TENAGA NASIONAL BERHAD

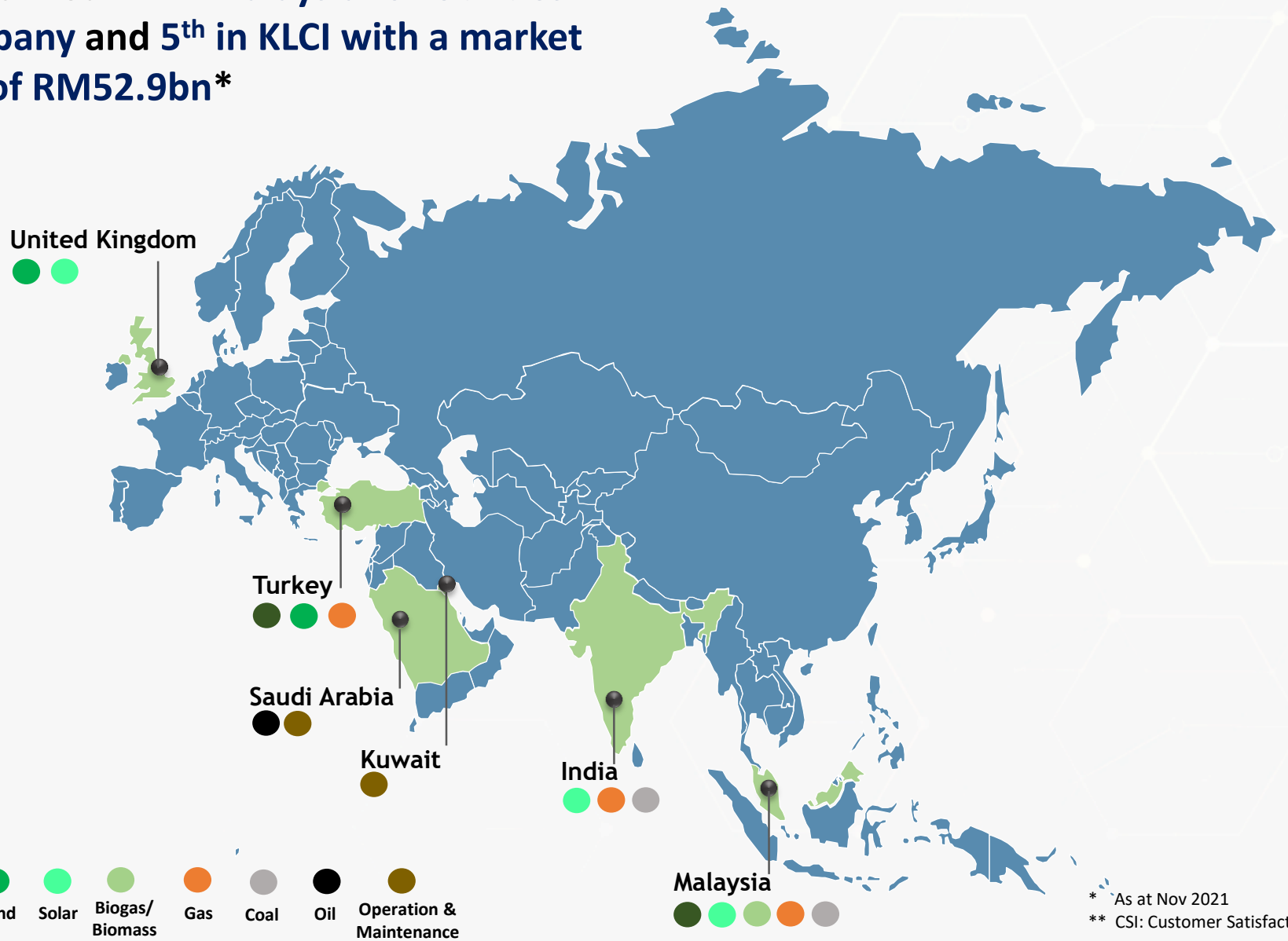
INVESTOR PRESENTATION

TENAGA NASIONAL
Better. Brighter.

Prepared by IR Holding unit, CoE Investor Relations department, Group Finance

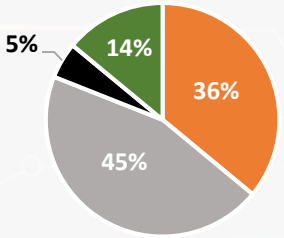
A LEADING UTILITIES COMPANY IN MALAYSIA

We ranked 1st in Malaysia for Utilities company and 5th in KLCI with a market cap of RM52.9bn*



Generation Business (Group)

Total Installed Capacity: 23,896MW*



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

TNB Grid & Retail Business (Peninsular Malaysia)

Transmission length: 27,548 KM
Substations: 510
System Minutes: 0.09

Distribution Network: 703,312 KM
Substations: 85,127
SAIDI : 32.38 minutes

Retail customers: 9.5 mil
CSI**:86%

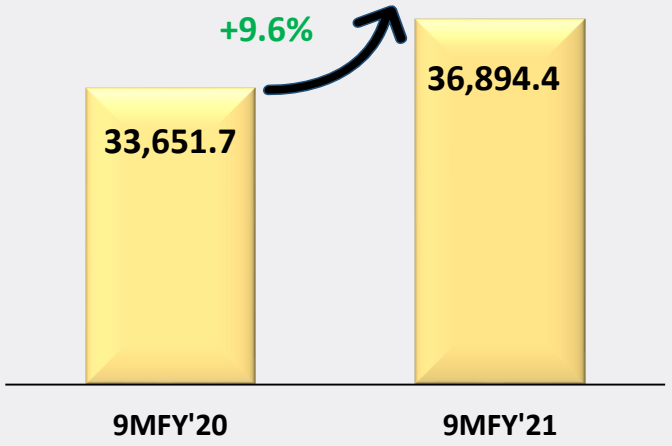
Main Subsidiaries

TNB REMACO
TNB GENCO
TNB RESEARCH
SESB
allo!
TNB ENGINEERING CORPORATION
GSPARX

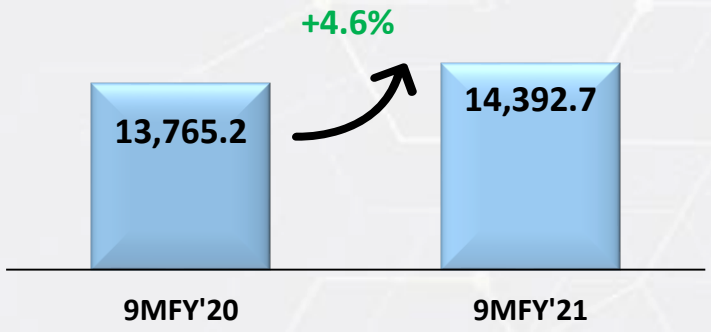
* As at Nov 2021
** CSI: Customer Satisfaction Index

OUR FINANCIAL PERFORMANCE REMAINS RESILIENT

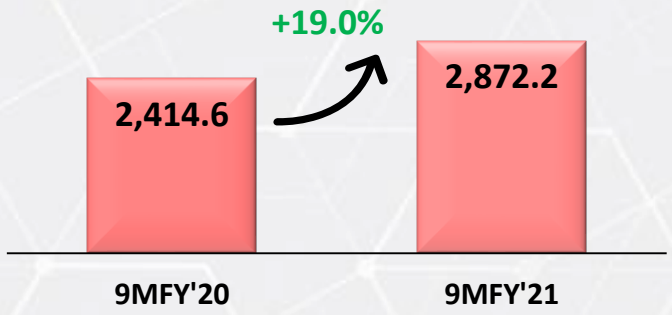
REVENUE (RM mil)



EBITDA (RM mil)



PROFIT AFTER TAX (RM mil)



OUR DOMESTIC NETWORKS ACHIEVEMENT WITH LOW SYSTEM MINUTES AND SAIDI ARE AMONG THE BEST IN THE WORLD

Equivalent Plant Availability Factor (EAF)
(Generation)

83.84%

9MFY'20: 88.28%

2021 Target: 86.1%

System Minutes
(Transmission)

0.09 mins

9MFY'20 : 0.05 mins

2021 Target: 2.0 mins

SAIDI
(Distribution Network)

