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Data centre - boon or bane?

The Star, Malaysia





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As Malaysia pushes ahead with its 'Big Data' agenda, experts weigh in on how this would affect the country, especially over the long term

TECHNOLOGY

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DATA centres have been the flavour of our current times with stocks linked to such activities hitting their highs. The unstoppable digitalisation and "Big Data" wave sweeping over the country means data centres will continue to be the overarching hot topic of conversation.

More specifically, the debate continues afoot on the pros and cons of setting up so many data centres in Malaysia – recent news reports suggest they could rise 10-fold over the next five years from the current total of 47 – and how this would eventually affect several issues of concern such as power usage and economic spillover effects.

Data centres are centralised physical facilities that house critical applications and data, facilitating remote storage, processing or distribution of large volumes of data. They may be privately owned and operated by individual organisations or provided as services by third-party companies or cloud service providers, rendering services such as "Big Data" storage, productivity applications, powering online gaming communities and managing high-volume eCommerce transactions.

To draw a clearer picture, the pipeline of data centre development is anticipated to add a capacity of 1,400 megawatt (MW) within the next five to 10 years, from the current capacities ranging from 100MW to 150MW which took approximately 20 years to complete.

As a note, the country had received US\$16bil worth of investments for data centres between 2021 and March 2023. Furthermore, a study by Mordor Intelligence estimated that the data centres in Malaysia is expected to generate colocation revenue of US\$838mil this year and this is projected to reach US\$2bil by 2029, growing at a compounded annual rate of 19.45% from 2024 to 2029.

With this in view, it should be noted that Microsoft Inc had earlier this month committed to invest US\$2.2bil into Malaysia's cloud and artificial intelligence (AI) infrastructure, bringing applause among many observers.

This follows the recent investments from Equinix Inc, Amazon Web Services and Japan's NTT Group.

However, several questions still linger: Beneath the big names and hoo-hah, how does this benefit Malaysia economically on a sustainable basis over the long

run, and how will it affect the power grid as well as the country's energy transition aspirations?

Are we bringing in the mega corporates just for the sake of itself, akin to a football club signing an ageing superstar for a one-off impact, or is there more to these data centres?

Sustainability: From the power and human angles

There is no mistaking that industry observers and economists generally perceive the data centre wave that is sweeping across Malaysia as a positive, of course with the caveat that this is just the beginning.

However, the huge demand of power from data centres has also raised eyebrows, underpinned by the fact that they consume about 1,000 kilowatt per hour (kWh) of electricity per square metre, about 10 times the power consumption of a typical American home.

According to a 2017 *Forbes* report, data centres based in the United States used up more than 90 billion kWh of electricity that year, noting that much energy would require 34 massive coal-powered plants to generate at least 500MW each to meet the power demand of the aforementioned data centres.

If seen from the worldwide perspective, the numbers become even more drastic as the amount of power needed to run data centres on a global scale totalled 416 terawatts, or approximately 3% of all electricity generated on earth. And this was in 2017.

That aside, studies done by American marketing group TechTarget also concluded that on average, data centres consume or have a water usage effectiveness of 1.8 litres of water per kWh.

From a Malaysian perspective, that is also significant, judging by the low cost of water in the country, a point that will surely not escape the attention of those committing data centres to be built in Malaysia.

As with most things, there are multiple sides to the story. Taking a peek at our neighbour Singapore, the city-state put in place a three-year moratorium on the construction of new data centres from 2019, which, despite being lifted in late 2022, still limits total allocated capacity on new data centre building applications to 60MW per year.

With that said, an investment officer with a local fund management group believes that contrary to popular opinion, Malaysia may have missed the initial data centre rally as the sector has run ahead of its fundamentals.

"The exposure would not be as huge as we would like, although we can still benefit from our

involvement at the current stage in bits and pieces," he says.

He also highlights the concern of the more environmentally-inclined that the data centres are set to be powered by coal and natural gas, a fact which may not escape the scrutiny of multinational companies who abide closely to the environmental, social and governance agenda.

Centre for Market Education chief executive Carmelo Ferlito, though, is one of those who views the data centre wave as a ray of sunlight for Malaysia.

For starters, he believes the key position of Malaysia in the semiconductor industry can definitely be seen as one of the specific drivers for the country's growth in the data centre segment. "Malaysia's rise as a data centre powerhouse is part of a global trend, whereby some operations traditionally split in different centres tend now to be consolidated into data centres.

"Private data centres grew out of the need for the semiconductor manufacturers and other industries to consolidate their server farms. Server farms, which used to be maintained at each design centre, then merged into a limited number of data centres," he says.

Given that there are views Malaysia may have missed the true data centre rally, Ferlito prefers to take a longer-term approach, telling *StarBizWeek* that when it comes to sustainability, disruptive innovations are like earthquakes in the economy and therefore they generate business cycles.

