

EMPOWERING SUSTAINABLE FUTURE

Changing the face of energy and empowering a brighter tomorrow for continuous value creation.



Scan to Visit
Our Website

Certified as One of The Best

Our ISO certification proves our qualification and recognition as a power generation provider that achieves global standards.



CERTIFIED TO ISO 55001:2014
CERT. NO. : AMS 00101



CERTIFIED TO ISO 45001:2018
CERT. NO. : OSH 00104



CERTIFIED TO ISO 14001:2015
CERT. NO. : EMS00791

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**We Are
TNB Genco**



We Empower Sustainable Progress

Known as TNB Power Generation or TNB Genco, we are the leading entity of Tenaga Nasional Berhad's power generation services, providing secure, stable, reliable and sustainable power to Malaysia and beyond. Incorporated as a wholly-owned subsidiary of TNB on 1st August 2019 and fully operationalizing on 1st October 2020, our journey focuses on empowering energy transformations to contribute to the long-term demands of power-hungry businesses both locally and abroad.

We take ownership of the operations and asset management through E2E capabilities ranging from plant development, Operation and Maintenance to End-of-Life Management.

Our Aspirations

We aspire to become a leading power generation solutions provider that sustainably delivers value to all stakeholders by focusing on four strategic initiatives:

- Turnaround Excellence
- Productivity Uplift
- Asset & Service Expansion
- Sustained BAU performance within PPA levels

“

At TNB Genco, our commitment stands in driving further

Growth, Efficiency and Performance. ”

Our Next Step

As we grow beyond serving the massive energy demand, we will accelerate plant turnaround programs for new fleets and sustain the impact of value uplifts, develop a pipeline of new assets, plant-ups and service businesses and unlock productivity savings.

Empowering Progress

It is our business to build yours.

Harnessing power in the ever-changing landscape of the energy industry is our speciality. We empower businesses just as we power up houses and buildings with the energy that people need to step into a future full of evolutions.

We are proud owners of cutting edge innovations that spur advancements of sustainable power generation technology and its demanding expertise. With formidable commitments and end-to-end competency, we operate, manage and provide solutions to more than just generation assets, but also to the ever needed effort of change.

Take a glance at our services



Asset Management

A laser-focused approach on plant performance efficiency and return optimisations to our stakeholders.



Operation & Maintenance (O&M)

Streamlining daily operations and management of assets and facilities for continuous efficiency and long-living capacity.



Maintenance, Repair & Overhaul (MRO)

Comprehensive plant solutions to maintain, preserve and sustain performances and reliability for combined cycle, open cycle, conventional and hydro technologies.



Test & Diagnostic

Identifies plant performance improvement opportunities through detailed assessments on components and equipment, ensuring standard compliance and regulatory requirements are met.



Engineering, Procurement, Construction & Commissioning (EPCC)

An end-to-end turnkey contractor with established expertise and embellished lines of talents to procure efficient management for top of the line results.

TNB Genco Across The Globe

Asset Owner

3,400+

Total Workforce

2,900+

Total Technical Workforce

Malaysia

13

Power Plants (Thermal and Hydro Power Stations)

Total capacity: **14,038.53 MW**

7

Total Technical Specialist

2

Port Terminals

Operation & Maintenance Operator

Kuwait

170MW

Total Installed Capacity for Doha West Gas Combined Cycle Gas Turbines (CCGT) Power Plant Natural Gas Distillate

Shuaiba North Co-Generation (Power & Distillation) Plant

Pakistan

1,233MW

Total Installed Capacity for Balloki Combined Cycle Gas Turbines Power Plant Natural Gas

252MW

Total Installed Capacity for Sabiya, Integrated Water and Power Plant Natural Gas Distillate

Cambodia

1

Power Plants Technical Services Agreement

Together with our subsidiaries, TNB Remaco and Integrax, we have ventured into new regions of opportunity. Thus, bringing home vigorous profits and enhanced proficiency that is distributed to the rest of our stakeholders. We believe in a collective effort, one that brings bigger impacts to our movement towards a changing landscape of energy consumption.

Marking New Territory of Power

Known as an energy powerhouse in Malaysia, Tenaga Nasional Berhad embarked on a massive reconstruction of its commercial and operational organisation. Foreseeing a massive change in the energy industry, the utility giant took a radical reformation. This is where TNB Genco began.

Our incorporation helmed the objective of channelling TNB power generation services - opening a new horizon in establishing accelerated progress in clean energy exploration and implementation apart from dependable power delivery.