32.38 mins

9MFY'20 : 33.90 mins

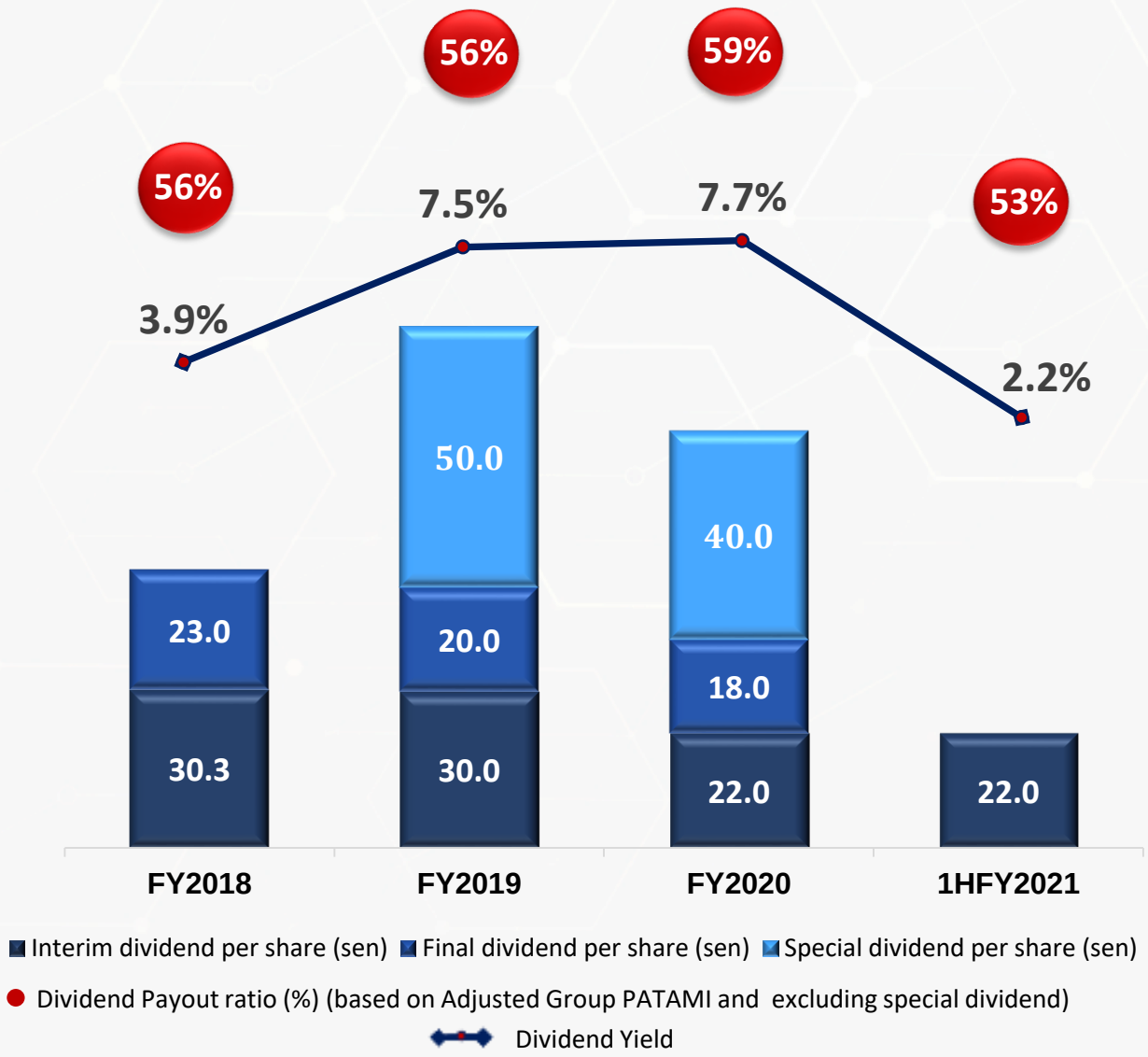
2021 Target: 55.0 mins

A RESILIENT FINANCIAL PERFORMANCE AND ROBUST CAPITAL MANAGEMENT HAS AFFORDED US TO CONTINUE REWARDING OUR SHAREHOLDERS WITH ATTRACTIVE 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

Statistic	30th Sep '21	31st Dec'20
Total Debt (RM Bil)	49.1	49.5
Gearing (%)	46.3	46.3
Net Gearing (%)	35.4	33.7



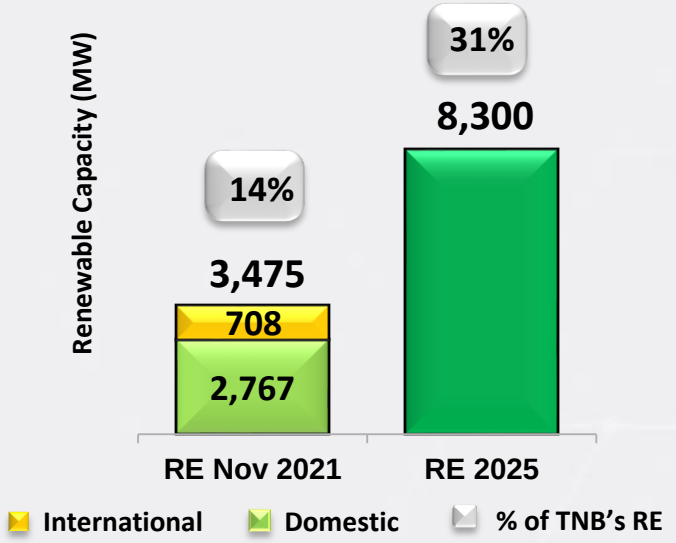
Note:
Dividend yield for 1HFY2021 is based on 6-month basis with share price as of 30th June 2021

WE BELIEVE OUR SUSTAINABILITY PATHWAY WILL OPEN UP NEW GROWTH OPPORTUNITIES WHILST REMAINING TRUE TO OUR CORE ROLE

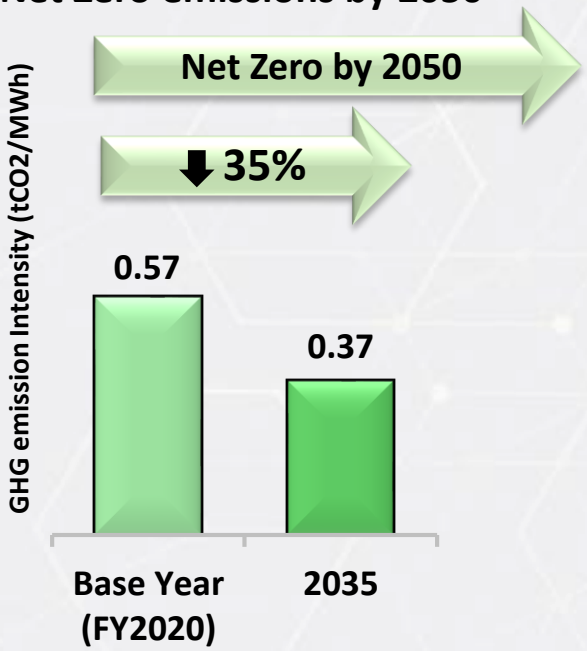
Aspire to achieve Net Zero emissions by 2050

Our 8,300 MW RE Target by 2025 – Build scale in renewable generation
Our Commitment to 2035 - Emission intensity reduction by 35% through significant renewable generation growth and 50% reduction in coal generation capacity
Our Aspiration to 2050 - Invest and grow our emerging green technologies, achieve net zero and coal-free by 2050

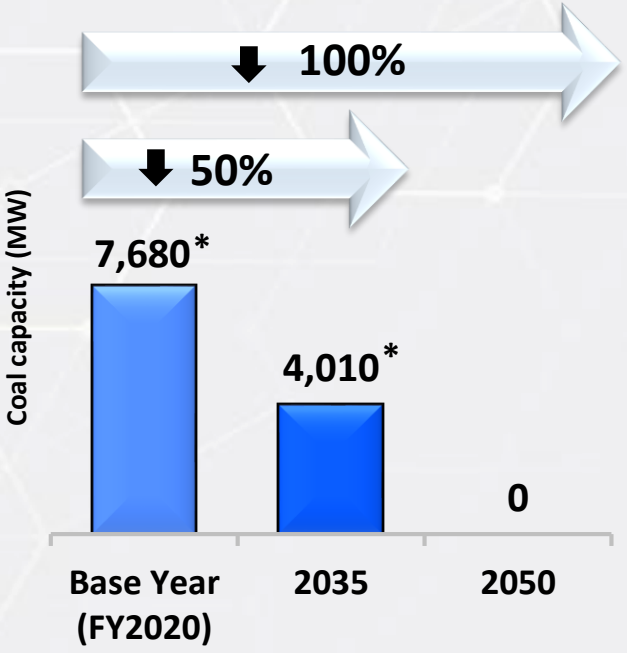
Increase RE Capacity to 8,300MW by 2025



Reduction of emission intensity of 35% by 2035, and Net Zero emissions by 2050



Reduction of coal capacity of 50% by 2035, and 100% by 2050



* Peninsular Malaysia's coal plants, gross capacity

- TNB targets not to take any new stake in new coal plants and will honor the existing PPAs
- TNB is committed that revenue from coal does not exceed 25% of Group revenue

Note:
Emission intensity (tCO2e/MWh) = Annual Emission (million tCO2e) / Annual Energy Generated (MWh)

IN 2016, WE EMBARKED ON OUR REIMAGINING TNB JOURNEY TO PREPARE FOR DECARBONIZATION, DECENTRALIZATION, DIGITALIZATION AND DEREGULATION

TO BE A
LEADING PROVIDER OF
SUSTAINABLE ENERGY SOLUTIONS IN MALAYSIA AND INTERNATIONALLY

Future Generation Sources
2025 EBIT Target : RM5.0bil

Main Initiatives:
- **Growing TNB's renewable** capacity
- Expansion of capacity into selected international strategic markets with strong growth prospects
- **Improving performance of existing thermal generation** fleet

2021 Focus:
- Improve the performances of existing assets
- Operationalisation of RACo & ReDevCo
- Acquire our first off-shore wind assets with a strong partner and aim to build expertise in this technology and beyond.
- Explore SEA for RE expansion

Grid of the Future
2025 EBIT Target: RM6.1bil

Main Initiatives:
- Leveraging on **innovation across the network to support our Energy Transition**
- Upgrading our existing network infrastructure into a **smart, automated and digitally enabled network**
- Optimising our network's productivity, efficiency and reliability

2021 Focus:
- Achieve the Smart Meter installations targets
- RAB Expansion by utilizing the allowed CAPEX on Grid modernization Project
- Reduce System Losses

Winning the Customer
2025 EBIT Target: RM0.7bil

Main Initiatives:
- Enhance our customer's experience through all customer journeys for service, interaction and communication channels
- Growth through **innovation of new sustainable customer solutions**
- Strengthen **digital presence via digital solutions, interactions and enterprise**

2021 Focus:
- Enhance customer service by ensuring our customer's experience is a seamless interaction with TNB from the start to the end through Network of Teams models
- Expansion of rooftop solar PV

