KEMENTERIAN TENAGA DAN SUMBER ASLI

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JABATAN	:	TNB			



ENERGY

TNB's ambitious green ener

Utility giant is going full steam into renewable energy to futu

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IN all the talk surrounding growing the country's green energy aspirations, one important part of the story has remained relatively quiet. National energy giant Tenaga Nasional Bhd (TNB) today operates power plants that supply just over half of the country's electricity needs and the bulk of those plants are running on coal.

So without TNB, green energy will move at a snail's pace.

The good news, though, is that TNB has now laid bare its ambitious plan to overhaul its energy mix and go full steam into renewable energy (RE).

The plan was revealed last week, being referred to as a "sustainable pathway" for TNB and also one that future-proofs the company.

The plan spans more than 30 years with an end goal of achieving net-zero emissions by 2050.

One notable step toward that journey is that TNB will no longer build any new coal-powered power plants.

The Jimah East Power, a coal-fired 1,000MW plant commissioned in 2019, will be the last such power plant by TNB.

For its move into greener energy sources, the plan is to not only build or invest in new RE assets locally but more significantly, to acquire assets overseas in solar, wind and even hydrogen.

The reason for venturing abroad in a big way is because the domestic power market is relatively small for TNB to rapidly increase its RE capacity.

The government has set a goal to increase the country's installed capacity for RE from 7,995MW currently to 18,000MW by 2035.

TNB president and CEO Datuk Baharin Din says the group targets to double its RE capacity to 8,300MW by 2025 from 3,400MW currently. Its current RE capacity in the international market is only 666MW.

While he declines to comment on the amount of capex that TNB is allocating for its RE plans, he reveals that the amount "would be substantial" as TNB aims to add 20GW by 2050 to its RE portfolio.

"We have to go overseas because we are aiming to go for 8,500MW by 2025. The idea is to acquire the technology and the know-how and transfer and grow that in Malaysia and South-East Asia," he tells *StarBizWeek*.



"TNB's sustainability commitment is guided by our government's initiatives and TNB commits to contributing a prominent role to drive the sustainability efforts in Malaysia."

Datuk Baharin Din

He points out that TNB is looking into the European market for RE assets, as the industry is more mature there.

For perspective, currently, coal is the main fuel used in TNB's power generation, accounting for almost 50% of the fuel mix.

Clearly this has to change in order to meet the country's commitments to use more green energy. Furthermore, investors of TNB would also demand this as environmental, social and governance (ESG) principles feature heavily in today's investing world.

In June, the Energy Commission (EC) released its "2020 Report on Peninsular Malaysia Generation Development Plans". In that, the EC said that more than 7,000MW of coal-fired power plants will be retired by 2033. Coal-fired plants now account for 13,000MW of installed capacity in the country.

Interestingly, the report does seem to indicate that Malaysia will still be having 2,800MW of new coal-fired power plants coming into operation after 2030.

This does seem to contradict statements made by the Energy and Natural Resources Ministry that there will no longer be any newly built coal-based power plants in the country.

The report has also highlighted that the government has increased its renewable target to hit 31% of the country's energy mix by 2025. Two years ago, the government had put that target only at 20%. And now the government wants to grow it even bigger to 40% of the energy mix by 2035, the report states.

According to RHB Research, the revision took into consideration the country's large hydro resources as part of the RE definition for Malaysia.

"This is consistent with practices adopted by other countries internationally," RHB Research said in a report on Wednesday.

"It is not surprising for TNB to focus on the markets abroad, considering that the local market's growth potential could be too small for TNB's earnings base," RHB added.

Margin compression

When asked about the rationale for TNB pursuing its RE journey overseas first, Baharin says that acquisitions will be the "pathfinder" for TNB to expand its RE expertise and adopt the technology and grow it in Malaysia.

"The RE market in Europe is more mature than in this part of the world. We are taking a long-term approach in which we want to acquire the technology and know-how to build and operate RE assets.

"We hope to bring back this expertise to be developed in this part of the world not only in Malaysia but also in South-East Asia," he says.

"This has always been the TNB way of developing our expertise. In the past, we also brought in technology, learned the trade and grew our workforce and capabilities," he adds.