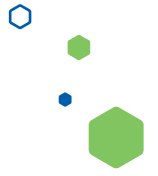
2016



2016

TNB Plans of Reform in Motion

TNB begins its plan to evolve beyond a utility provider by initiating a set of key enablers such as corporate restructuring to meet future and global demands.



2019



29th July 2019

Announcement of the Reorganization

TNB announced its Generation and Retail businesses will be reorganised to its wholly-owned, subsidiaries, TNB Power Generation (TNB Genco) Sdn Bhd and TNB Retail Sdn Bhd.

2020



1st July 2020

Merging into a Single Entity: TNB Genco

Energy Venture Division, Generation Division, TNB Repair & Maintenance Sdn Bhd and Integrax Sdn Bhd were merged into a single entity named Power Generation Division (PGD) in an interim period before the incorporation of TNB Power Generation Sdn Bhd (TNB Genco).

2020



1st October 2020

A subsidiary of Tenaga Nasional Berhad

TNB Genco officially became a subsidiary of Tenaga Nasional Berhad, spearheading its power generation services to provide secure, stable, reliable and sustainable power to Malaysia and beyond.

Committed to Delivering Sustainable Values



At the core of our business, lies integrity and accountability of socially responsible investments in the energy industry mix. In line with our parent company TNB, we carry the very same commitment of implementing a robust framework of ESG practices into the nature of our business.

Our dedication lies in empowering consistent progress towards positive impacts to every touchpoint of our organisation. We want to ensure that we are constantly aligning our business direction and efforts towards a more sustainable value creation. Additionally, we aim to attract commitments from increasingly climate-conscious investors.

Our Sustainability Pillars

As the world evolves, we do too - and for the better. This is where we aim to make a difference.



Economic

Providing reliable and efficient energy in the local Energy Supply Industry (ESI).



Governance

Reinforcing ethical business practices and forward-looking culture.



Social

Developing long-term and meaningful relationships with our customers, stakeholders and communities.



Environmental

Minimising our environmental impact wherever we operate.

Taking on Sustainability

To amplify our efforts in upholding sustainability and accountability in our line of service, we've taken part in contributing to 3 out of the 17 Sustainable Development Goals (SDGs) by the United Nations.



SDG7 - Supplying Cleaner Energy to All

Ensure access to affordable, reliable, sustainable and modern energy for all

In fulfilling the SDG7 we implement the latest Combined-Cycle Gas Turbine (CCGT) that delivers up to 50% more electricity from the same fuel than a traditional simple-cycle plant. This ensures minimal energy wastage, accelerating efficiency while lowering carbon footprints up to 40% leading to cleaner energy supplies. Alongside thermal power generation, our network of hydroelectric schemes across the country ensures a consistent supply of renewable energy to the community.

We place energy efficiency and renewable energy at the forefront of our services through state-of-art infrastructure developments. Our CCGT power plants have contributed a cleaner domestic energy generation capacity of 5.13GW.



SDG11 - Sustainable Cities and Resilient Communities

Make cities and human settlements inclusive, safe, resilient and sustainable

Aligning our efforts to fulfil SDG11, we are committed to making a positive impact on the communities around our power stations and facilities. While we supply energy, these rural areas go through developments that contribute to the improvements of basic amenities and new job opportunities. We also aim to uplift the community's well being through resilient and sustainable infrastructures.

With the initiation of our latest hydro scheme development in Nenggiri, Kelantan, the surrounding Orang Asli settlement and communities will benefit from increased economic opportunities by 2026. This will stimulate a tremendous change in their daily lives.





SDG13 - Taking Climate Action

Take urgent action to combat the impact of climate change

Our efforts in balancing business continuity and environment preservation surpass the mechanics of philanthropy. We initiate comprehensive efforts to ensure sustainable positive impacts for surrounding communities, the environment and its resources.

Environment

- A total of 23,700 mangrove saplings planted since 2013 in our annual mangrove planting programmes (over 1000 planted yearly) to promote healthy coastline preservation and fisheries cultivation.
- Kelah Sanctuary conservation programme implemented alongside the development of Hulu Terengganu and Sungai Perak Hydro Schemes to preserve the aquatic ecosystem.

Sustainability

- Integration of one of the world's largest and most efficient power generating models, the first commercial GE 9HA.02 gas turbine to our Southern Power Generation's (SPG) 1.4GW natural gas-fired power plant in Southern Malaysia.
- Commercialisation of the Tuanku Muhriz Power Station, Jimahin Port Dickson, Negeri Sembilan, with twice the capacity of 1GW to expand our Ultra Supercritical Coal-Fired (USC) power plants.

Invest in Energy of The Future





Asset Management

Spearheading the nation with sustainable electric supplies is at the forefront of our asset management services. Our focus is on improving plant performance and increasing shareholder returns. This is in line with our aspiration for growth, efficiency and performance. Our assets portfolio is focused on renewables and energy efficiency, ensuring a consistent stream of clean power supplies.

All assets are managed meticulously by our experienced teams, providing fully integrated lifecycle solutions for asset management. Our services:



Technical and Commercial Performance, and Monitoring Analysis



Turnaround Management



Asset Major Maintenance



Sharing of Best Practices



Operation and Maintenance

Assets Portfolio Energising Every Part of the Peninsular

We control **almost 50%** of the overall power generation market share with a total installed capacity of **14.1GW** out of **28.3GW**.

Our Assets' Capacity & Generation Mix

Total Capacity
14,038.53MW



3 Coal-Fired
Power Plants



7 Gas-Fired
Power Plants



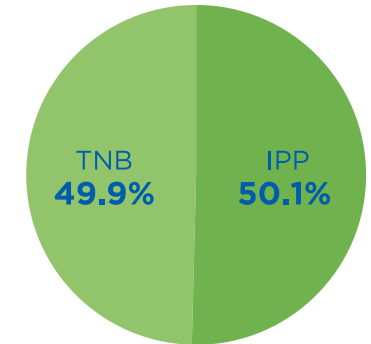
3 Hydroelectrical
Schemes



2 Port Terminals

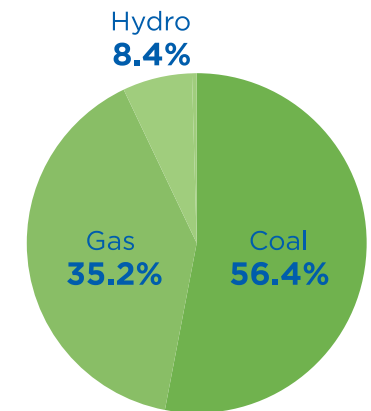
Overall Power Generation Market Share

Total System Capacity
28.3GW



TNB Genco Generation Mix for The Year 2021

Total Capacity Mix
81.8TWh



Footnote:

Hydro: The sum of Hydro generation consists of SGPK, KNYR & CAMH excluding mini-hydros.



3 Hydro Power Stations

Total capacity

2,536MW

In alliance with the government's aspiration to increase the share of renewable energy (RE) in its installed capacity to 31% in 2025, we continually develop our Hydro Schemes for sustainable energy production catered to local markets and surrounding communities. Supplementing and growing our capacities in the energy supply mix, we establish a framework of profitable returns to our stakeholders while advocating energy transition.

Igniting a Brighter Perak

Sungai Perak Hydro Power Station, Perak.

Total Capacity

1,249MW

Holding a record of over 50 years of operation, the Sungai Perak Hydroelectric Scheme delivers over 1,937 GWh of clean energy every year. With one of the first operating hydropower stations being completed in 1978, our ceaseless efforts are written into the nation's history as we continue to transform and innovate.

Other Assets

Kenyir Hydro Power Station, Terengganu.

Capacity:

665MW

Cameron Highland Hydro Power Station Pahang.

Capacity:

622MW



7 Gas-Fired Power Stations

Total capacity

5,134MW

As part of our aspiration to accelerate growth, performance and efficiency, TNB Genco focuses on the expansion of Gas-fired Power Stations. Our Combined Cycle Gas Turbine power plants produce 50% more electricity than a simple-cycle plant, operating at greater efficiency and accommodating power demands instantaneously.

Our Award-Winning Asset

Track 4A is POWER's Plant of the Year for 2021

Sultan Ibrahim Power Plant
Pasir Gudang, Johor.

Total Capacity

1,440MW

Including SIPP Energy Percentage
Equity Stake of 30%

Track 4A astounds for its transformative advancement and array of first-of-their-kind equipment integration of the world's first commercial GE 9HA.02 gas turbine. It is a state-of-the-art gas turbine technology that is one of the world's largest and most efficient operating modules with a generation capacity exceeding 60%.

Other Assets

Prai Power Station,
Penang.

Capacity:

1,071MW

Gelugor Power Station,
Penang.

Capacity:

310MW

Connaught Bridge
Power Station,
Klang, Selangor.

Capacity:

375MW

Putrajaya Power Station,
Putrajaya.

Capacity:

252MW

Tuanku Ja'afar Power
Station,
Port Dickson, Negeri
Sembilan.

Capacity:

1,411MW

Pasir Gudang Energy
Power Station,
Johor.

Capacity:

275MW



3 Coal-Fired Power Stations

Total capacity

7,680MW

As one of the more conventional power generation methods in Malaysia, TNB Genco refocuses efforts into fully optimising the operational efficiency of Coal-fired power plants. With award-winning clean coal usage and technology, we strive to align our energy supplies with our values in transitioning towards a sustainable energy chain for the nation.

Our Award-Winning Asset

ASEAN Energy Awards 2021 for Clean Coal Technology

Tuanku Muhriz Power Station (TMPS),
Negeri Sembilan.

Total Capacity

2,000MW

Including Mitsui & Co Ltd and The Chugoku Electric Power Co Ltd
Percentage Equity Stake of 30%

The TMPS receives international recognition with its technology of two Ultra-Supercritical plants that reach a total capacity of 2,000MW at 40% efficiency. Actively minimising carbon emissions, TMPS is changing the face of conventional power generation.

Other Assets

Sultan Azlan Shah Power Station
Manjung, Perak.

Capacity:

4,080MW

Sultan Salahuddin Abdul Aziz Power Station
Klang, Selangor

Capacity:

2,200MW

Including Malakoff Percentage Equity Stake of 40%



2 Port Terminals

Alongside Integrax, a wholly-owned subsidiary of TNB Genco, we establish streamlined processings and managements of transportations, overhaul and operations of fuels and resources for our power plants. With upgraded accessibility, we ensure utmost efficiency in maintaining our energy services to provide reliable power supplies to our consumers and maximise returns for our stakeholders.

Our Award-Winning Asset

Best Specialist Dry Bulk Port/Terminal from the IBJ Awards

Lumut Maritime Terminal
Perak.

Partly owned by Perak
Corporation with percentage
equity stake of 50%

The 25-year-old port achieves official recognition from the renowned International Bulk Journal (IBJ) organisation for its efficiency and top expertise in handling various bulk shipments, catering to both import and export of transshipment goods, edible cargo and LNG products for the regional market.

Other Asset

Lekir Bulk Terminal, Perak

External Operation and Maintenance Services

Entrusting our wholly-owned subsidiary, TNB Remaco with External Operation & Maintenance Services for asset operational management, we collaborate to deliver exceptional expertise in power station life-cycle optimisations and preservation. Our 25 years of experience ensures that assets under our care stay within peak performance, reducing unforeseen costs and risks while maintaining top-rate operating efficiency.

We are proficient in handling the diverse needs of energy related industries, with specialisation in power plants technologies such as gas, steam, hydro turbines, generators and beyond. Our team of specialists ensures that businesses benefit from tangible and measurable results by efficiently handling daily operations under ideal ecosystems.

Global Presence

Our O&M services are procured across countries such as Kuwait, Pakistan, Cambodia and Saudi Arabia.

Diverse Specialisation

Diverse Specialisation - Gas, steam, hydro turbines, generators, you name it. We deliver scalable results no matter the kind of technology used.

O&M Assets Under Our Governance



Domestic

- Diesel Plant Units
- Generator Sets
- Coal Stockyard O&M
- LTSA for PETRONAS Centralised Utility Facilities



International

- Balloki CCGT, Pakistan
- Doha West Gas CCGT, Kuwait
- Sabiya IWPP, Kuwait
- Annual Maintenance Contract for MEW (I&C, Mechanical & Crane), Kuwait



Technical Services Agreement

- EDC Diesel Plant, Cambodia
- MHPS / Toshiba

Maintenance, Repair and Overhaul (MRO)



TNB Genco is the solutions provider of choice for comprehensive MRO services. Our extensive portfolio and experience guarantee a holistic approach to the optimisations of various power plants' needs, with expertise on technologies such as combined cycle, open cycle, conventional and hydro technology. We integrate extensive strategies to ensure facilities run on peak performance capacity for maximised returns to our stakeholders.

Our strategies for your business

- Total End-to-End Power Plant Solutions
- Predictive Asset Maintenance
- Efficient Execution of MRO Management
- Innovative Solution Deliverables



Maintenance Services

- Mechanical Field Services (Gas Turbine, Steam Turbine, Hydro Turbine (Francis, Kaplan, Pelton), BOP (Pumps, Fan, Valve, Gearbox), Low-Speed Balancing)
- Electrical Field Services (Generator, C&I, Commissioning)
- TA Services (OEM Certified (MHI), Internally Certified)
- Boiler Services
- Diesel Genset Rental
- Power Plant Solution Provider
- Long Term Maintenance Contract



Repair Centre

- GT Parts Repair, Bearing Re-metalling
- In-Situ Repair
- Pumps & Gearbox Refurbishment
- Reverse Engineering
- Spare Parts Fabrication & Supply
- Hydro & Pump Parts Repair
- Complete retrofitting solution (mechanical, electrical, C&I)
- LM 2500 Level 2 Workshop

Test and Diagnostics

Power plant management requires a high level of technology and component dependability. We monitor compliance to standards and regulatory requirements in order to discover plant performance improvement possibilities. Our team of professionals at TNB Genco is professionally trained and equipped with cutting-edge technology to satisfy all of the market's testing and diagnostics requirements.

TNB Genco provides a diverse range of testing and measuring services to its clients. Thanks to our modular approach to projects, every stage of evaluation can be carried out individually from the others, allowing a greater level of versatility.



Our Services Package

- | | | | |
|--|---|------------------------------------|--|
| 01 Plant Performance & Test | 02 Plant & Equipment Calibration | 03 Investigation & Analysis | 04 Electrical & Mechanical Diagnostic |
| 05 Risk based inspection (RBI) / Reliability Centered Maintenance (RCM) | 06 Non-destructive Testing (NDT) | 07 Plant Upgrade | 08 Asset Maintenance & Monitoring |
| 09 Cable Offline Partial Discharge Testing (PD) | 10 Grid Code Test | | |

Engineering, Procurement, Construction and Commissioning (EPCC)

Engineering, procurement, construction, and commissioning (EPCC) contracts are the most common type of turnkey construction contract undertaken by TNB Genco to complete construction operations on last-scale, complex infrastructure projects.

Our project execution is focused on three key elements



People

Provide a group of talented employees with the necessary skills and knowledge.



Process

Developing a more effective and efficient project delivery process.



Technology

Creation of a cloud-based project management platform to provide timely project reporting, effective risk management, and efficient project execution.



Engineering

TNB Genco's engineering is the product of a comprehensive collaboration between skilled discipline engineers, veteran project management, and a diversified group of project engineers.



Procurement

TNB Genco follows the highest ethical requirements in its worldwide procurement practices to develop and implement coordinated strategies, structures and processes to ensure top-quality delivery of every project.



Construction

TNB Genco engages with the client's project champion from the initial site survey to the last bolt installation to guarantee that all contractors and subcontractors are functioning to their full potential.



Commissioning

The Commissioning Process is designed to improve the integrity of the finished project by emphasising the design and constructing teams on TNB Genco's objectives for a functional and energy-efficient structure.

Forging Lasting Partnerships

In the business of energy, our organisation's practice does not stray far from the nature of our power plants. Our consistency is built upon a component of complex collaborations with our subsidiaries.

Just like the process in our power plants, our networks of partnerships are essential to promote a circular ecosystem of constant progress, making us the leading power generation company of our time.

Our Subsidiaries



TNB Repair And Maintenance Sdn. Bhd. (TNB Remaco), founded in 1995, is a fully owned subsidiary of TNB Genco. It specialises in energy-related industrial operation and maintenance (O&M), maintenance, repair and overhaul (MRO), with a specialised focus on power plant technology. TNB Remaco provides installations and equipment and covers extensive installations locally and internationally, breaking barriers and servicing countries such as Saudi Arabia, Pakistan, and Kuwait.



As a fully owned subsidiary of TNB since 2016, Integrax Berhad has continued to expand its experience as a prime service provider in port management, dry bulk management, and logistics to fulfil its obligations and responsibilities as a subsidiary of TNB Genco. Specialising in port and bulk cargo handling on terminal jetty and located strategically near the Malacca Straits, Integrax provides facilities services for delivering coal to TNB Janamanjung Power Plant.

Establishing Viable Prominence



2021

Jan-Feb 2021

Southern Power Generation Project - 1440MW

Commercial Operation

Date:

Unit 1 : 1 January 2021

Unit 2 : 19 February 2021

2020

Sept 2020

Bukit Selambau Project - 30MW

Commercial Operation

Date:

8 September 2020

2019

Aug-Dec 2019

Jimah East Power Project - 2000MW

Commercial Operation

Date:

Unit 1: 22 August 2019

Unit 2 : 27 December 2019

2018

Nov 2018

Sepang Solar Project - 50MW

Commercial Operation

Date:

23 November 2018

2017

June-Sept 2017

Hydroelectric Hulu Terengganu Project - 7.5WM (Tembat Station)

Commercial Operation

Date:

Unit 1: 16 June 2017

Manjung 5 Project - 1000MW

Commercial Operation

Date:

28 September 2017

2016

Feb-Dec 2016

Prai Combined Cycle as Turbine (CCGT) Project - 1071.43MW

Commercial Operation

Date:

20 February 2016

Connaught Bridge Project - 375MW

Commercial Operation

Date:

20 February 2016

Hydroelectric Ulu Jelai Project - 372MW

Commercial Operation

Date:

Unit 1: 27 September 2016

Unit 2: 15 August 2016

Hydroelectric Hulu Terengganu Project - 7.5MW (Tembat Station)

Commercial Operation

Date:

Unit 2: 23 December 2016

2015

Apr-Dec 2015

Manjung 4 Project - 1000MW

Commercial Operation

Date:

14 April 2015

Hydroelectric Hulu Terengganu Project - 250MW (Puah Station)

Commercial Operation

Date:

Unit 1: 3 December 2015

Unit 2: 31 December 2015

2010

Jan 2010

Shuaibah Independent Water And Power Project (Shuaibah IWPP)

Commercial Operation

Date:

14 January 2010

2009

Nov 2009

Shuaibah Expansion IWP Project

Commercial Operation

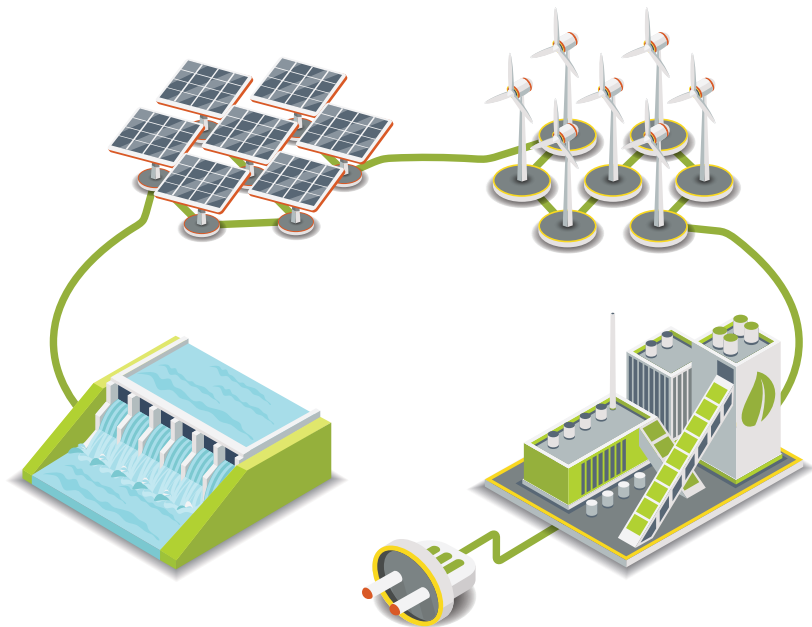
Date:

17 November 2009

Driving Networks of Viable Equity

Investment & Asset Portfolio

Expanding across the market cycle, we anchor our investments towards a goal of realising Net-Zero Emissions Aspiration by 2050. We integrate feasible investment practices that encourage growing returns and ensure that our shared values toward a greener tomorrow continue to accelerate innovations in energy generation.



TPGSB Corporate Structure



*Excluding dormant, in members' voluntary winding up, associates, joint ventures and simple investment subsidiaries

TNB Power Generation Sdn. Bhd.

100% Ownership

TNB Repair and Maintenance Sdn. Bhd.

100% Ownership

Tenaga WHR 1 Sdn. Bhd.

100% Ownership

TNB Operations & Maintenance International LTD

100% Ownership

TNB Remaco Pakistan (Private) Limited

100% Ownership

Oasis Parade Sdn. Bhd.

100% Ownership

Integrax Berhad

100% Ownership

Pelabuhan Lumut Sdn. Bhd.

100% Ownership

Lekir Bulk Terminal Sdn. Bhd.

100% Ownership

Integrax Maritime Services Sdn. Bhd.

100% Ownership

TNB Prai Sdn. Bhd.

100% Ownership

TNB Manjung Five Sdn. Bhd.

100% Ownership

TNB Western Energy Berhad

100% Ownership

TNB Northern Energy Berhad

1. SJ Putrajaya,
2. SJ Gelugor, Pulau Pinang
3. SSJ Sungai Perak, Gerik, Perak

- | | |
|-------------------|-------------------|
| I. SJ Temengor | II. SJ Bersia |
| III. SJ Bersia | IV. SJ Kenering |
| V. SJ Upper Piah | VI. SJ Lower Piah |
| VII. SJ Chenderoh | |

4. SJ Sultan Ismail, Pergau, Kelantan
5. SJ Sultan Mahmud, Kenyir, Terengganu
6. SSJ Cameron Highlands, Pahang

- | | |
|--------------------------|-----------------------------|
| I. SJ Sultan Yusoff, Jor | II. SJ Sultan Idris II, Woh |
|--------------------------|-----------------------------|

7. SSJ Cameron Highlands (Mini Hydro)

- | | |
|------------------------|-----------------|
| I. SJ Habu | II. SJ Odak |
| III. SJ Robinson Falls | IV. SJ Kg. Raja |
| V. SJ Kuala Terla | |

*TPGSB as the IPP of all 7 power plants

Our Progressive Dedication





Empowering Change, Energising Connections

The foundation that upholds our business are indisputably the people, community and environment surrounding us. At TNB Genco, we acknowledge that value must be distributed to more than just our stakeholders, it must be shared with all.

Conservation of Fish Sanctuaries and Natural Resources in Royal Belum

TNB Genco and TNB Research Sdn Bhd has contributed to the preservation of the two Kelah sanctuaries in Tembat, Hulu Terengganu, and Sungai Tiang, Hutan Royal Belum, Perak, in accordance with our commitment to achieving the SDG13 - Climate Action objective. Tenaga Nasional Bhd and its subsidiaries have pioneered an Aquatic Ecological Conservation Program in the Hulu Terengganu Hydroelectric Power Stations.

The Aim

- **Preserve and boost the local fish population**, especially the Kelah fish, also known as the Mahseer
- **Minimise the negative effects of hydropower project development** on aquatic ecosystems
- **Promote eco-tourism opportunities** for the locals and nearby communities

The Progress

772

Kelah fishes relocated, including the largest Kelah fish weighing around 15kg.

RM6 Mil.

invested on environmental conservation research in hydroelectric projects in Hulu Terengganu and Sungai Perak

Conservation of Rafflesia

Continuing our effort in taking proactive measures for climate action, we have found three species of Rafflesia in **Royal Belum near Sungai Perak HydroSchemes**. Since June 2016, a budget of more than RM5 million has been set aside to protect and nurture Royal Belum's natural resources, particularly the world's largest flowers in the vicinity of our hydropower plants.

Mangrove Planting

Our proactive climate action began in 2013, right at the heart of our operations, Sultan Azlan Shah Power Station in Manjung where we conducted an **annual mangrove planting programme. Over 10,600 saplings were planted in a four-hectare land in Manjung** on the first phase, and thousands more have been planted yearly since then. We aim to plant seven thousand more by the end of December 2022.

Today, our efforts have branched all across Peninsular Malaysia, moving in parallel with organisations such as Malaysia Nature Society and the Ministry of Energy and Science (KeTSA) to contribute to a greener environment and counter carbon footprints.

Project Specs

23,700

Mangrove saplings planted (*as of 2022)

6

States involved

100 Mil.

Tree Planting Campaign Participant

Sustainability Pathway



Strategy Towards Energy Transition

Our journey towards realising our 2050 aspiration consists of 3 key phases; reducing, lowering and finally neutralising GHG emission intensity. We began our ambitious initiatives during the establishment of TNB Genco - although the seeds of change were planted much earlier.

With an escalated necessity toward greater climate action, we are shifting gears to accelerate our transition to cleaner energy. We invest in efficient technologies and expand our renewable energy assets across continents for faster results.



Our Three Investment's Focus Area:

a) Emerging Technology

We initiate in-depth exploration through collaborative partnerships with external and internal parties for the feasibility studies of:

- **Ammonia (NH₃) Co-Firing at Coal Plants**

To gauge Ammonia's co-firing potential, we conduct multiple ammonia test firings at our combustion test rig, fully measuring its effectiveness.

- **Hydrogen (H₂) Co-Firing at CCGT Plants**

As Hydrogen co-firing becomes a norm in the global energy industry, we aggressively initiate similar efforts at our CCGT plants to ensure we are on track with the global transition.

- **Green Ammonia/Hydrogen Supply Chain Through Solar Energy**

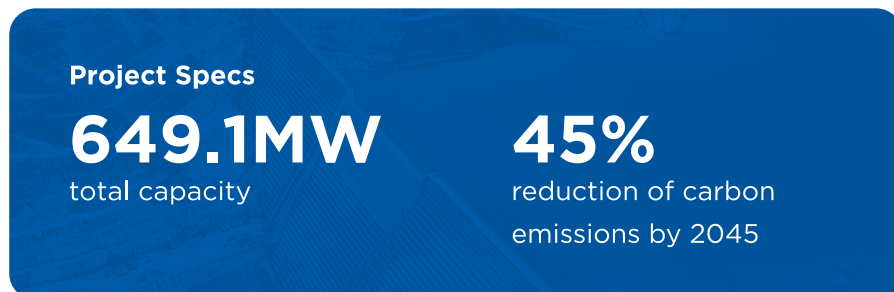
As TNB Genco shifts to the diversification of clean energy, we empower the Green Ammonia/Hydrogen supply chain through solar energy.

