.8MW in biogas (49% equity)



CHAIRMAN
DATO' ABDUL RAZAK BIN ABDUL MAJID



EXECUTIVE DIRECTOR / PRESIDENT / CEO
DATO' SERI IR. BAHARIN BIN DIN

**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

Non-Independent Non-Executive Directors



MUAZZAM BIN MOHAMAD
Permodalan Nasional Berhad
(PNB)



**ROHAYA BINTI MOHAMMAD
YUSOF**
Employees Provident Fund
(EPF)



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



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



**DATIN RASHIDAH BINTI
MOHD SIES**
Ministry of Finance



**SELVENDRAN
KATHEERAYSON**
Khazanah Nasional Berhad



Amid a challenging environment, our 9MFY2023 PAT was impacted by negative fuel margin

REVENUE
(RM mil)

9MFY2023
RM39,414.9

9MFY2022: RM 37,952.6

- Improved Y-o-Y electricity demand growth of 2.7% (Group) mainly from:
 - Peninsular Malaysia of 2.5% from commercial and domestic sector; and
 - Sales of electricity of UK Investment (acquired in April 2022).

EBITDA
(RM mil)

9MFY2023
RM14,342.8

EBITDA MARGIN: 36.4%*

9MFY2022: RM16,314.2
EBITDA MARGIN: 43.0%

- EBITDA margin declined to 36.4% from 43.0% as compared to the same period last year mainly due to:
 - Impact of negative fuel margin of RM767.9 mil (EBITDA without negative fuel margin: RM15,110.7 mil).
 - Higher non-generation cost resulted from repair and maintenance expenses compared to previous year but within the IBR approved level.
- While the regulated business recorded a stable performance, GenCo was impacted by negative fuel margin and capacity rate financing (CRF) step down.

*EBITDA margin (excl. fuel margin): 38.4% (9MFY2022 40.6%)

PAT
(RM mil)

9MFY2023
RM2,079.2

9MFY2022: RM2,749.5

- PAT impacted by:
 - Increase in finance cost by RM175.3 mil due to interest on higher borrowings, mainly for working capital to fund higher fuel cost.



Group earnings supported by; (i) Improved generation business (ii) World-class network performance