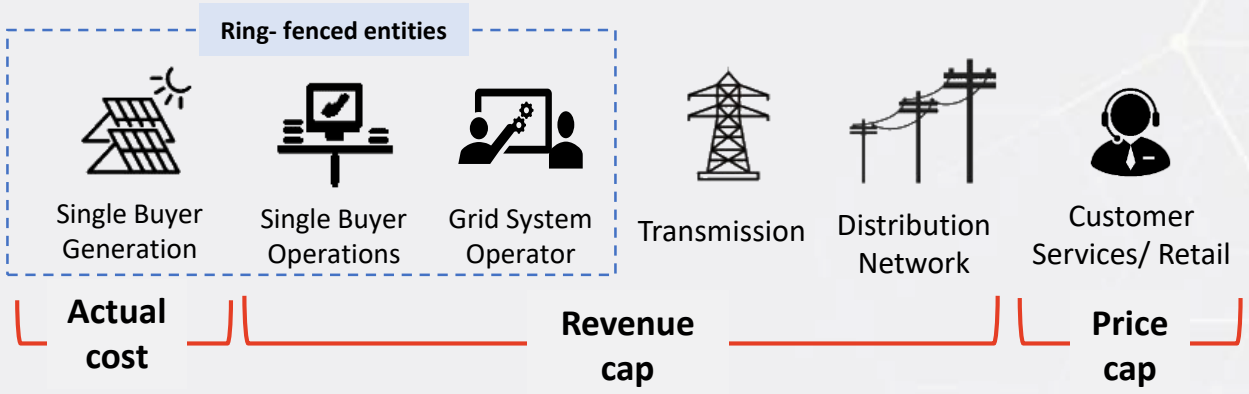
Future Proof Regulation

Main Initiatives:
- Working together with key stakeholders towards a stable and sustainable regulatory landscape

2021 Focus:
- RP3 Proposal Approval
- Shape TNB's sustainability agenda

DELIVERING SUSTAINABLE RETURNS VIA IBR MECHANISM SINCE 2014

Regulated entities under Incentive Based Regulation (IBR)



The IBR mechanism provides:

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

(Please refer appendix section for further details)

- Regulated business made up more than 70% of the overall Group earnings.
- Regulated entities' earnings are guaranteed based on approved electricity demand growth as stipulated by the IBR guidelines.
- Risks such as fuel price and forex volatility has been taken up through the Imbalance Cost Pass-Through (ICPT) mechanism which is being reviewed every six months.

Note:

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

ii. **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.

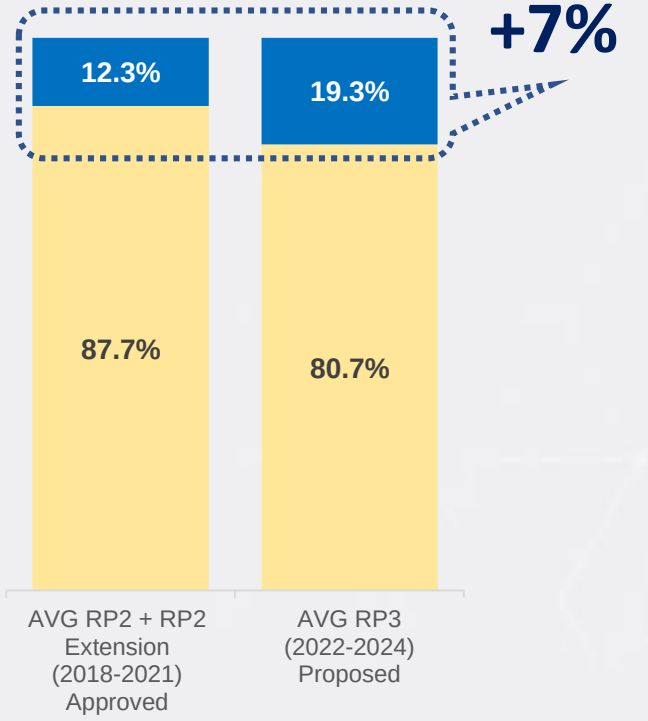
INCREASED CAPEX INVESTMENTS IN OUR GRID DIGITALIZATION IS KEY TO MALAYSIA'S ENERGY TRANSITION AMBITION, FURTHER FUTURE-PROOFING OUR REGULATED BUSINESS

Towards becoming a Smart Utility by 2025

Our target : Achieve Smart Grid Index (SGI) of 85% by 2025

Regulated businesses spends on average ~16% of its CAPEX towards supporting Energy Transition (ET)

Regulated CAPEX to support Energy Transition



- A smart utility will enable us to deliver a reliable and high quality grid with bidirectional energy flow to accommodate intermittent RE generation, EV and distributed generation in supporting ET.
- Our regulated CAPEX related to enabling ET is expected to increase from 12.3% to 19.3% through our proposed RP3 initiatives.
- Continued investment is crucial in developing a robust grid system to ensure supply reliability while embracing our sustainability agenda

Note:
TNB SGI 2020 score: 62.5% (55th place)

Major projects related to ET

Advanced Metering Infra. (AMI)

- Smart meter program enables customer to have an improved access and management to their energy consumption. It also improves operational effectiveness by reducing response time, automating processes and improving data accuracy.
- Smart meters installation progress:

0% — 86% (as at Oct'21) — 100% (1.8 mil units by end 2021)

LED Relamping

- Replacement of traditional high pressure sodium vapor (HPSV) street lightings with light emitting Diode (LED) which are cost efficient (longer lifespan), lower electricity consumption and more environmental friendly.
- LED street lightings replacement progress:

0% — 89% (as at Oct'21) — 100% (650,000 units by end 2021)

Volt-Var Optimisation (VVO)

- VVO is an advanced application that runs periodically or in response to operator demand, at the control center for distribution systems or in substation automation systems.
- VVO optimally manages system-wide voltage levels and reactive power flow to enhance network efficiency and reduce power losses at both transmission and distribution network level
- The installation focuses on identified locations within Peninsular Malaysia that have the required reactive power demand. The current progress:

0% — 82% (as at Oct'21) — 100% (560 MVAR by end 2021)

Advanced Distribution Management System (ADMS)

- ADMS is a new technology which will replace the current ageing SCADA master system.
- The new system will be able to support new functions and requirements for Grid of the Future e.g. integrated & automated outage restoration system, volt-var optimization, optimize distribution/grid's performance

GLOBAL RE EXPANSION; A VITAL MOVE TOWARDS ACHIEVING OUR SUSTAINABILITY COMMITMENTS

Acquisition of 49% stake in 41.5MW Blyth offshore UK wind farm in October 2021

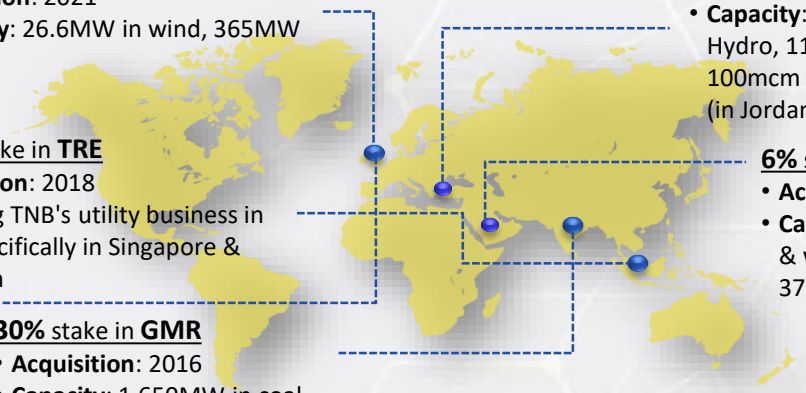
- Marks TNB's maiden entry into UK offshore wind market, showcasing TNB's capability and commitment to its Sustainability Pathway aspiration.
- Strategic partnership with EDF, capitalising on EDF's vast experience & capabilities in RE for future growth.

GLOBAL FOOTPRINT

100% stake in **VANTAGE RE**
- **Formation**: 2021
- **Capacity**: 26.6MW in wind, 365MW in solar

100% stake in **TRE**
- **Formation**: 2018
- Growing TNB's utility business in SEA specifically in Singapore & Vietnam

30% stake in **GMR**
- **Acquisition**: 2016
- **Capacity**: 1,650MW in coal, 388MW in gas & 26MW in solar



30% stake in **GAMA**
- **Acquisition**: 2016
- **Capacity**: 853MW in gas, 131.5 in Hydro, 117.5MW in wind & 100mcm p.a. water conveyance (in Jordan)

6% stake in **SHUAIBAH**
- **Acquisition**: 2005
- **Capacity**: 1,190MW in IWPP & water desalination of 375.95mcm p.a.

New Energy Division established to advance international business commitments on:
- Defocusing on India and Pakistan through divestments.
- Expansion of RE in targeted markets, includes the UK, Europe and SEA.
- Strategic partnership with one of the leading RE players to leverage on their technological expertise.

INTERNATIONAL BUSINESS STRATEGY

Ground Zero

Value Protection & Value Creation for existing assets

Part of this strategy involves :
- Growing TNB's International RE business. **Focused market in UK, Europe and SEA.**
- Continue to drive initiatives to seek monetization options for our assets in India and other non-focus markets.
- Recently, TNB had divested on LPL and exited from Pakistan.

Ambition #1

RE Growth Strategy (UK/Europe)

- **Grow TNB's Renewable Energy (RE) business in the UK and Europe via the Vantage RE Ltd** (launched on 1st July 2021) by leveraging on existing assets, capabilities and experience to acquire operational assets with contracted revenues.
- **Develop greenfield RE projects via an RE Development Co (ReDevCo)** platform that could provide pipeline of future operational assets to Vantage RE Ltd.

Ambition #2

Grow Utility in South East Asia (SEA)

We foresee extensive potential in **growing revenue and returns through greenfield development and M&A across the utility value chain in SEA**, leveraging of TNB's core business experience and capabilities.