After achieving sufficient groundwork on all three studies, we will implement the successful feasibility studies as a Pilot Project across a selection of our existing power plants.

b) Renewable Growth

As we shift towards realising energy transition, we expedite our efforts in diversifying renewables as the driving power to energise Malaysia and beyond.

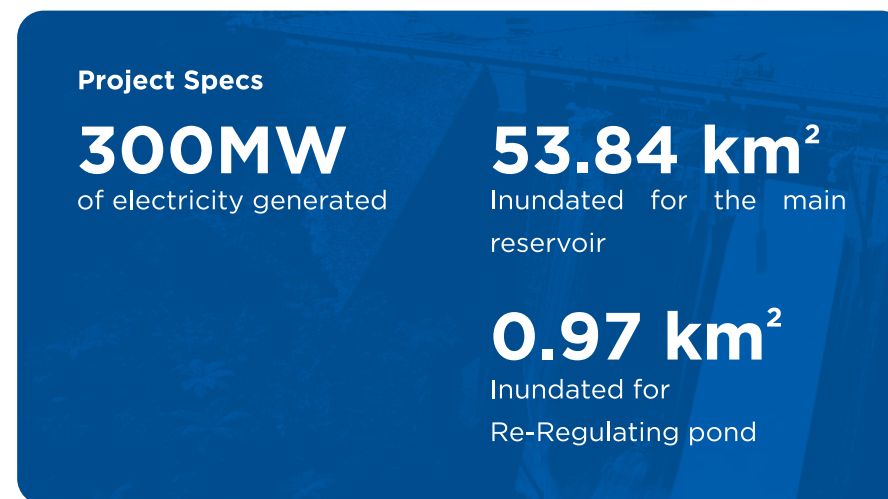
- **Sg. Perak Hydro Life-Extension Program (LEP)**



With a history of **over 44 years**, the SGPK hydroelectric schemes (HES) consist of six locations, mainly in Temengor, Bersia, Kenering, Chenderoh, Sg. Piah and Pergau power stations.

These plants represent one of the largest and oldest hydro schemes in Malaysia, distributing sufficient clean energy to the grid. With the Power Purchase Agreement expiring in August 2022, We intend to extend their technical lifespan with cutting edge technology. Thus, meeting the nation long-term sustainability generation mix with improved reliability and efficiency.

- **Nenggiri Hydroelectric Project**



As part of our ongoing sustainability pathways, our latest initiative, the Nenggiri Hydroelectricity Project will be implemented in the district of Gua Musang, Kelantan.

The project aims to generate supporting electricity while adding benefits such as **contributing to clean water supply** and **irrigation for agriculture, ecotourism, indigenous socio-economic improvement and state-level economic growth.**

The Nenggiri HEP project development began in 2014 after receiving approval from the Kelantan State Government. The large-scale hydro project is a crucial breakthrough for TNB Genco to accelerate and expand its effort in contributing to TNB Genco's sustainability goal.

- **MARC 'GOLD' Accreditation**

In consideration of our approach to assessing the environmental and social risk in Nenggiri project, the Malaysian Rating Corporation Berhad (MARC) has assigned a “Gold” Sustainability Sukuk Assessment to TNB Genco’s Framework.

- **Floating Solar Feasibility Studies**

In an effort to solarise Malaysia, we initiate progressive exploration into the feasibility studies of Floating Solar through collaborations and partnerships with internal and external stakeholders.

- **Investment in Cleaner & Greener Energy**

To meet the racing demand for power locally and globally, we channel our resources to engage with numerous studies in the potential of Small Modular and Fusion Power, both known for its carbon-reducing competencies.

c) Cleaner Repowering

As our efforts deepen into pioneering technologies, we equip our assets with the necessary enhancements to repower them with the capabilities that align with our goal: Net Zero Carbon Emissions.

We institute the development of new Combined Cycle Gas Turbine (CCGT) technology with hydrogen co-firing and repower coal plants into CCGT plants, also equipped with co-firing capabilities.



Be a Part of Our Transformation



Empowering Tomorrow with TNB Genco

TNB Genco's purpose is to be the prime solutions and energy provider with a central commitment towards a carbon-free future. We are constantly at the bedrock of progressive change in the energy sector. Accelerating our efforts towards a more sustainable future, our molecular constructs stand unchanged. We are here to empower further growth, efficiency and performance.

Reach out to us here:



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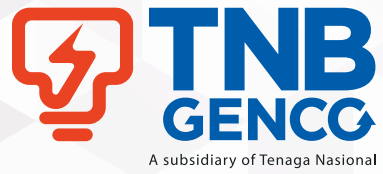


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