Bahrain stresses that TNB does not see a future without RE. TNB needs to have "skin in the game" he says.

"Of course we need to strike a balance between continuing to support the current business model by focusing on operational efficiency while at the same time working on our energy transition that would include gas and hydrogen and expanding the RE segment," he says.

TNB has established its own RE investment and asset management company called Vantage RE Ltd, to operate and manage its portfolio of RE assets in the UK and Europe.

About 90% of the TNB RE target will be filled up with its international RE capacity expansion, an approach similar to the Petroliam Nasional Bhd or Petronas.

However, RHB Research has raised concerns about the returns that TNB will be getting from its RE investments.

The research house says that the return on investment or ROI by TNB could reduce to a single digit as it goes ahead with its RE acquisitions compared to conventional fossil fuel ventures.

"The earlier generation of power purchase agreements or PPAs for typical thermal plants provides much greater returns and has normalised to about 10% to 12% internal rate of return or IRR in recent years.

"With significant investments pouring into the RE space, the average returns for these projects, especially onshore solar, tend to be kept at single digits," it says.

Baharin has a different view. He says that RE margins will continue to improve in the mid to long term due to advancements in technology. He says it's already proven that RE plants today have lower operational costs compared with conventional coal-fired ones.

He cites solar power as an example, saying that the cost to produce electricity from utility-scale solar photovoltaics had fallen by a massive 85% between 2010 and 2020.

Coal-fired power plants could be more expensive to run in the future, says Baharin. "Over the past 20 years, the operational costs of running RE has dropped significantly and will continue to improve."

In terms of earnings, Baharin points out that there is data to show that several global pure-play RE companies are able to generate earnings before interest and tax (Ebit) margins of over 30%. "In comparison, non-RE energy firms typically manage Ebit margins of between 9% and 14%," he says.

Reducing cost

"This cost will reduce further because it is a growing emerging technology," he adds.

As for concerns on the high capex needed for RE projects, Baharin points to a telling fact revealed by a report published by the International Renewable Energy Agency in June. That report states that 162GW or 62% of total RE generation added in 2020 had lower costs compared with the cheapest new fossil fuel options for power generation plants.

"As RE generation capacity worldwide increases, project costs will fall further. This will come from improving technologies, economies of scale, competitive supply chains and improving project developer experiences," he says.

Presently, TNB has more than RM5bil cash in its coffers that puts the company in a good position to

Acquisition of overseas RE assets cruc

ENVIRONMENTAL, social and governance or ESG is growing in importance globally. A crucial part of this relates to renewable energy (RE) and its production, consumption and increasing importance being given to it by global investors.

Last week, utility giant Tenaga Nasional Bhd (TNB) rolled out a 30-year roadmap it has dubbed its "Sustainability Pathway".

It aims to reduce its carbon emissions to zero and intends to achieve this by adding more RE assets and gradually retiring coal-fired power plants while finding new ways to create cleaner energy production.

In an exclusive interview with *StarBizWeek*, TNB's newly appointed president and CEO Datuk Baharin Din shares his thoughts about capturing the seismic energy transition globally, how innovations will support the group's decarbonisation plan and future-proofing TNB.

Below are excerpts of the virtual interview:

SBW: One of the toughest questions facing traditional energy companies is how they are dealing with the global shift towards a low-carbon economy. How is TNB's "Sustainability Pathway" plan addressing this?

Baharin: Under the Sustainable Pathway, our ambition is to reduce our carbon emission intensity by 35% and cut 50% of our coal-generation capacity by 2035. Eventually, we want to have zero emissions by 2050.

It is a bold move towards the decarbonisation of the group. RE is the future of providing reliable and efficient energy for a better and brighter tomorrow.

We have already stated that TNB will no longer build any greenfield coal-fired power plants and that we will phase out coal gradually. We will be investing in smart power grids.

It is a clear path and priority for TNB. While we expect it is going to be a challenging road ahead, it will also be rewarding as we are working towards a better world.

Under the Sustainable Pathway plan, TNB is aiming to double its RE capacity to more than 8,500MW by 2025. One of the strategies highlighted is the acquisition of overseas assets. Can you elaborate?

More funds will be channelled towards building up assets in the RE sector, especially in solar and wind power generation.

But we won't simply pump in money without making sure the return is within the threshold that we have agreed on.

In Malaysia, the market is quite small as we are aiming to achieve 8,500MW. So we have to go overseas. Given our RE targets, the space to grow in Malaysia alone is limited and therefore we are looking beyond Malaysia to meet our targets.

The target market will mainly be in Europe. In addition, we are also looking for opportunities in the region. We are also looking for potential partnerships to tap into the South-East Asian market.

We have a stringent framework set up many years ago when we first started venturing into overseas assets.

When it comes to RE, the question that often props up is what happens if the sun isn't always shining, or if the wind isn't blowing. Can RE be sufficient to cater to a country's needs?

We believe that there will be an inflexion point in 2035 that will determine the speed of our net-zero trajectory. TNB is also looking to develop energy storage solutions that will address this kind of technical issue in the RE sector.

Our international arm is intended to be the pathfinder to seek technologies and partnerships on battery storage and emerging green technologies such as green hydrogen, carbon capture and utilisation, and waste-to-energy, which can be brought back to Malaysia to help us accelerate decarbonisation and our energy transition.

While TNB has now set out great RE aspirations, how does this impact your finances? And what about the impact on consumers?

A combination of technology improvement, consumer demand and global movement is working to boost the adoption of cleaner and greener energy. The RE sector is an emerging technology where we will see continuous improvement both in terms of efficiency as well as operating costs.

Over the last 20 years, the operational cost of running RE has dropped significantly and this will continue to improve. It is the way to go and TNB wants to be part of that journey.

Already, indications are that RE energy generation requires lower operational costs compared with traditional coal power plants.

According to data by *Bloomberg*, several pure-play RE companies globally generate average earnings before interest and tax (Ebit) margin of over 30%. In comparison, non-RE energy companies today have Ebit margins that average between 9% and 14%.

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gy plans

re-proof company



Sustainable practice: The wind turbines that form TNB's solar-wind-diesel hybrid power generating system on Pulau Perhentian Kecil. The group targets to double its RE capacity by 2025.

acquire RE assets.

Baharin believes that electricity tariffs would remain "competitive" as the group increases its exposure to the RE sector. "Tariffs will remain competitive. As more technologies are introduced, efficiency gains will be achieved. As such, the pressure to increase tariffs will be lesser.

"We are using technology in all directions from the way we generate to the way we distribute electricity," he says.

He says TNB is investing in modernising the national grid with a technology that supports two-way energy flow dubbed as "grid-of the future".

Under the Incentive-Based Regulatory or IBR framework, TNB has planned to invest RM7bil to RM10bil a year from 2021 to 2024 to develop the grid as one of the key enablers of the energy transition.

Baharin says TNB has already made a commitment to no longer build any new coal-fired power plants and it will gradually retire its existing coal power plants according to its PPAs.

He explains that TNB started its "sustainability journey" in 2016 when it launched the "Reimagining TNB Strategic Plan" then and undertook its first carbon footprint assessment in 2017.

"TNB's sustainability commitment is guided by our government's initiatives and TNB commits to contributing a prominent role to drive the sustainability efforts in Malaysia," he says.

This week, TNB signed an agreement with the Energy and Natural Resources Ministry to build a 300MW hydropower plant in Kelantan that will have a 30-year PPA.

The plant is estimated to cost RM5bil to build, which will be financed with debt.

UOB Kay Hian Research expects the contract to be earnings-accretive for TNB. "Based on our assumption that the project has an IRR of 9.5% to 10.5%, the hydropower plant may yield a net present value of RM1.2bil to RM1.8bil for TNB.

"This accounts for 2% of its current market capitalisation. We are positive about the project," it said in a note to clients.

To survive and navigate disruptions, energy companies must continually evolve. To overcome this, business practices will need to change to become flexible enough to respond quickly to opportunities.

Ultimately, energy companies like TNB will need to make conscious, strategic choices to prepare for the future.

To future-proof the company, TNB needs to start to transform its business rather than clinging to what it is today and create a new operating model that is fit for the future.

ial for roadmap

This cost will reduce further because it is a growing and emerging technology.

