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Data centre boom tests infrastructure

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by AUFA MARDHIAH

MALAYSIA is facing growing pressure to expand its power and water infrastructure as the rapid development of data centres drives electricity and water demand far faster than conventional infrastructure planning cycles.

Energy Commission (EC) CEO Siti Safinah Salleh said that the growth of electricity demand, previously forecast at around 1.5% to 2% annually, has risen to about 10% with the expansion of data centres.

She said the mismatch between the pace of data centre development and the longer investment cycle for power infrastructure could create risks for utilities and investors.

"When you invest capital into the grid, it is a shared investment. That investment is recovered over 20 years," she said during a panel session at the JC3 Journey to Zero Conference 2026 recently.

However, some data centre operators are prepared to commit to electricity requirements for much shorter periods.

While some commitments can extend to 15 years, co-location operators may commit for only five to six years before reviewing their requirements.

"You need to invest in the grid quickly to actually connect them from demand perspective. You need to invest in the supply side, generation capacity, costs are going up and so on.

"But then the willingness to commit is not there. So I think in banker's term, this is where it becomes a high-risk investment," Siti Safinah said.

The challenge is compounded by the different development timelines of data centres and power infrastructure.

Data centres and artificial intelligence (AI)-related facilities can become operational within 18 to 24 months, while new generation capacity can take more than five years to develop amid supply-chain constraints.

She said Malaysia's national grid currently has sufficient headroom, although bottlenecks are emerging in areas where data-centre and renewable energy (RE) development is concentrated.



(From left) Wolff-Bye, Abdul Razib, