Data centres may be **key** for Malaysia in the **renewable energy market**

DATA centres are the darlings of the industrial landscape and have long been at the forefront of technological innovation, serving as repositories as well as providers of backup, disaster recovery, data management and networking solutions.

In recent years, the demand for data centre services has surged, driven by several factors such as cloud-based services, Internet of Things (IoT), big data analytics and the rapid pace of digitalisation.

However, the sudden rise of Artificial Intelligence (AI) is becoming a game-changer in the Southeast Asia region, particularly in Malaysia where data centres could play a pivotal role in the country's journey to becoming a dominant player in the industrial sector and renewable energy market.

According to a TechNavio report, the data centre construction market in Southeast Asia is expected to grow by US$3.61bil between 2021 and 2025, with a compound annual growth rate (CAGR) of nearly 12%.

Traditionally, factors like increased usage of cloud-based services and the adoption of digital technologies have driven this demand. However, what sets the current trend apart is the rapid advancement of AI.

The new frontier

AI has become ubiquitous in today's tech landscape. Generative AI tools -- such as ChatGPT, Bard, Copilot, and DALL-E -- are designed to create new content based on their previous experiences. These AI models are now accessible online either for free or through affordable subscriptions, making it possible for individuals worldwide to generate original content from children's books to computer code.

Tech giants like Apple, Microsoft, Google, Facebook, and Amazon are heavily investing in these platforms.

This technology is rapidly going mainstream, and companies are eager to commercialise it. However, regulators are still trying to understand its implications fully.

Much like previous transformative technologies, generative AI has the potential to reshape our world, creating complex trade-offs along the way.

From their origins as telecommunication hubs, data centres have become larger, more localised and more resilient industrial facilities equipped with state-of-the-art cooling systems, redundant power supplies, and advanced security measures.

As the demand for data centre services continues to rise, it raises questions about the sustainability of the power grid and its ability to meet the increasing energy needs of AI computing.

Sustainable energy transition challenges

Green energy sources such as solar power play a role in reducing the carbon footprint of data centres. However, keeping up with the evolving demands of data centres on the national grid remains a daunting task.

Malaysia's power grid has the capacity to support up to 29GW of power, with a total consumption of around 18-19GW during peak hours. Unfortunately, a significant portion of Malaysia's energy production still relies on coal, despite growing concerns about climate change and the need for renewable energy sources.

Demand for renewable energy

Data centres have emerged as major energy consumers in Malaysia, demanding roughly 1.9GW or 10% of the total power supply. With the nation's commitment to decarbonisation and a Net Zero Carbon target by 2050, there is a rush towards sustainable renewable energy transitions.

However, Malaysia's record in renewable energy generation has been subpar, with only 445MW produced in 2022 of which 330MW came from solar power, accounting for just 1.7% of total power generation.

To supply 1.9GW of power to data centres using solar energy, about 191,175 acres of land would be required, considering factors like efficiency and peak sun hours. This calculation does not account for the additional land needed for battery storage.

This amount of land is equivalent to the size of Singapore, highlighting the immense challenge of meeting the energy demands using solar sources alone.

Data centres are on the brink of reshaping Malaysia's technological landscape and could become key players in the Asean renewable energy market. However their rapid growth, driven by the surge in AI, presents a significant challenge for Malaysia's energy infrastructure.

As the nation strives for a sustainable energy transition, addressing the energy needs of data centres while maintaining a commitment to renewable energy sources will be a complex task.

Malaysia must invest in infrastructure to position itself as a leader in the global data centre industry while finding innovative solutions to ensure a sustainable energy future.

The balance between becoming a data centre hub and achieving renewable energy targets will be crucial in shaping Malaysia's role in the Asean market and its contribution to the global tech ecosystem.

Our options may be limited now but as technologies rapidly advance, we could see other renewables emerge as front-runners in the race to Net Zero Carbon -- from hydrogen-powered turbines to mini hydro-power plants, and the option for nuclear power which is now a serious contender as the most stable and reliable alternative to solar.

Trends & **perspectives**

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