He explains that when an innovation enters the economy, if it is usually perceived positively, giving rise to imitators, pushing the industry growth beyond its structural limit. This is likely the stage that the investment officer believes Malaysia is now in.

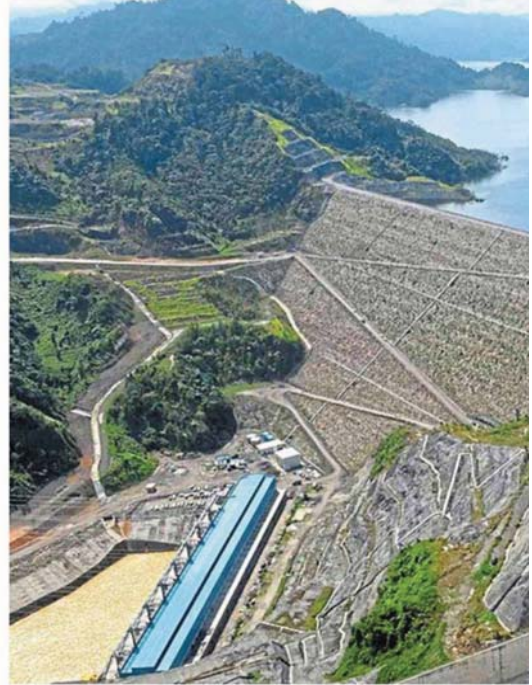
"After the 'hot' period, a liquidation follows, which eliminates unhealthy and speculative imitators, leaving in the industry only those that are fit, most likely the first innovators.

"Thus, the industry reaches its structural size, the one which is sustainable. But that initial moment of heat and confusion is somehow necessary for the industry to find its identity," Ferlito says.

Why Malaysia, why now

Aside from Malaysia's position in the semiconductor sector, he says the country also offers a better level of connectivity compared with most of its neighbouring countries as well as relatively inexpensive energy.

That view resonates with Rakuten Trade head of equity sales Vincent Lau, who points out



Steady supply: The Bakun dam is one of Sarawak's source of clean hydroel for 20 gigawatt of hydropower generation capacity.



"Malaysia's rise as a powerhouse is part whereby some operations split in different centres tend now to be consolidated into data centres."

Carmelo Ferlito

that Singapore has its reason to put a leash on the construction of new data centres, with the most obvious one being a lack of land.

Lau does not deny that companies looking to build data centres in Malaysia are indeed looking at lower costs, including for electricity and land, coupled with suitable infrastructure.

"Malaysia is a natural choice for these titan companies to go into other than Singapore in South-East Asia. The question is not why, but why not Malaysia?" he asks.

The fact that Singapore and Sarawak are working on a proposal for the former to channel investments such as data centre projects into Malaysia's largest state underscores Lau's point.

In January this year, the two parties confirmed they are working on a cooperation that also involves the state selling excess energy to the republic as well as the construction of an undersea cable set to be completed in 2032.

With Sarawak Premier Tan Sri Abang Johari Openg himself having noted that the state has the potential for 20 gigawatt of hydropower generation capacity, an industry player tells *StarBizWeek* that it makes sense economically to set up more data centres there.

"Sarawak can produce green and cheap power. If more of data

centres are to be constructed, we do not see any reason not to do it there, especially if the country were to keep up its NETR (National Energy Transition Roadmap) agenda while bringing in foreign direct investments," he observes.

Interestingly, a news report from last year has quoted Tenaga Nasional Bhd (TNB) to have approximated that power demand from data centres will be substantial, exceeding 4,300MW in the coming years.

Of note, however, the utility giant has said it is confident in meeting that demand, as it has sufficient reserve capacity within its current installed generation infrastructure.

"TNB's commitment to ensuring the availability of electricity for this growing sector underscores our role in supporting the digital economy and technological advancements in Malaysia," it noted.

The power reserve margin rate of Peninsular Malaysia is currently estimated to be between 28% and 36% for the next six years, with TNB also reporting that it has been actively working on enhancing its infrastructure, including power generation and distribution, to ensure a reliable and sufficient electricity supply to meet the needs of data centres.