For example, the cost of electricity from utility-scale solar photovoltaics fell 85% between 2010 and 2020. We expect conventional coal power plants to be more expensive to operate than RE power plants in the coming years.

In your statement two weeks ago, you said that the acquisition of overseas RE assets also serves as "pathfinders" for TNB's green technology adoption. Can you elaborate?

The RE market in Europe is more mature than in this part of the world. We are taking a long-term approach through which we want to acquire the technology and know-how to build and operate RE assets. We hope to bring back this expertise to be developed not only in Malaysia but also in the South-East Asian region.

We believe this is the right way to go. Right now, we can't see a future without RE. This has always been TNB's way of developing our expertise. In the past, we also brought in technology, learned the trade and grew our workforce and capabilities.

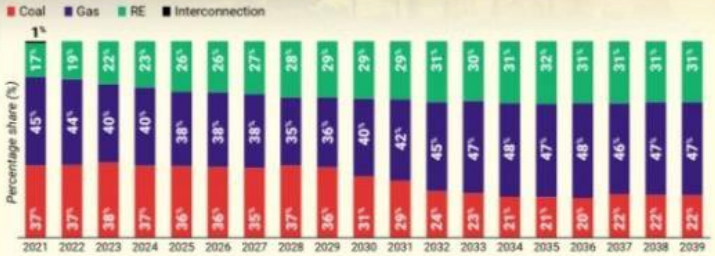
Can you update on the grid interconnection between Malaysia and neighbouring countries?

The Asean Power Grid (APG) is a flagship programme mandated in 1997, which aims to help the Asean member states to meet the increasing demand for electricity and improve access to energy services by enhancing trade in electricity across borders, optimising energy generation and development and encouraging possible reserve sharing schemes.

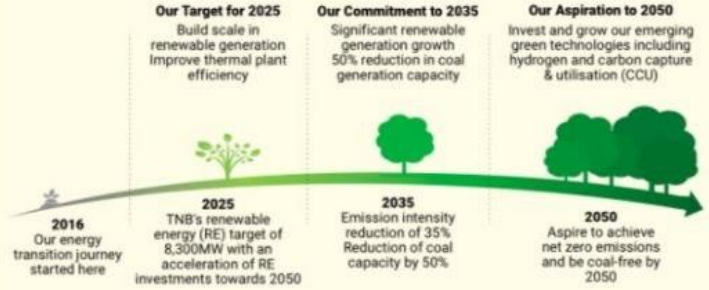
In March 2020, the government approved a cross-border electricity sales scheme in which a third party can generate electricity and sell it to Singapore using the existing Malaysia-Singapore interconnection for an initial two-year trial period.



Coal-powered energy in Peninsular Malaysia is projected to reduce from 37% in 2021 to only 22% in 2039, a net reduction of 4,244MW



TNB's Sustainable Pathway spans over 30 years to become net-zero emission by 2050



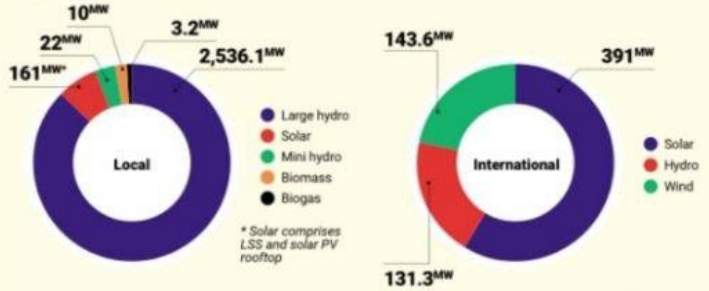
- *TNB targets not to take any new stakes in new coal plants and will honour the existing power purchase agreements*
- *In tandem, TNB intends to significantly ramp up its RE generation portfolio on the path to be coal-free by 2050*
- *To achieve Net Zero, TNB will accelerate investments in emerging green technologies (eg, green hydrogen, CCU) – as soon as it becomes economically viable*

TNB's power generation mix in Malaysia (financial year 2020)



TNB's renewable energy capacity mix - local & international

Our performance in FY20



Source: The Energy Commission & TNB FY20 Annual Report

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