Equivalent Plant
Availability Factor, EAF
(Generation)
%

9MFY2023

84.2%



9MFY2022: 82.8%

2023 Target: 81.80%



EAF performance secured
generation assets'
capacity revenue



System Minutes
(Transmission)
Minutes

9MFY2023

0.67



9MFY2022: 0.01

2023 Internal Threshold: 2.00



World class network
performance safeguarded our
regulated business earnings



SAIDI
(Distribution Network)
Minutes

9MFY2023

34.62



9MFY2022: 33.84

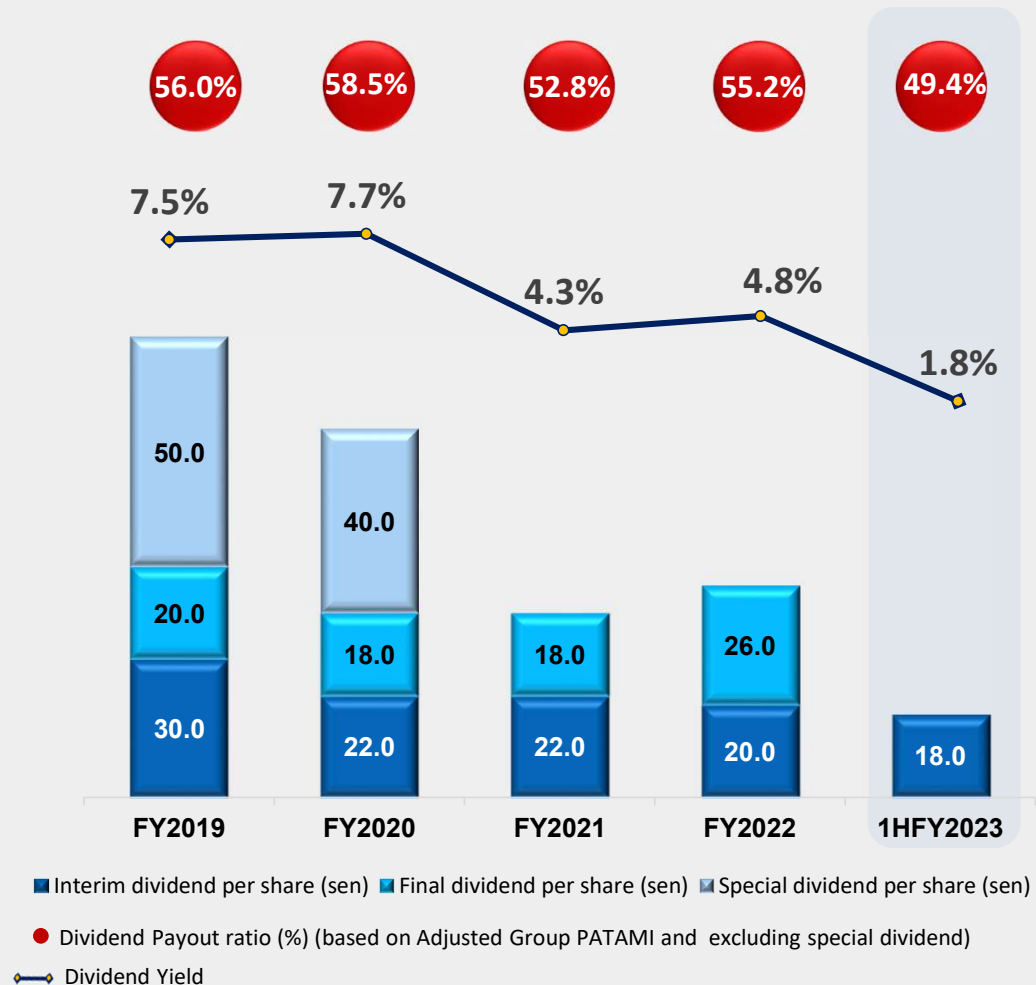
2023 Internal Threshold: 53.0



We strive for sustainable dividends to ensure long term value for the shareholders, proven by our historical dividend payout record