✓ **Vietnam**: We are currently fiinalising our acquisition of 39% stake from Sunseap in 21.6MW rooftop solar project which expected to be completed by 1QFY'22.

Ambition #3

Technology Catalyst

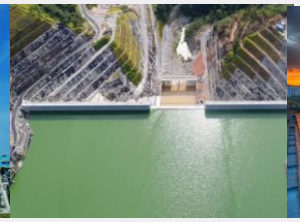
Future proofing TNB with the right technologies within the Energy Transition landscape to enhance capabilities and future growth.

LARGEST GENERATION COMPANY IN MALAYSIA; CONTINUOUS FOCUS ON DELIVERING EXCELLENCE SERVICE WHILE PURSUING NEW CLEAN ENERGY GROWTH OPPORTUNITIES

Contracted Capacity in Peninsular Malaysia

4 Coal Plants
Capacity: 7.7GW

8 Gas Plants
Capacity: 5.7GW



5 Hydro Schemes
Capacity: 2.6GW

Pipeline:
Nenggiri (300MW)
COD : 1st June 2027

2 Solar Plants
Capacity: 80.0MW

Pipeline:
Bkt. Selambau 2 (50MW)
COD : 31st Dec 2023

We Care for The Environment

Compliance with environmental policies

- **ISO 14001:2015** Environmental Management System certification in GenCo operations
- The self-monitoring environmental management tool, **Guided Self-Regulation (GSR), has been implemented** across all divisions and subsidiaries.

Coal Power Plant (Clean Coal Technology)

Adopting clean coal technology, through deployment of more efficient ultra-supercritical (USC) technology for new coal power plants. For example Manjung 4, Manjung 5 and JEP. We expect to be coal free by 2050.

Biodiversity Management

Carried out International Union for Conservation of Nature (IUCN)'s Red list programme to monitor and protect the biodiversity at two of our site:

- ❑ Hulu Terengganu hydro electric station: Ikan Kelah sanctuary
- ❑ Pergau hydro electric station: Fish resource management and Raflessia protection.

Water and Waste Management

- **Our power plants track water consumption on a monthly basis** under a plant optimisation and waste minimization programme in compliance with ISO 14001:2015
- We also monitor the consumption of materials such as fuel and the discharge of effluents

GenCo Financial Performance (9MFY'21)

REVENUE

RM14,925.0 mil

EBITDA

RM2,977.1 mil

EBITDA Margin: 19.9%

PROFIT AFTER TAX

RM750.9 mil

3 Business Priorities Under GenCo

Performance

To deliver sustainable returns, we will ensure high availability and reliability for key assets by operating within PPA terms

Growth

To capture new clean and green plant-ups opportunities whilst growing our asset-light services

Efficiency

To deliver plant operational excellence by scaling up turnaround programs and uplifting productivity across the business

CREATING VALUE BY CAPTURING NEW OPPORTUNITIES IN TECHNOLOGY ADVANCEMENT

Objective

Current Progress / Development

Electric Vehicles

- To lead Malaysia's transition into low-carbon mobility through collaborative efforts with various stakeholders in the country.
- **To capture growth in EV as well as part of the long-term solution to reduce GHG emissions,** operate vehicles more efficiently and reduce oil dependency.

TNB EV Charges

73

Stations, out of 223 stations available in Malaysia

i. **Signed Memorandum of Understanding (MOU) with Socar in Aug'21 to leverage on shared demand data on electric-vehicle (EV)** usage in Malaysia.

ii. **Signed MOU with DHL in Jun'21 to explore a framework of greener supply chain** that will focus on delivering environmentally friendly solutions which includes installing EV charging stations at DHL's KL service centre and its delivery routes.

Broadband Business

- We see **huge potential in the High-Speed Broadband (HSBB) business for future non-regulated stream, riding on our fibre optic infrastructure.**
- Currently we are expanding our fibre infrastructure to premises in Melaka, Perak, Kedah, Penang and Johor.

Allo has expanded to around

110,000 premises

in Melaka, Perak & Kedah,

out of ~150,000 premises targeted by end of 2021

Allo entered into a **joint collaboration agreement with Singapore's SEAX Global Pte Ltd (SEAX) in May'21 to promote robust connectivity in Malaysia and neighboring countries**, which it will leverage each other's existing infrastructure to provide faster and larger data transmission.

Rooftop Solar Solutions

- We see **potential in the rooftop solar industry which allow us to diversify our source of earnings while growing our renewable energy business.**
- Our growth strategy is focusing on selected customer segments specifically in the commercial and industrial market while leveraging on the Government's existing program under Net Energy Meter (NEM) 3.0 and Self-Consumption (SelCo).

Secured a total capacity of

116.0 MW

out of total target of 576MW capacity by 2025

GSPARX & TNB Retail are in the middle in **finalizing MoU and SARE agreement with some public universities and healthcare providers**. These projects is expected bring more than 100MWp rooftop solar capacity for GSPARX and produce recurring income for 21 years.

Note: Data as at Novt 2021

TNB'S SUSTAINABILITY PATHWAY SUPPORTS THE NATION'S CLIMATE COMMITMENTS, CONSIDER EXISTING RE TARGETS AND IN TANDEM WITH THE PENINSULAR MALAYSIA GENERATION DEVELOPMENT PLAN

Malaysia Climate Commitments

To reduce Greenhouse Gas (GHG) emissions intensity of gross domestic product (GDP) by 45% by 2030 relative to the 2005 baseline

MyClimate Action Council (MyCAC)

- Development of a **"green recovery plan"**
- Strengthening the country's **climate change governance**
- **Low Carbon Mobility** Development Plan 2021 – 2030
- **National Low Carbon City Master Plan**

JPPPET* Peninsular Malaysia Generation Development Plan 2020 and RE capacity targets of 31% by 2025 and 40% by 2035

- **Peak Demand** Projection
- **Renewable Energy** requirement & mix
- **Energy Trilemma**
- **New Capacity** Projection & **Reserve Margin** projection
- **No new coal plants**

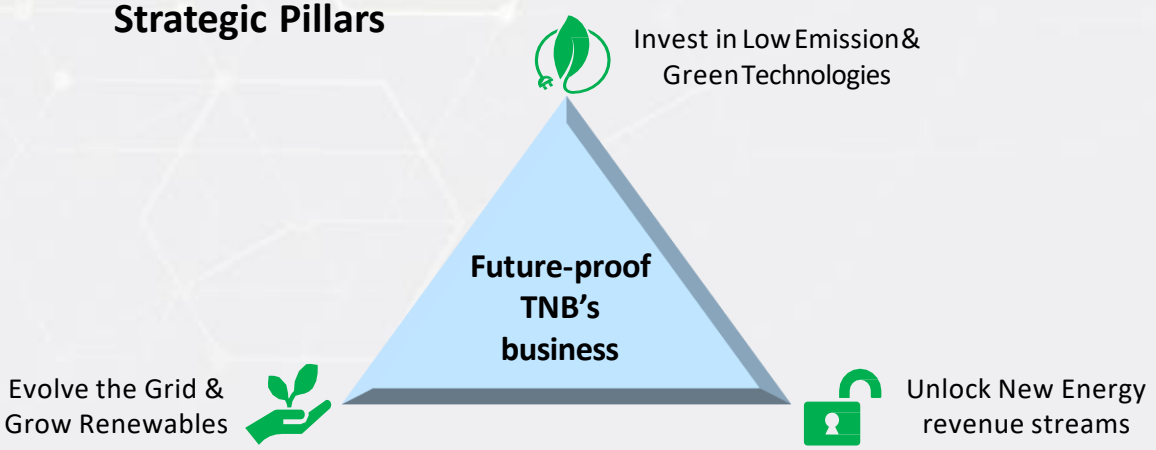
TNB Sustainability Pathway 2050

Targets

1. Aspire to achieve Net Zero by 2050 (in line with 1.5°C scenario), 35% emission intensity reduction by 2035
2. Aspire to achieve Zero Fatalities and LTIF** < 1.0
3. 1% profit-after-tax (PAT) towards environmental and community-related programmes

** LTIF - Lost time incident frequency

Strategic Pillars



* Jawatankuasa Perancangan dan Pelaksanaan Pembekalan Elektrik dan Tarif / Planning and Implementation Committee for Electricity and Supply Tariff

OUR DECARBONIZATION ROAD AHEAD IS PAVED BY REPOWERING TO CLEANER SOURCES

By 2025:

1 RE Target of 8300MW

- **Build scale in renewable generation**
- **Improve thermal plant efficiency**
  - Acceleration of RE investment towards 2050

By 2035:

1 35% emission intensity reduction

2 Halve coal capacity

- **Ramp up renewables energy: 8.3GW by 2025 & accelerate to 2035**
  - TNB's capacity renewal & expansion will come from lower emission sources e.g. **gas and renewable energy**
  - Our international investments will increasingly focus on **Renewable Energy and emerging green technologies**

By 2050:

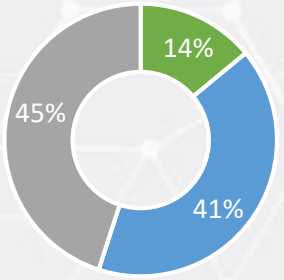
1 Net Zero Emission and Coal-Free

- TNB continues to invest in R&D on **emerging energy technologies**
- **Strategic partnerships** both locally & internationally

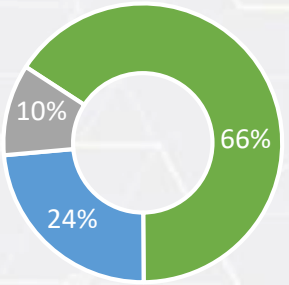
TNB will focus on pursuing **emerging green technologies** & **partnerships** today, as the technologies are expected to become commercially-viable in the 2030s

