The power and water factors

Holistic management of resources crucial amid data centre frenzy

TECHNOLOGY

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DATA centres are the latest craze in corporate Malaysia and stocks are surging as companies jump onto the multi-billion-ringgit bandwagon.

But, unlike the glove manufacturing craze in 2020 and electric vehicles in 2022, where many deals struggled to turn profitable or to even take place, the rush for data centres seems more promising, given the backing by technology giants like Microsoft, Google and Nvidia.

Data centres made up nearly 80% of the RM144.7bil approved digital investments into Malaysia between 2021 and 2023.

While there are criticisms about the lack of direct job creation from data centres, the massive investments into this space have opened up opportunities for non-data centre players.

They include suppliers of power cables and switchboards, property companies with huge land bank, hard disk drive makers, power producers and construction firms.

It is, hence, not surprising that stocks with exposure to data centres like Powerwell Holdings Bhd, Southern Cable Group Bhd and YTL Power International Bhd have surged by 117%, 107% and 97%, respectively, year-to-date.

Interestingly, Malaysia has emerged as the go-to place for data centres, even though the country is said to be among the top expensive markets globally for developing data centres.

According to a report by Arizton in April, Malaysia's data centre construction cost in 2023 stood at about US$8.5mil to US$10mil per megawatt (MW), making it the costliest market in Asia-Pacific after Singapore and Indonesia.

Arizton estimates that the Malaysian data centre market size will witness investments of US$3.97bil by 2029, up from US$1.81bil last year. It also mentions 34 existing data centres and 33 upcoming facilities across Malaysia.

It is noteworthy that tier-three data centres account for the majority market share in Malaysia, as per data from Mordor Intelligence.

Data centres are ranked from one to four, with one offering the most downtime and four the lowest. Amid the boom in data centres, the biggest concern about these investments is the fact that data centres consume electricity and water.

> "There must be more focus on upgrading grid infrastructure in places with over-concentration of data centres."
> Datuk Lai Keng Onn

Analysts point out that the main driver for electricity demand growth in Malaysia will be data centres, moving forward.

Tenaga Nasional Bhd's (TNB) electricity sales already hit a record in the first quarter of 2024 at 31,899 gigawatt hours, driven by two new data centres that have a combined installed capacity of about 600MW.

The strong sales was achieved despite the first quarter being seasonally the weakest quarter in the year.

For the entire 2024, TNB guided for nine data centre projects with a total energy demand of 700MW to be this year.

TA Research notes that TNB expects to sign an electricity supply agreement for 10 more projects in 2024, with about 2000MW total energy demand.

"These data centres are gradually increasing their energy consumption in a stepped ladder fashion after being connected to the grid, hence progressively driving the electricity demand."

As the surge in power demand is taking place, a big question arises: Can the national grid handle the needs of data centres?

A power generation sector veteran tells *StarBizWeek* that Malaysia has a big reserve margin of 40% in electricity generation.

"This 40% is the spare capacity, but a reserve margin of 20% to 25% is already good enough in the event of sudden power demand surges. This means we have ample room to serve the power needs of data centres, and the country continues to increase its power generation capacity.

"In addition, data centres' power consumption is flat and consistent 24/7. Given these reasons, TNB can carry out its power grid planning efficiently."

The fact that data centres in Malaysia are concentrated in certain locations such as the Sedenak Tech Park in Johor also allows the upgrading of the electricity infrastructure more effectively.

This enables TNB to gain a return on investment from building the power infrastructure for data centres in less than half of the usual period.

"Typically, it takes 15 years to make a return on investment. But, because of the concentration and better load factor, the return on investment is only about seven years from building the power infrastructure for data centres," he says.

The industry veteran notes that electricity sales to data centres are "very lucrative".

To exclusively meet the robust power needs of data centres, TNB had announced the setting up of the Green Lane Pathway last year to accelerate the electricity supply process.

Before the Green Lane Pathway, the electricity supply process was between 36 months and 48 months.

However, with the Green Lane Pathway, the time has been reduced to 12 months.

On whether the influx of data centres, especially those owned by global corporations, will take up most of the renewable energy (RE) in the country, leaving less or none for local non-data centre industrial players, the industry veteran says electricity sourced from clean sources like solar are sold at a premium and the larger corporations have deeper pockets to purchase the RE.

RE capacity

"That said, Malaysia is progressively increasing its RE capacity and there will be more supply in the future, potentially bringing down the price.

"With the rollout of the Third Party Access (TPA), buying of RE will be more common."

With TPA, independent power producers like solar power producers can sell directly to customers.

Meanwhile, Kinergy Advancement Bhd (KAB) executive deputy chairman cum group managing director Datuk Lai Keng Onn tells *StarBizWeek* that the country has enough spare electricity to meet data centre needs for now.

However, he cautions that the power demand from data centres will peak in about three years, given that many of the facilities are to be built in coming months.

"If the national grid is not improved adequately by then, we may face a situation where supply of electricity cannot meet demand. There must be more focus on upgrading grid infrastructure in places with over-concentration of data centres," he says.

Lai, who leads KAB in offering sustainable energy solutions, agrees that data centres owned by larger corporations will need huge amounts of RE, but also notes that the TPA will be advantageous for the bigger players by reducing the dependence on TNB.

KAB is in talks with several parties to provide off-grid power generation for data centres via waste-to-energy technology and cogeneration plants.

"Our business model allows the generation of off-grid power at a lower rate. At KAB, we are also looking into the data centre space via our energy efficiency offerings that include cooling systems for data centres."

It is worth noting that data centres consume water in the form of liquid coolant to dissipate the heat generated by the servers and other data centre equipment.

ING Group, in a report last year, said a mid-sized data centre in the United States uses 1.1 million litres of water a day, equal to the water consumption of 100,000 homes.

Water issues

Lai says that water supply issues will be a limitation for data centres, if not properly handled.

It was reported that Malaysia is likely to face a water crisis by 2030 amid growing demand. The fact that the country also suffers from high levels of treated water being lost before it reaches the customer makes the situation more pressing.

Between 2018 and 2022, Malaysia lost an estimated US$1.7bil in wasted water.

With Malaysia ramping up its data centre space, there needs to be a more holistic approach to handling the power and water situation in the country.

In the case of electricity, an observer says that nuclear energy will be "unavoidable" for Malaysia, even without data centres.

"Nuclear power is the way to go if we want to produce clean energy at large scale. Solar and hydropower cannot come close to the scale of power generation from fossil fuels, only nuclear can."

Prime Minister Datuk Seri Anwar Ibrahim, in one of his recent speeches, has said that the government supports exploring new technologies, including nuclear.

Perhaps, the growing data centre power needs and the demand for clean energy will make the nuclear push an unavoidable necessity.

For now, at least one power producer in the country is already exploring nuclear energy generation, based on information gathered by *StarBizWeek*.