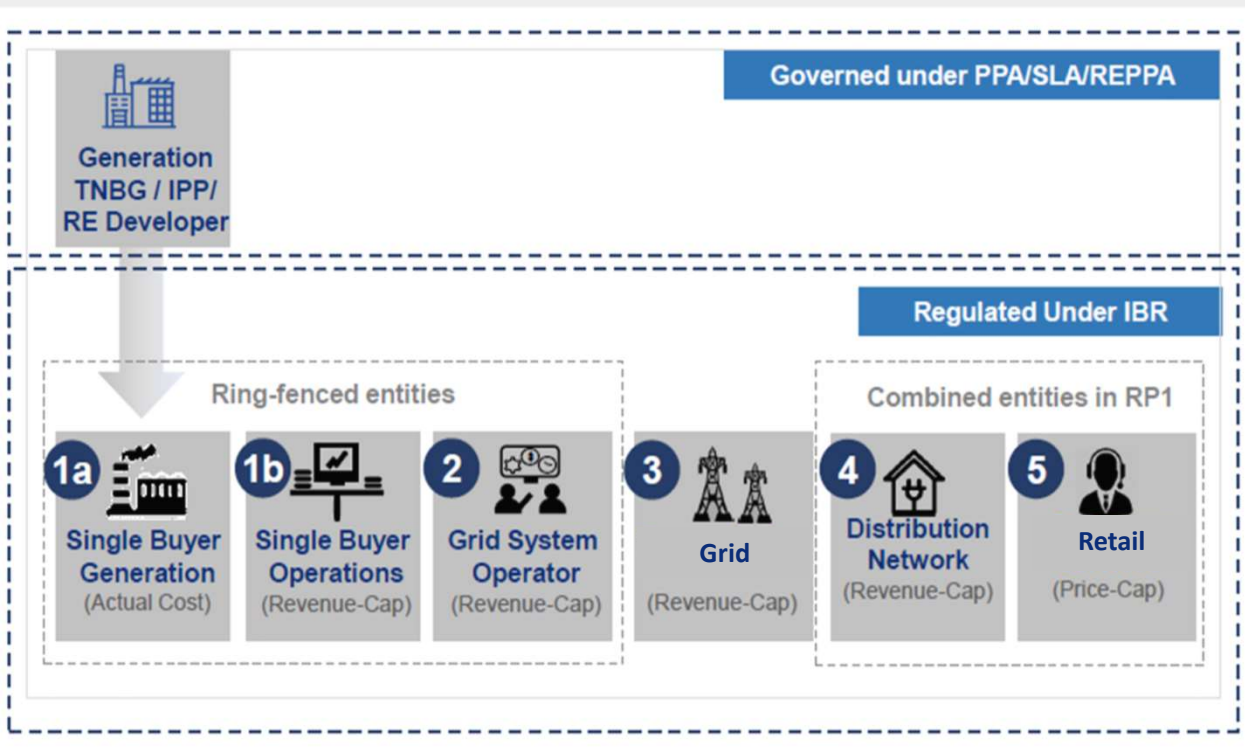
DIVIDEND POLICY

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





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.