Our Generation Portfolio Journey

TNB Capacity mix (2021)



TNB Capacity mix (2035)



Renewable | Non coal thermal | Coal

1) Repowering roadmap

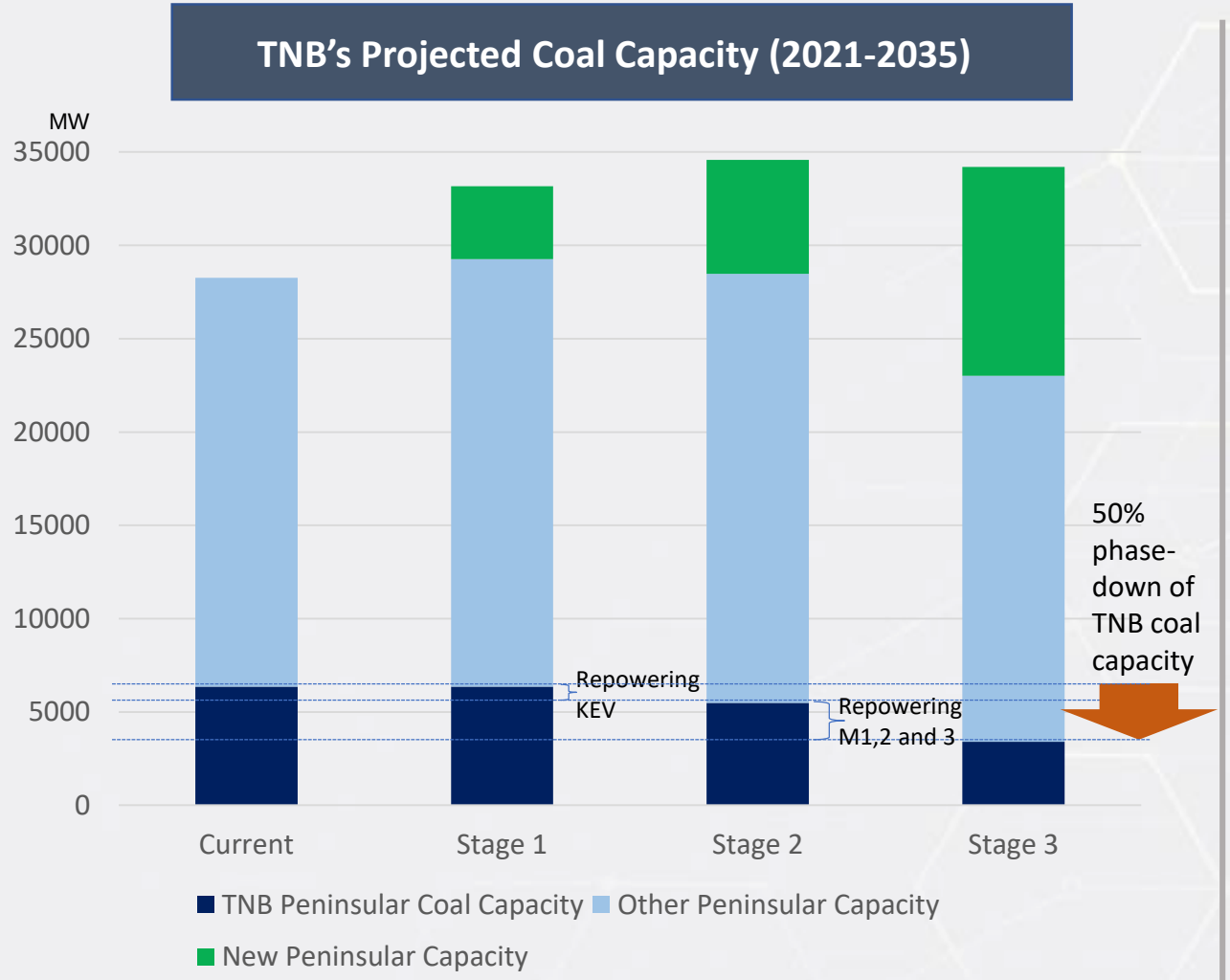
- Our journey towards 35% emission intensity reduction begins with Reimagining TNB(RT). We expect the renewables build under RT to deliver a **5% reduction in our emission intensity[2] by 2026**.
- By early 2030s, we expect our **repowering efforts to enable a further 18% reduction** in our emission intensity[2]
- The **remaining 12% to be achieve by the end of 2035 through the expiry** of 2GW of coal capacity PPAs

2) Renewables growth

- Growing our renewables capacity would be **necessary to achieve our aspiration of 35% emission intensity reduction** by 2035
- We expect to **grow an average of 1GW of renewables capacity per year** to ensure that 66% of our capacity is made up by renewables energy sources

Note:
Our action plans above would be subject to economic feasibility assessment
[1] renewables capacity includes large hydro plants
[2] from the base of 2021 emission intensity

WE ARE PLANNING OUR CAPACITY RENEWAL AND EXPANSION WHILE PREPARING TO PHASE DOWN OUR COAL ASSETS



Note:
[1] Report on P. Malaysia Generation Development Plan 2020 (2021 – 2039)
[2] Subject to final Government of Malaysia approval

- The Peninsular Power system will be building **6 GW new capacity in addition to repowering of expiring capacity up to 2035**[1]. This presents opportunities to expand our generation business in both non-coal thermal and RE.
- TNB plans to extend its dominance in the Peninsular Generation sector through the following:
  - ❑ Delivering the most competitive bids for each new capacity
  - ❑ Ensure win-win repowering proposals of our coal assets
  - ❑ Extending the life of our existing hydro power plants
  - ❑ Build on our existing partnership with Sunseap and EDF to scale our renewables growth within Malaysia
- Leading to 2035, we target to **repower our 50% of our coal assets; Kapar Energy Ventures and Janamanjung (Unit M1-M3)** as part of our commitment to a greener Malaysia.
- The **capacity renewal of our thermal assets would come from the latest gas turbine technologies**[2], in line with Malaysia Generation Development Plan 2020 plans to ensure supply reliability whilst contributing to the national efforts to reduce emissions.

THE PACE OF TECHNOLOGY DEVELOPMENT HAS INCREASED SIGNIFICANTLY, THUS WE RECOGNIZE THAT LEVERAGING ON PARTNERSHIPS AND COLLABORATION WILL BE CRITICAL FOR THE LONG RUN

TNB RESEARCH (TNBR) PROGRAMS	DESCRIPTION
Carbon Capture and Utilisation	• TNBR is committed in providing comprehensive technical and economic assessment of CCU since 2011 as they focus on technology development of capturing CO_2 from our thermal power plant (coal fired and gas fired) and utilisation of the captured CO_2 by converting into valuable outputs . The research & development (R&D) program covers Chemical Approach Carbon Capture, Biological Approach Carbon Capture and Carbon Utilisation. • **CCU is one of the key technologies that can reduce emissions from fossil fuels on a significant scale**. This technology is critical in aligning ourselves with the global energy transition as well as achieving our aspiration of net zero emission by 2050.
Green Hydrogen	• TNBR is focusing on providing technical and economic assessment of green hydrogen production as the **production of hydrogen via sustainable energy will ensure the production of the energy would not emit carbon dioxide into the atmosphere**. **Current R&D include alternative method for green hydrogen such as production through two stage Anaerobic Digestion (TSAD) process of organic waste** e.g. palm oil mill effluent and food waste. • Green Hydrogen project will **support TNB's aspiration to be the leading provider of sustainable energy solution in Malaysian and internationally**.
Virtual Pilot Plant Technology	• TNB is piloting a **Virtual Pilot Plant (VPP) technology that utilizes software and energy storage** that will enable the future peer-to-peer generation amongst energy prosumers (a consumer who produces and consumes energy).
Ammonia	• TNB with **IHI Corp (Japan) and PETRONAS had formed a joint study into Co-Firing Ammonia** at coal power stations to reduce carbon emissions. Ammonia is viewed as the most viable carrier of Hydrogen to be used as fuel.

Our Partnership

Offshore wind

TNB has invested and taken a 49% stake of an Offshore Wind Farm in Blyth UK with EDF of France. This marks **TNB's first entry into Wind Turbine Technology with a established partner.**

Electric Vehicle (EV)

TNB has **signed MoU's with DHL, SOCAR and Sime Darby Motors** to **explore various initiatives to accelerate the adoption of electric vehicles (EV).**

Rooftop Solar

TNB via GSPARX has collaborated with **Jabatan Kerja Raya (JKR) to install solar PV system** while currently finalizing with some public universities and healthcare providers.