The power reserve margin measures the available capacity



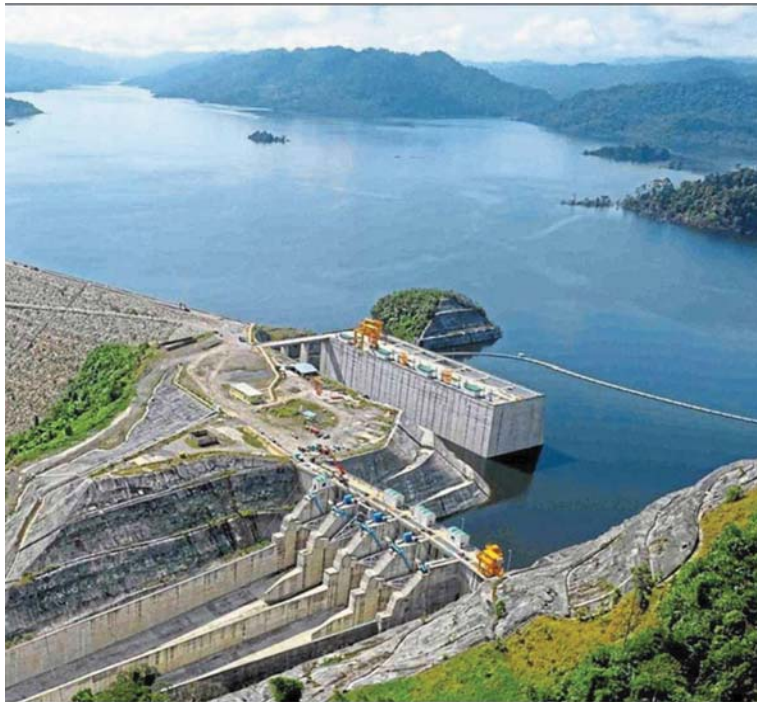
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data centre of a global trend, nations traditionally rich in resources tend now to embrace data centres."

beyond what is required to meet normal peak demand levels.

Spillover economic benefits

Data centre skeptics can be forgiven if they pose the very familiar question of whether there would be noteworthy and persistent economic benefits that can be reaped from the construction of these data centres.

After all, they are building blocks that do not appear to need round-the-clock man-management.

In fact, an industry observer remarks: "Is it right to bring in such investments that use up so much of our power resources while not creating sufficient jobs? Furthermore, these projects don't employ that many people as the data centres are largely software and artificial intelligence (AI) driven."

Even Rakuten's Lau concurred with that idea, to an extent.

"Yes, we may not see significant employment of highly skilled workers but at the initial stages we should expect to see building and cable contractors as well as the electrical and electronics sector benefiting, as the ecosystem there is strong," he opines.

Thereafter, he conceded that the job benefits should normalise, which echoes with Ferlito's comment that a new industry would inevitably consolidate over time.

Elaborating on this note, Ferlito himself is looking at a wider perspective, explaining that data centres will ultimately generate an enormous amount of employment.

"This is because they are part of a unique logistics chain consisting of all kinds of companies, from Internet exchanges, hosting and cloud providers, to consulting firms and fiber optic providers," he explains.

Citing a recent US Chamber of Commerce report, he reveals that the average economic impact for a data centre is approximately US\$32.5mil, with the report also showing that US\$9.9mil in revenue is typically generated during the data centre construction process.

The investment officer who spoke to *StarBizWeek* says Johor, with its business-friendly administration, is also set to benefit over time from it being a popular target for companies to construct their data centres.

Similarly, Malaysian Investment Development Authority deputy chief executive for investment development Lim Bee Vian also challenges the idea that data centres do not offer ample job opportunities.

She is of the opinion that data centres not only create direct employment in facilitating their operation which needs high-skilled, well-remunerated roles that require significant training, as well as educational and professional qualifications, but also indirect employment.

"These include construction-related jobs and the maintenance of the data centre infrastructure," she says.

Getting and staying on the bandwagon

Although agreeing that there is a need to balance power usage with environmental concerns,

Rakuten's Lau is confident TNB is able to handle the increased demand from these data centres when they come online.

In fact, as Australia's AirTrunk Operating Pty Ltd head of energy and climate Joscha Schmitz said recently of the company's decision to develop a 150MW capacity data centre in Johor Baru: "The strength of TNB power grid was one of the main factors in our decision to enter Johor."

He emphasises that TNB's Green Lane Pathway (GLP) initiative streamlines the grid connection and delivery process across all TNB functions, placing a customer-centric approach at the heart of the process.

"The One-Stop Centre team under its GLP helps in bringing together the various parts, including grid planning, technical design, commercial contracting, project delivery and all the other requirements that we encounter along the process," he elaborates.

Moreover, as if speaking to quell power supply capability and energy source concerns, TNB chief retail officer Kamal Arifin A. Rahman said this week that the national power provider welcomes the opportunities in Malaysia's growing data centre sector.

"Our electricity infrastructure is continuously being strengthened under the Smart Grid initiative. This is aimed at unlocking Malaysia's energy transition ambition and ensuring reliable energy supply for our valued customers," he comments.

At the end of day, it is perhaps crucial to understand that Malaysia's conducive investment environment, growth potential and strong connection to other regional technology hubs such as Singapore are presenting an important opportunity for data centre players to embark on the growth bandwagon of the cloud and AI in the region.