Regulatory > IBR Regulatory Period 3 (RP3) Parameters

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



WACC, %

7.3
RP2: 7.3



CAPEX, RM bil

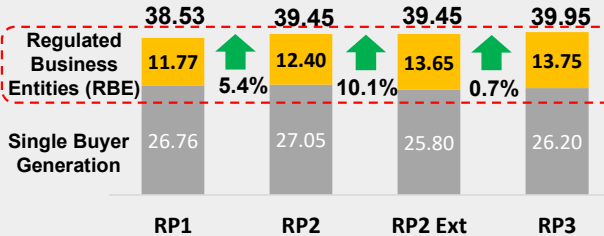
20.555
RP2: 18.8



RAB, RM bil

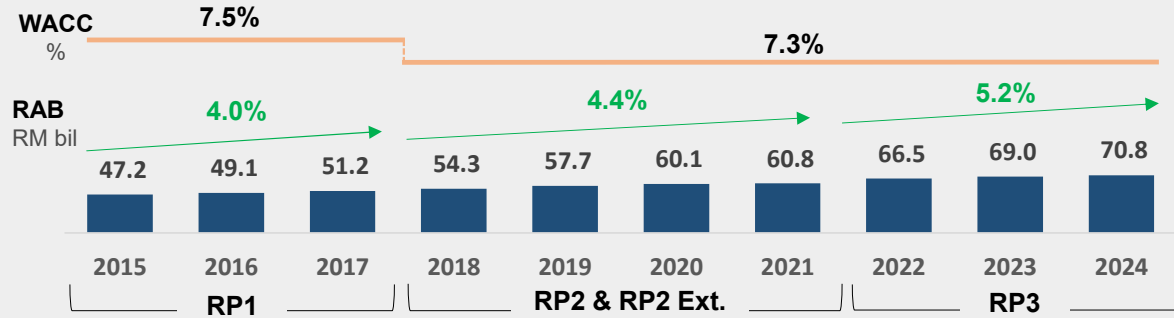
70.8
estimated closing
2024 RAB

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



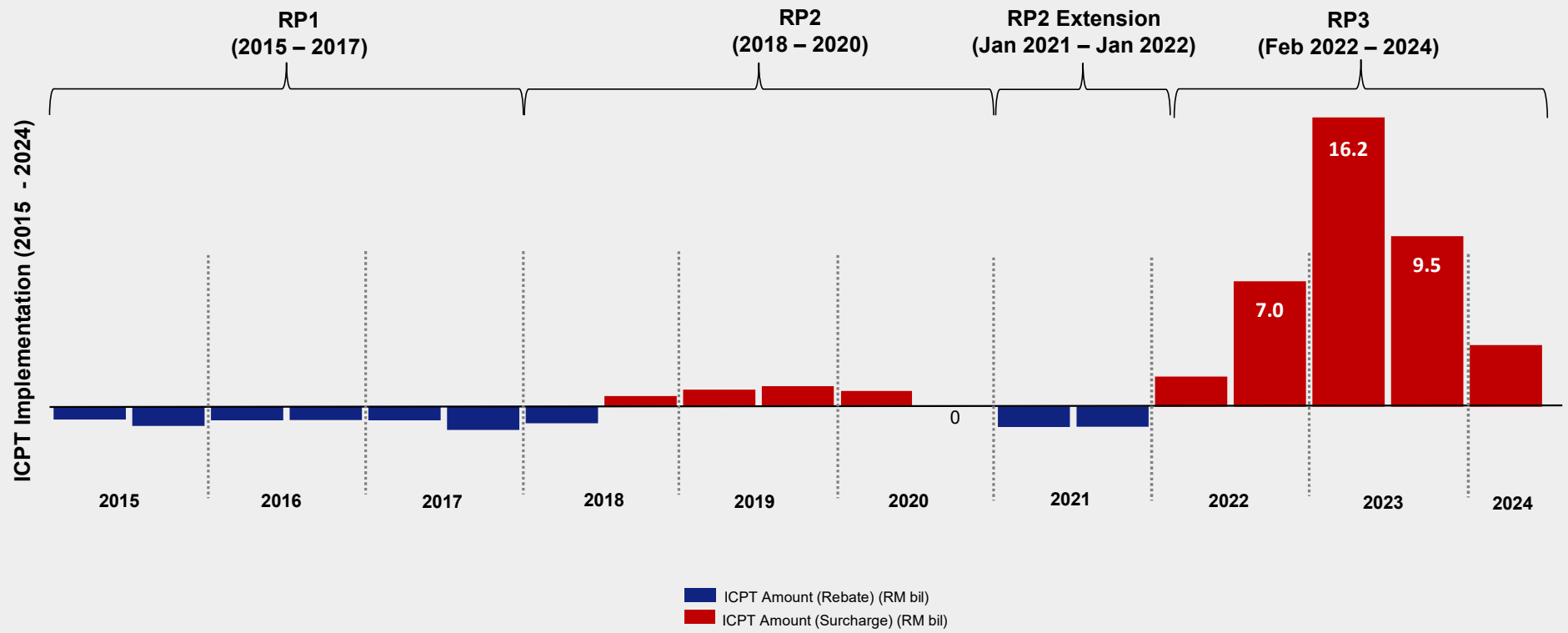
RP4 Outlook

> Submitted RP4 proposal to regulator in early December 2023.

> Key Theme; Delivering our customer's energy needs and facilitating Malaysia's Energy Transition.



Regulatory certainty; the Government has successfully managed the impact of fuel prices volatility for the past 19 ICPT* cycles since 2015 with the highest ICPT cost recovery in FY2023.



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

*Imbalance Cost Pass-Through



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

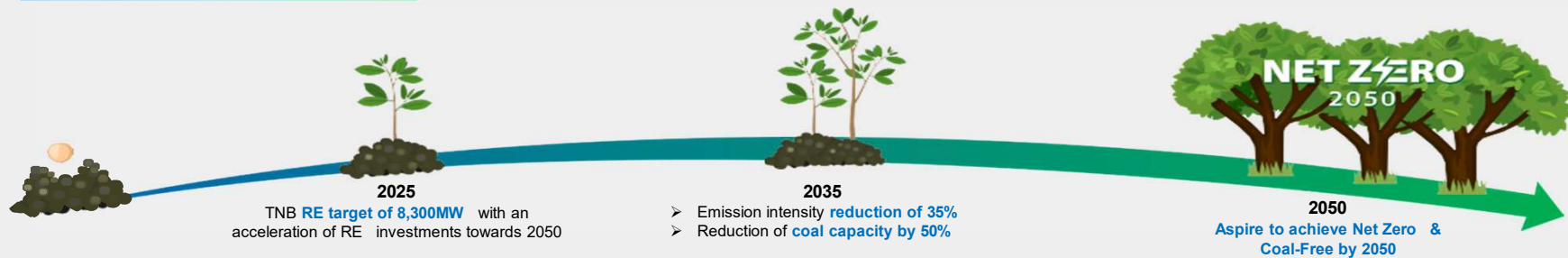
- Build scale in renewable generation
- Improve thermal plant efficiency

Our Commitment to 2035

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

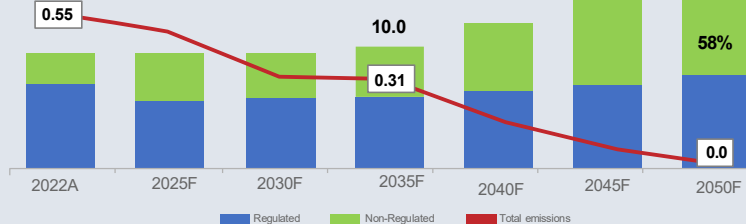
Our Aspiration to 2050

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



EBIT Projection

TNB GHG emissions intensity (tCO₂e / MWh)



Our future growth will be driven by the non-regulated business



Ranked 1st in the region and 42nd in the overall international ranking for Global ESG Monitor

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



ENERGY SOURCES

Renewable Energy (RE) Capacity

- 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

Coal Generation Capacity

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

Carbon Management

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



ENERGY VECTORS

Smart Grid

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

Regional interconnection

- Expand cross-border interconnection allowing for a wider reallocation of RE resources in ASEAN power system

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



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

Prosumer

- Provide rooftop solar + storage solution

Digital Platform

- 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

Smart Cities

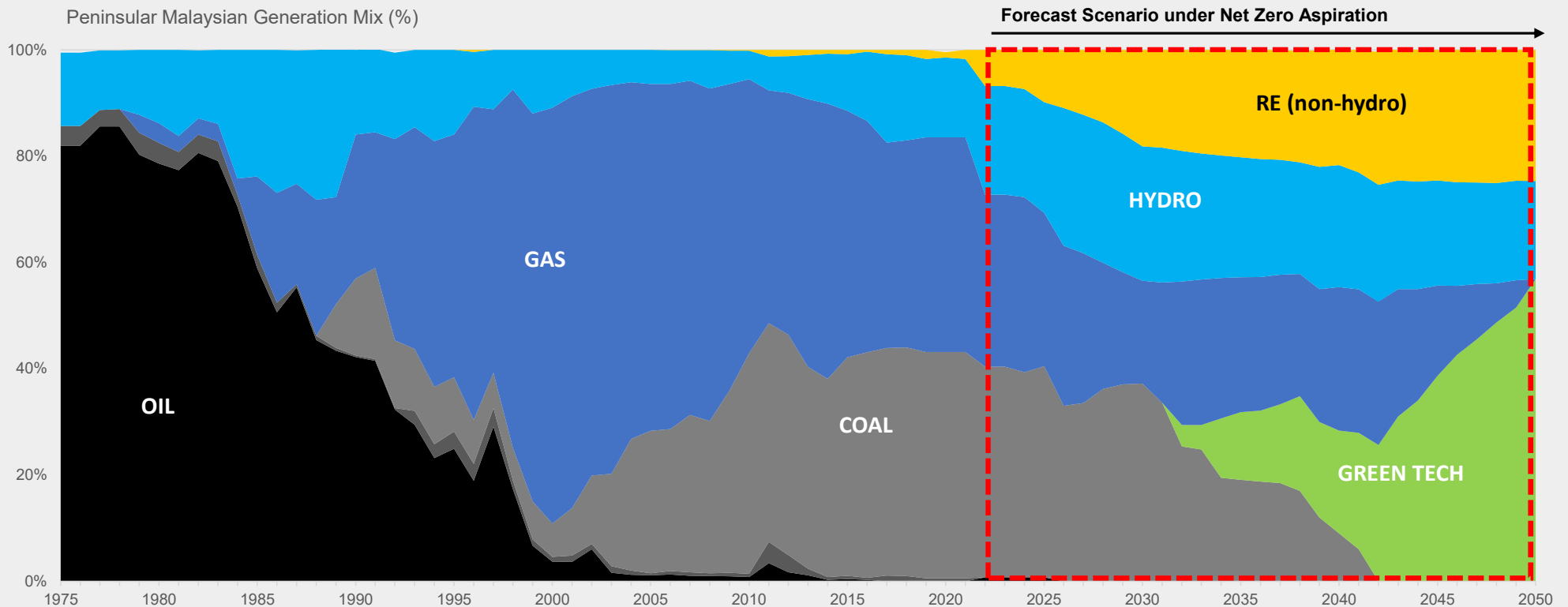
- Develop liveable, sustainable and resilient cities leveraging on technologies and integrated functionalities

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 see major shifts across the value chain in meeting our ESG commitment while ensuring business growth