We are allocating 3.5% of our forecasted PAT for our R&D activities from FY2022 onwards

WE ARE COMMITTED TO CONTRIBUTE 1% OF PROFIT-AFTER-TAX TOWARDS ENVIRONMENTAL AND COMMUNITY-RELATED PROGRAMMES

ECONOMIC & SOCIAL TRANSFORMATION



ENVIRONMENTAL SUSTENANCE PROGRAMMES



TRANSFORMING LIVES THROUGH EDUCATION



FY2020 Contributions

RM173.9 million

- Covid-19 Response Aid (MOH & State Government)
- Baiti Jannati & Mesra Rakyat
- Better Brighter Shelter
- TNB Reskilling Malaysia Initiative

- Tree for Tree
- Firefly Conservation
- Mangrove Planting Programme
- Green Energy Development Fund

- My Brighter Future
- Yayasan Tenaga Nasional
- Trust School
- Ceria Ke Sekolah
- Better Brighter Vision

- 2020 **Brand of The Year Award** (4th time)
- Sustainability & CSR Malaysia Awards **Company of the Year Award Overall Excellence**
- Global CSR Awards 2020 **Platinum – Best Environmental Excellence Award**
- **Gold – Best Community Programme Award**
- **Silver – Excellence in Provision for Literacy & Education Award**

(Please refer TNB 2020 Integrated Annual Report & Sustainability Report for further details)

RECOGNISED GLOBALLY FOR OUR CONTINUOUS COMMITTMENT TO OPERATE AS A SOCIALLY AND ENVIRONMENTALLY RESPONSIBLE ORGANISATION

Our sustainability disclosure are based on Bursa Malaysia's Main Listing Requirements and global disclosure frameworks:

- Bursa Malaysia Sustainability Reporting Guide (2nd Edition)
- Task Force on Climate-related Financial Disclosures (TCFD) framework
- GRI Electric Utilities Sector Disclosures
- United Nations Sustainable Development Goals (UN SDGs)

FTSE4Good

ESG Rating - 3.0
Rating: 0 to 5
(5 represents the highest score)

MSCI

ESG Rating - BBB
Rating: CCC-AAA
(AAA represents the highest score)

ARA
AUSTRALASIAN REPORTING AWARDS

Australasian Reporting Awards 2021

1) TNB was conferred **Gold Award** for the 4th time
2) TNB received a **Silver Award** for sustainability reporting

FORWARD GUIDANCE

Electricity Demand 2021

Forecasted at 2.9%, in line with GDP projection of 3.0% to 4.0%

RP3 (2022 – 2024)

Final stage discussion with Energy Commission

CAPEX 2021

Total : RM9.5bil

Regulated Recurring : RM7.3bil

Others : RM2.2bil

Non-Regulated Business

Strengthen existing and explore new revenue streams

5 low carbon ventures MOUs signed

Sustainability Pathway

Continuously ramping up our sustainability efforts towards achieving our net zero emission aspiration by 2050

Dividend

Continue to honour our dividend policy of 30% - 60% dividend payout ratio, based on adjusted PATAMI

APPENDIXES

TENAGA NASIONAL
Better. Brighter.

INCENTIVE BASED REGULATION (IBR)

Base Tariff

Base tariff is determined by the regulator for **every 3 years***, taking into account:

i. OPEX, depreciation of regulated assets & tax expenses of regulated entities - Transmission, Grid System Operator, Single Buyer operation, Distribution Network and Customer Services/Retail

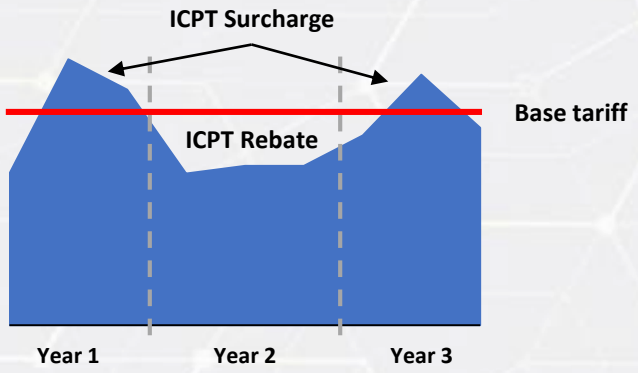
ii. Power purchase cost charged by generators to the Single Buyer

iii. Return on regulated assets (rate base) of regulated entities

* Current regulatory period, RP2 extension/interim year, is a one-year extension of RP2. The decision by EC was made due to the uncertainty in demand outlook for 2021 and the instability of the current global fuel markets following the COVID-19 pandemic.

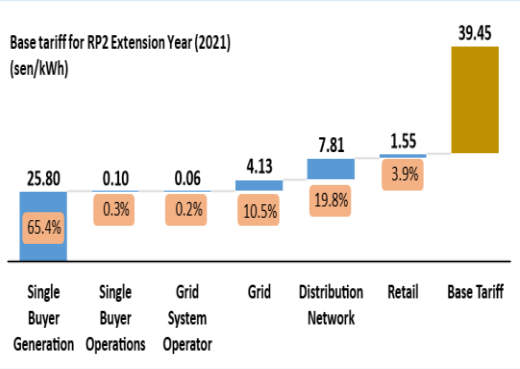
Imbalance Cost Pass-Through (ICPT)

ICPT is **6-monthly pass-through mechanism** of variations in uncontrollable fuel costs and other generation specific costs (imbalance cost) incurred by utility for the preceding 6-month period

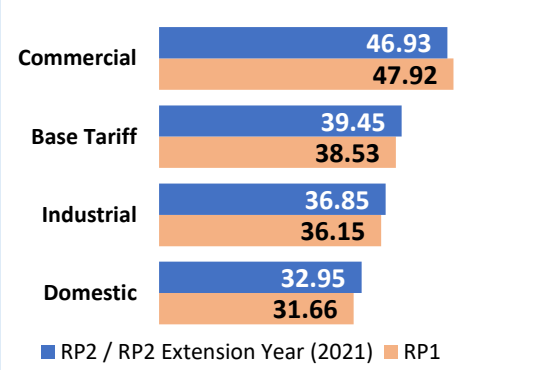


RP2 extension / interim year parameters

Average Tariff by Entities (sen/kWh)



Average Tariff by Entities (sen/kWh)



Fuel Parameters

COAL

USD67.45/MT @ RM4.212/USD

RP2 : USD75.00/MT (RM14.47/mmbtu @ RM4.212/USD)

GAS

RM27.20/mmbtu (Jan'21 – Dec'21)

RP2 :

i. RM24.20/mmbtu (Jan'18 - Jun'18)

ii. RM25.70/mmbtu (Jul'18 - Dec'18)

iii. RM27.20/mmbtu (Jan'19 - Dec'20)

Other Parameters

WACC

7.3%

RP2 : 7.3%

TARIFF

39.45 sen/kwh

RP2 : 39.45 sen/kwh

OPEX

RM6.30bn (approved OPEX)

RP2 : RM18.2bn (Avg. yearly: RM6.07bn)

CAPEX

RM7.3bn (approved CAPEX)

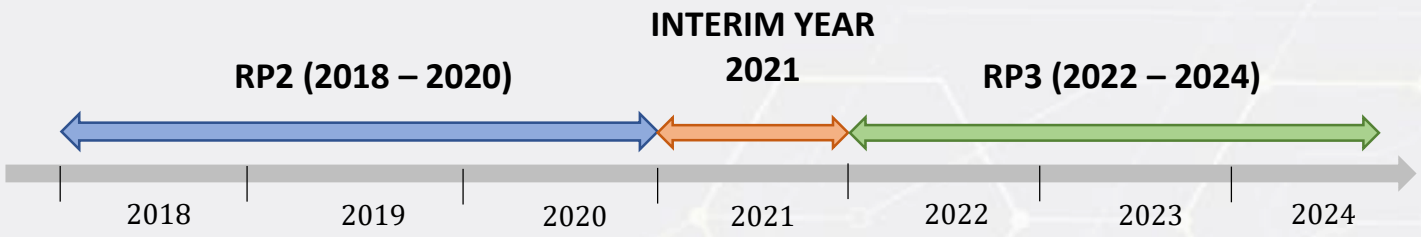
RP2 : RM18.8bn (Avg. yearly: RM6.63bn)

Regulated Asset Based (RAB)

RM62.4bn (Expected closing RAB 2021)

RP2 closing : RM59.1bn

REGULATORY PERIOD



RP2 Extension / Interim Year

- The Government has approved a one-year extension of the Second RP2 of the IBR for year 2021.
- This decision was made following the uncertainty in demand outlook for 2021 and the instability of the current global fuel markets following the COVID-19 pandemic.

RP3 Update

- We are currently in the final stage of discussions with the Energy Commission and the ministry.

ICPT surcharge and rebate position

ICPT	Surcharge / (Rebate)	Implementation Period
Jan – Jun'18	1.35sen/kWh	Jul – Dec'18
Jul – Dec'18	2.15sen/kWh	Jan – Jun'19
Jan – Jun'19	2.55sen/kWh	Jul – Dec'19
Jul – Dec'19	2.00sen/kWh	Jan – Jun'20
Jan – Jun'20	0.00sen/kWh	Jul – Dec'20
Jul – Dec'20	(2.00sen/kWh)	Jan – Jun'21
Jan – Jun'21	(2.00sen/kWh)	Jul – Dec'21

RENEWABLE ENERGY INVESTMENTS

TNB's RE Capacity: 3,475MW (as of Nov'21)

WIND
186 MW

International:
- UK (TNB Wind Ventures): 68 MW
- Turkey (GAMA): 118 MW

SOLAR
587 MW

International:
- UK (Vortex): 365 MW
- India (GMR): 26MW

Domestic:
- Large scale solar: 80 MW
- Rooftop PV: Total 116.0 MW (secured capacity)

BIOGAS & BIOMASS
13 MW

Domestic:
- Biogas: 3MW
- Biomass: 10MW

HYDRO
2,690 MW

International:
- Turkey (GAMA): 131.5 MW

Domestic:
- Large Hydro: 2,536 MW
- Mini Hydro: 22 MW

TNB's RE Strategy

International

1) **Renewable Energy Driver (UK / Europe)**
2) **Growing TNB's utility business in South East Asia (SEA)**
3) **Technology Catalyst**

Focus Market

- TNB's growth strategy will focus on selected growth markets and regions where we have presence (UK, Europe and South East Asia) and specific asset classes/technology that are key to the Energy transition.
- The country selection is based on fit to TNB strategy, elimination of high-risk countries, power growth, market attractiveness and openness to foreign investments.