Energy Sources

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

Explore opportunities in ASEAN



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

Pipeline capacity >7GW (Existing total assets: 15.7GW*)

NED aims ~USD7 bil Equity investment by 2050



FOCUS MARKETS



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

Pipeline capacity >7GW (Existing RE assets: 1.1GW*)

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



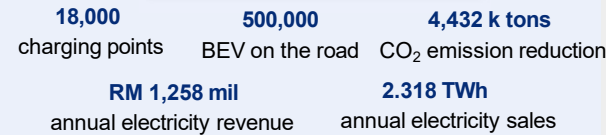
Potential Earnings by 2050: ~RM7 bil

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



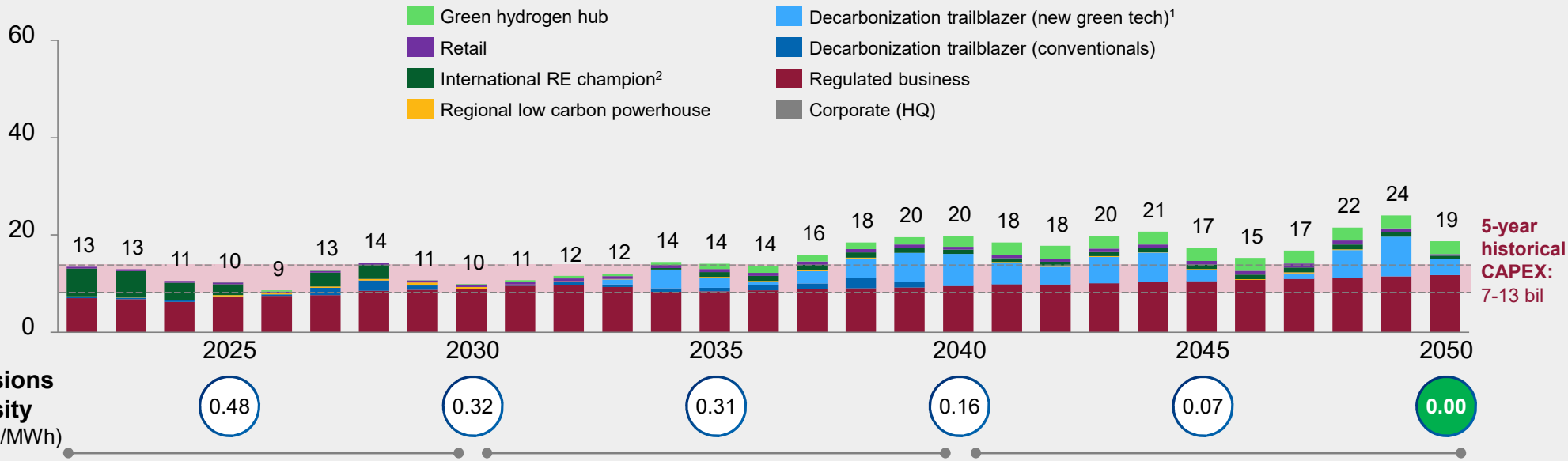
- 100% increase to ~250k users of Energy Budget features via myTNB (2025):
- 8,071 tonnes of CO2 avoided from the potential savings of ~11GWh in household energy consumption

*Gross capacity



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

Indicative TNB CAPEX³ (MYR bil) Legend



Emissions intensity
(tCO2e/MWh)

Key investment drivers

Indicative

Annual CAPEX
Total CAPEX

- | | | |
|--|--|--|
| <p>2020s</p> <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 <p>MYR 9-14 bil</p> <p>MYR ~90 bil</p> | <p>2030s</p> <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) <p>MYR 10-20 bil</p> <p>MYR 140-145 bil</p> | <p>2040s</p> <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 <p>MYR 15-24 bil</p> <p>MYR 210-215 bil</p> |
|--|--|--|

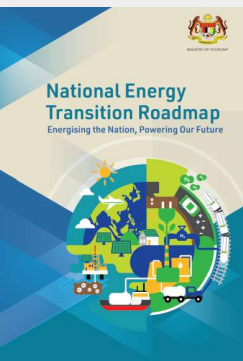
5-year historical CAPEX: 7-13 bil

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 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



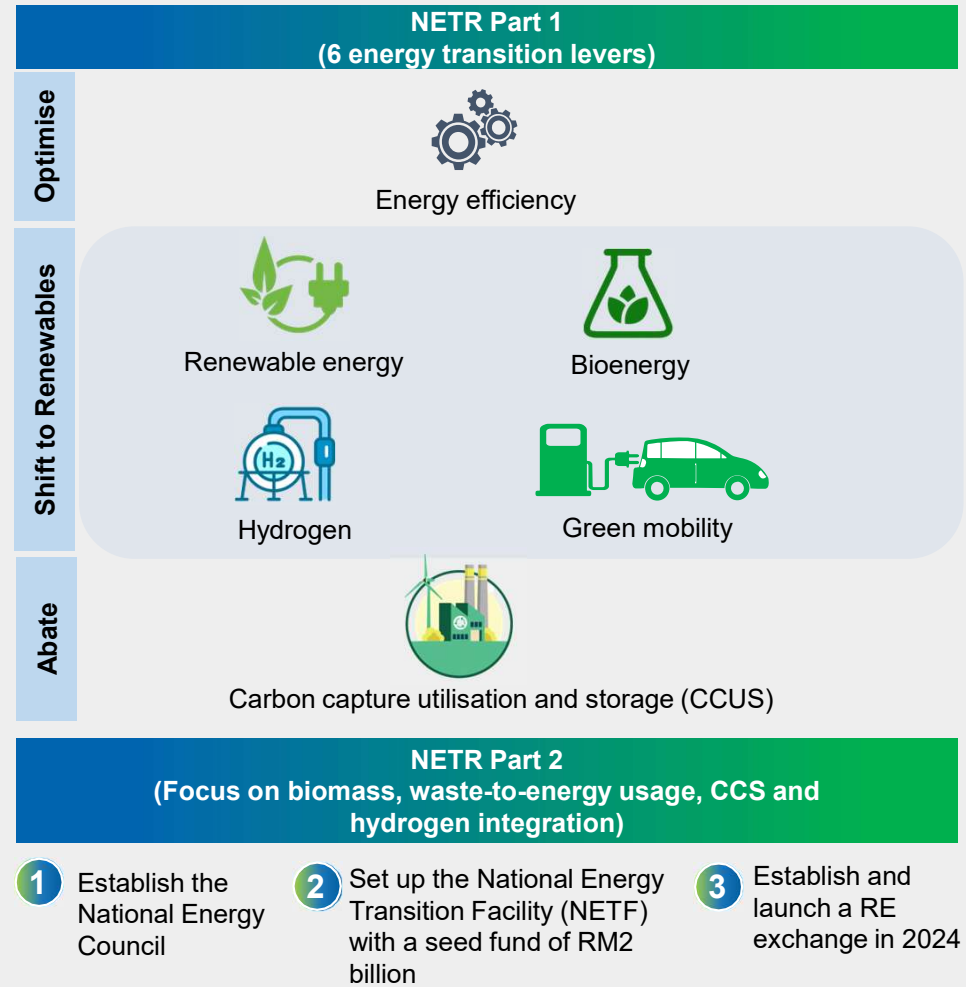
Aligned with the national aspirations and commitments to sustainable development

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.