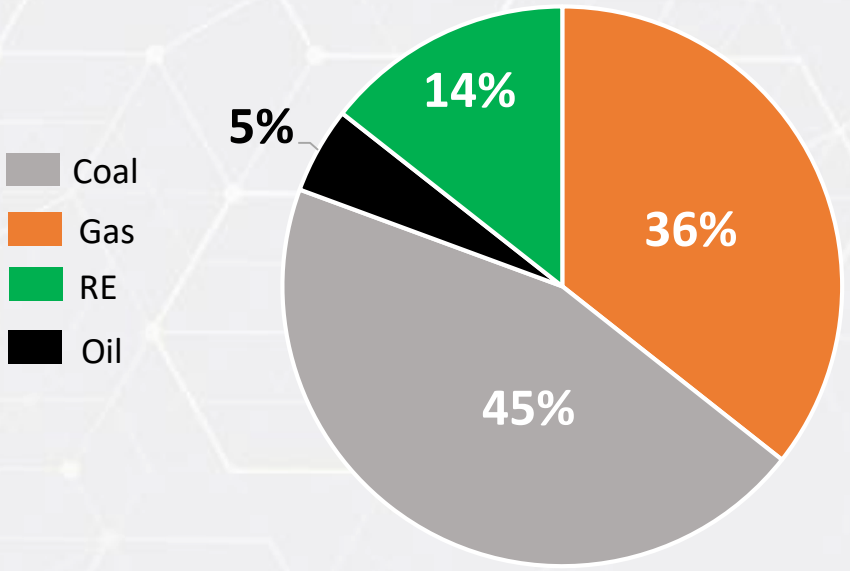
Domestic

1) **Win LSS** - Largest driver which focuses on winning local LSS bids, exploration of new entry points through NEDA and Green Corporate PPA as well as expansion on Asset Management Services.
2) **Secure Small RE** - Focus on mini hydro, biogas and waste to energy through the existing Feed-In Tariff Scheme and other initiatives.
3) **Distributed generation / rooftop solar** – To be the top solar distributed generation provider in Malaysia through GSPARX, with end to end delivery.

GROUP INSTALLED CAPACITY

Capacity as at Nov'21 (MW)

Fuel Type	Domestic	International	Total
Gas	7,024.4	1,476.0	8,500.4
Coal	9,080.0	1,650.0	10,730.0
Oil	-	1,190.0	1,190.0
Hydro	2,536.1	131.5	2,667.6
Wind	-	185.6	185.6
Solar	80.0	391.0	471.0
Total	**18,720.5**	**5,024.1**	**23,744.6**
Mini Hydro	21.8	-	21.8
Biogas	3.2	-	3.2
Biomass	10.0	-	10.0
Rooftop solar (secured)	116.0	-	116.0
Total inclusive small RE	**18,871.5**	**5,024.1**	**23,895.6**



Note: Gross installed capacity (include minority stakes), exclude SESB

IN THE NEAR TERM, WE CONTINUE TO SUPPORT AND BUILD TOWARDS ENERGY TRANSITION

Transmission system enhancements

Improving network intelligence to enable energy transition

Asset Investment Planning Enhancements	Grid Project Management Enhancements	Advance Fault Analysis System
85% of planned system upgrade completed (Q3)	100% of planned system upgrade completed (Q3)	70% of planned development work completed (Q3)

Distribution system enhancements

Smart Grid Index (SGI) 2025 target : 85% (2020: 62.5%)

Deliver a resilient, reliable system with bidirectional energy flow.

Advanced Metering Infra (AMI)	Advanced Distribution Management System (ADMS)	Volt-Var Optimisation
86% of annual AMI installation completed (Q3)	66% of planned upgrades completed (Q3)	80% of annual MVAR capacity optimized (Q3)

Retail service enhancements

74k RT*

26% Share of domestic district cooling system market (Q3)

*refrigeration ton

District Cooling System (DCS) Expansion through TNEC

- TNB has been actively involved (since 1993) in providing district cooling solutions to customers.
- DCS technology is capable of reducing 20% - 35% overall building energy consumption when compared to a standard air-conditioning system.
- In July 2021, TNB (through TNEC) has commenced its operation of the existing KLIA Cogeneration plant for a 20-year concession.
- TNB is now the main cooling energy supplier for both KLIA and KLIA2, and one of the largest domestic DCS player.

VERTICALLY INTEGRATED UTILITY COMPANY SERVING MORE THAN 9.0MIL CUSTOMERS THROUGHOUT PENINSULA MALAYSIA

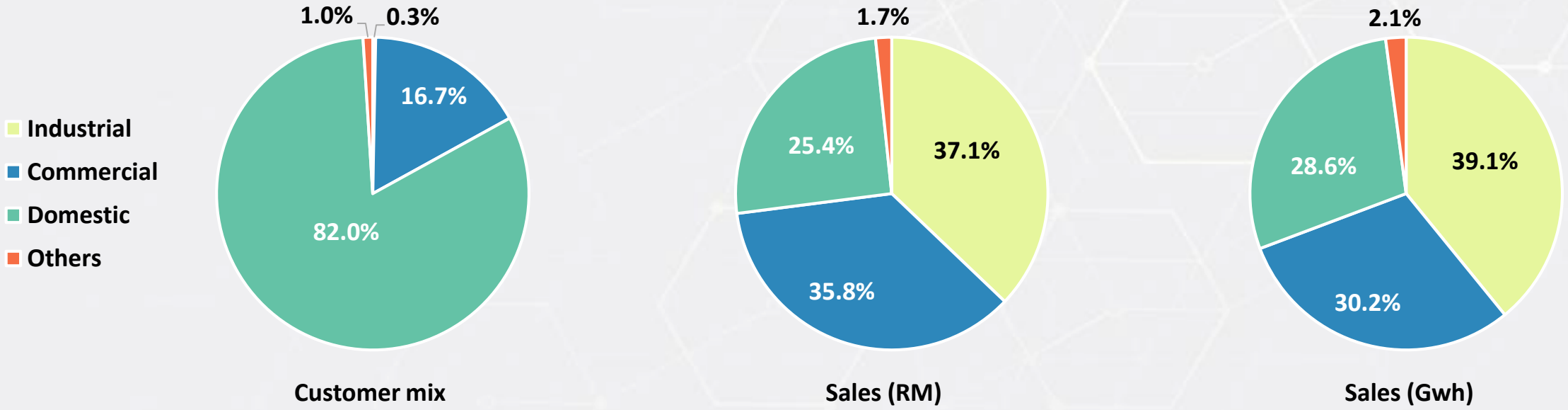
Total Customer
TNB: 9.6mn
SESB: 0.7mn

Total Employees
35,071

Total Assets
RM174.9bn

Total Unit Sold
82,904.2 GWH

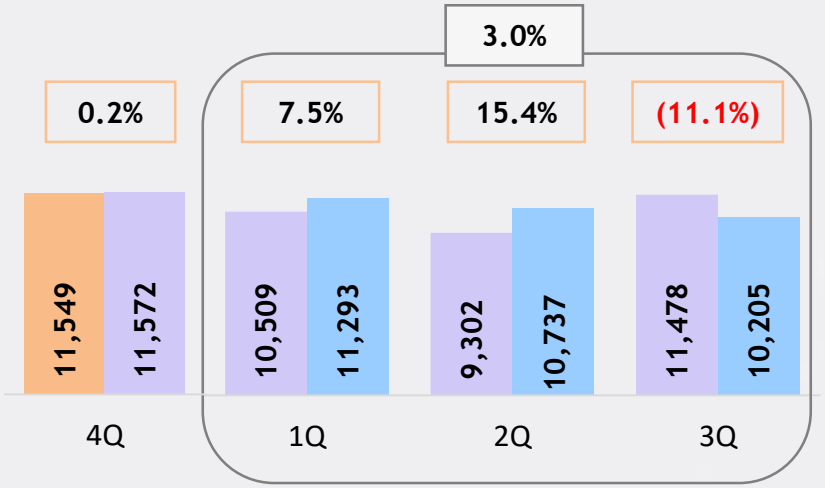
TNB Sectoral Sales Analysis*



Note: Data / Info as at Sep 2021
* Peninsular Malaysia only (TNB exclude SESB and other subsidiaries)

HIGHER Y-O-Y ELECTRICITY DEMAND IMPROVED DUE TO RESUMPTION OF BUSINESS OPERATION

Industrial



9MFY'21 main contributors for the drop in commercial sector:

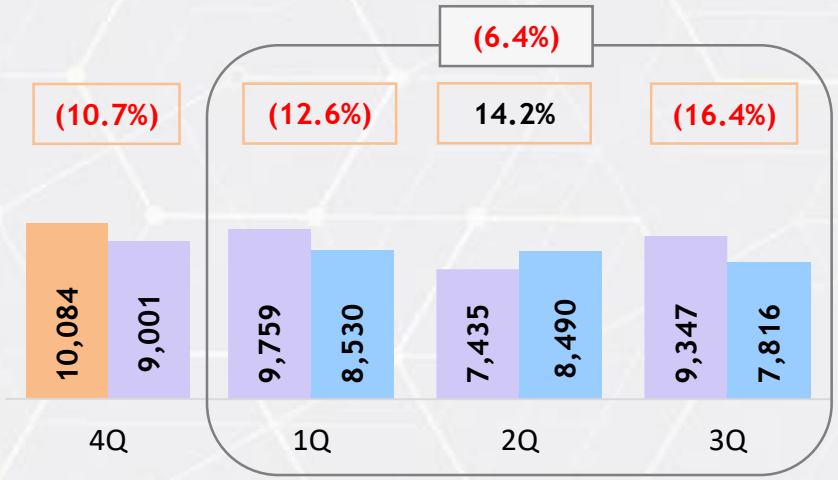
- Retails
- Accommodation
- Educational

Unit Sales (GWh) Growth

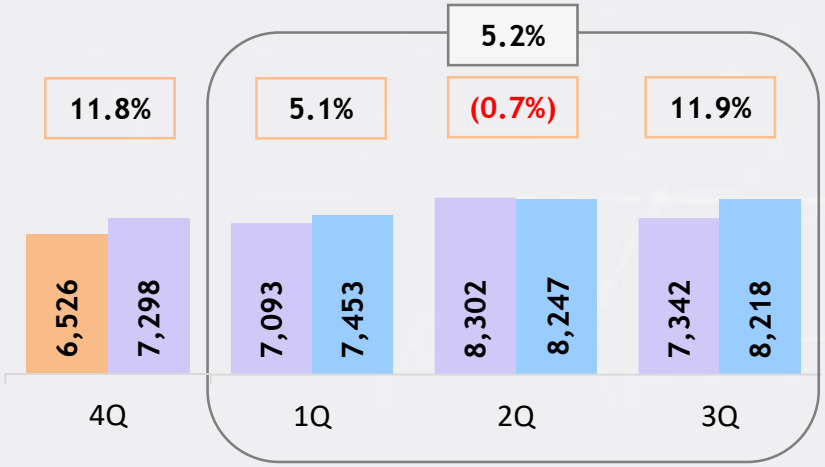
2019
2020
2021

Y-o-Y
Q-o-Q

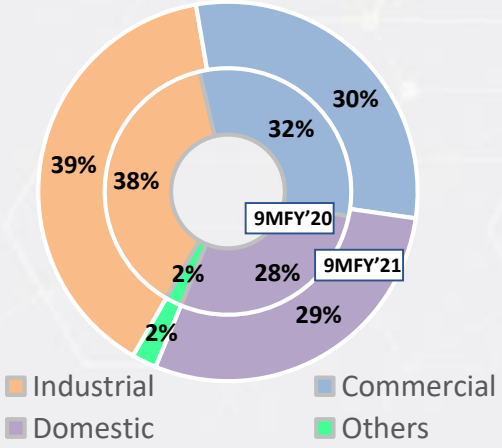
Commercial



Domestic

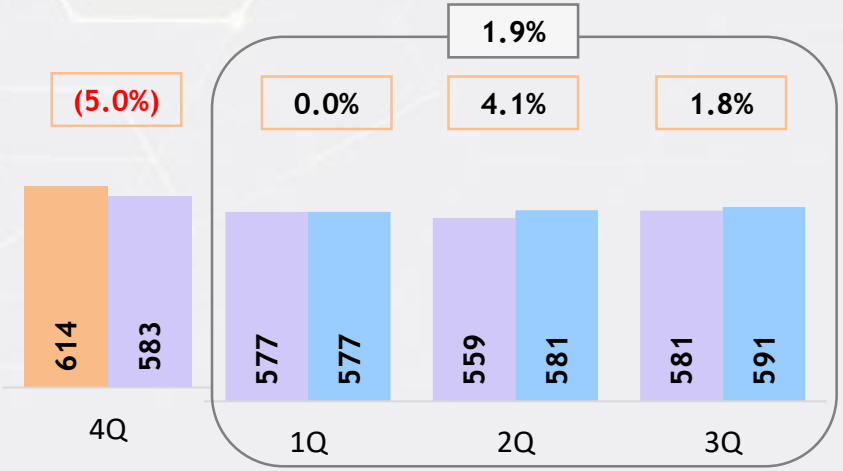


Sector Mix (%) 9MFY'21 vs 9MFY'20

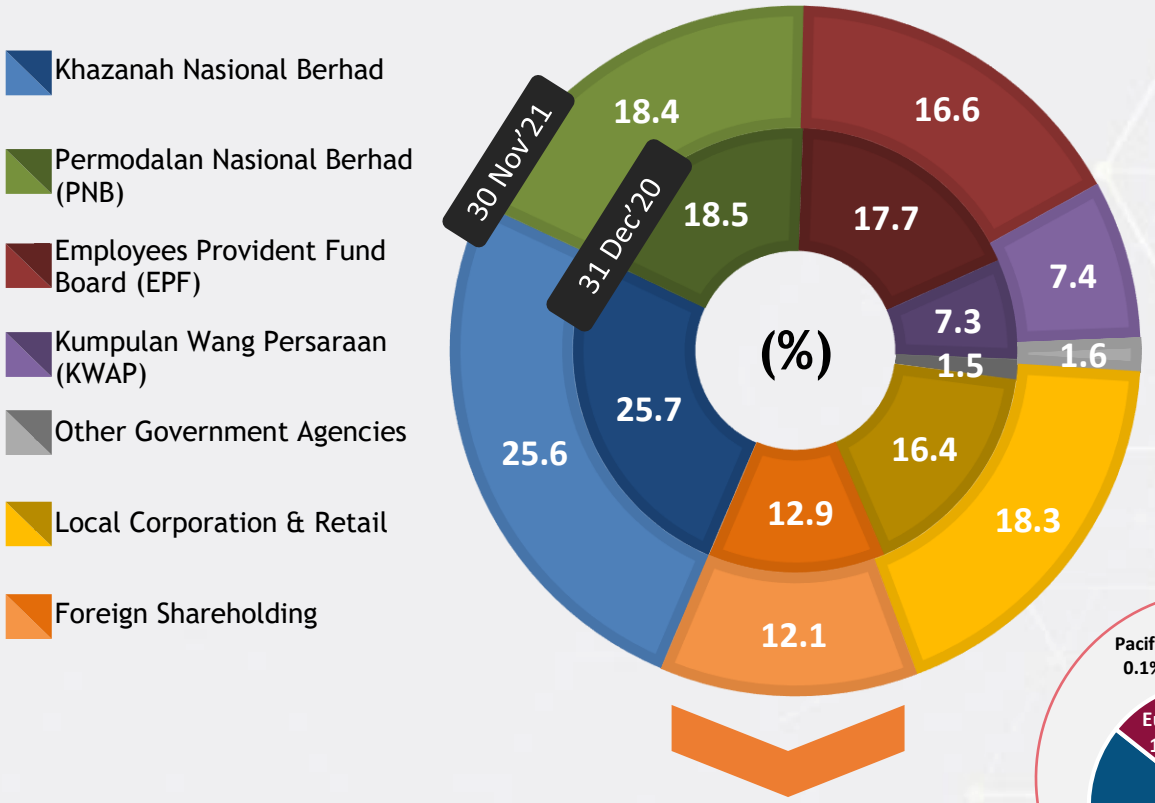


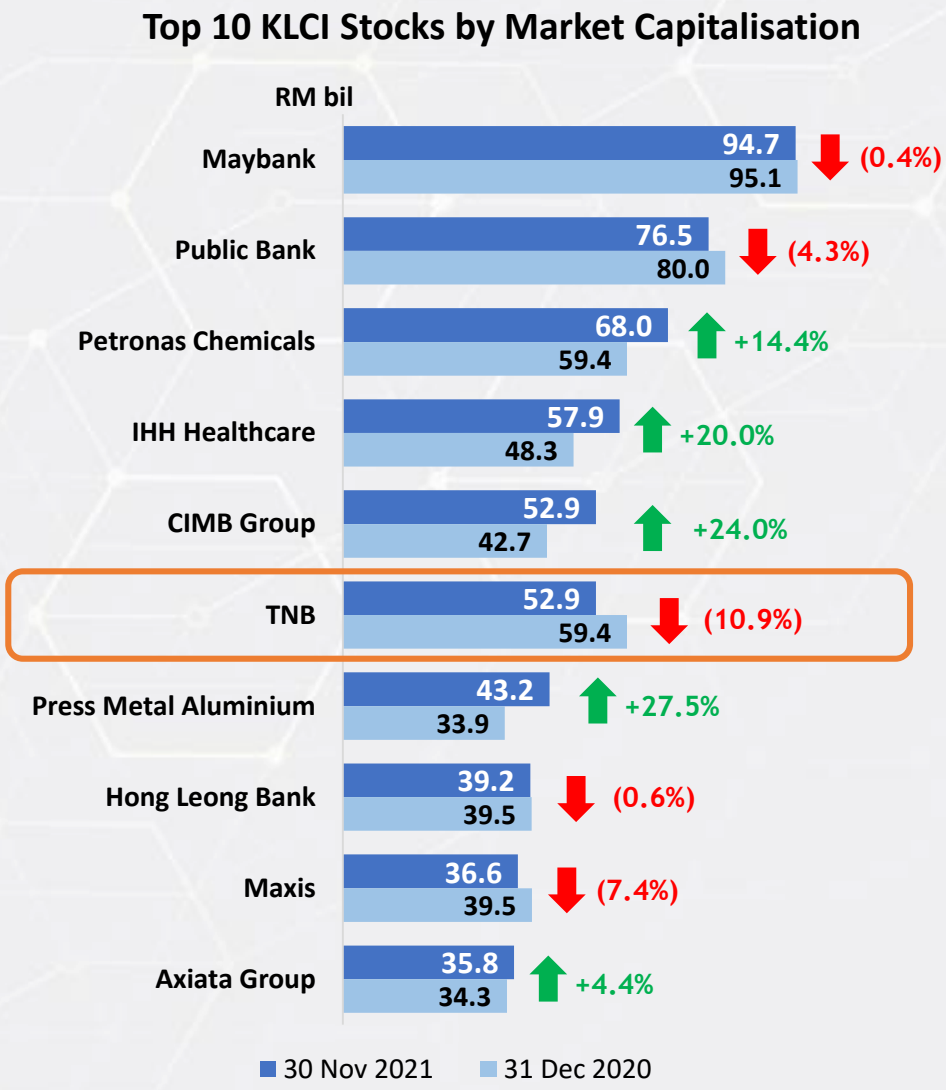
Others

*includes Agriculture, Mining & Public Lighting



TNB MARKET CAPITALISATION OF RM52.9BIL AS AT 30 NOVEMBER 2021





Note:
1. Top 10 KLCI ranking by Market Capitalisation as at 30th November 2021
2. TNB Latest Market Cap: RM53.4bil (6th), as at 31st December 2021

Source: Share Registrar, Bloomberg and IR Internal Analysis

THANK YOU

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