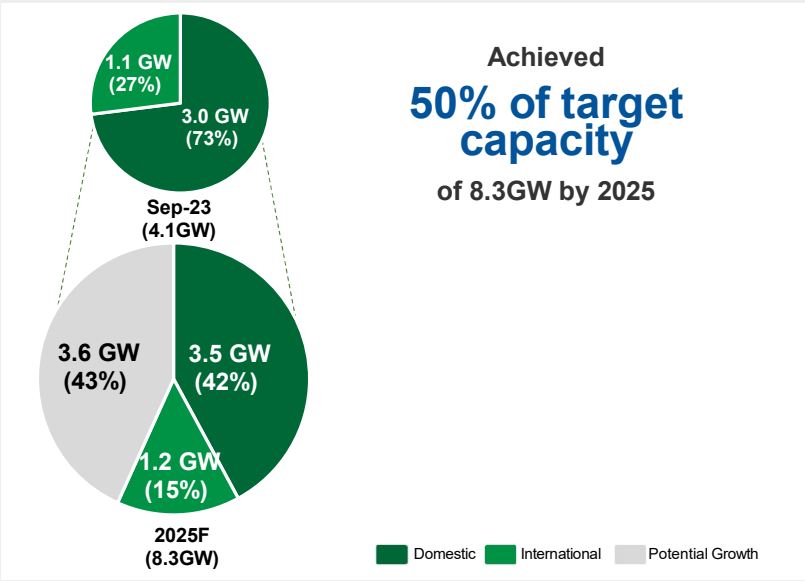


We remain resolute in delivering our RE target capacity of 14.3GW by 2050

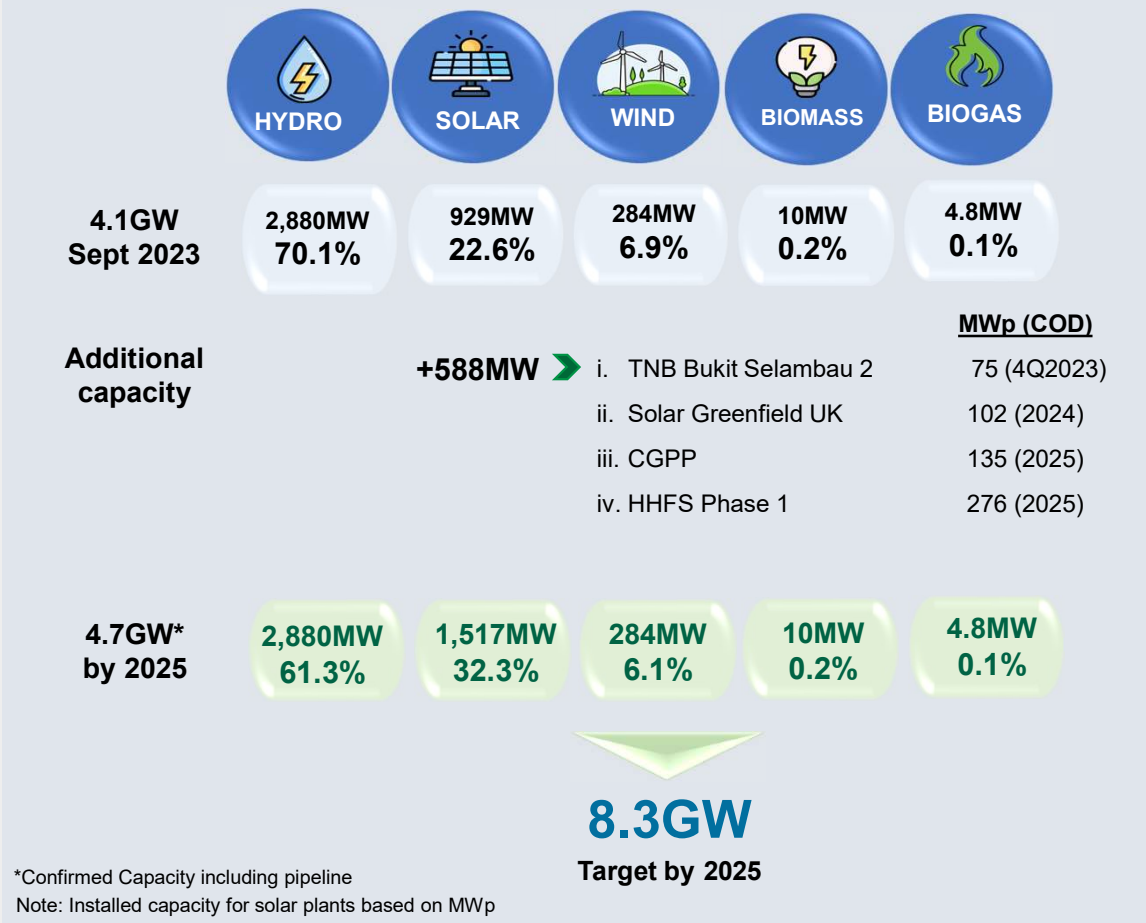
Champion for 3 flagship catalyst projects

- 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.

8.3GW RE target capacity by 2025



RE portfolio



Thank you

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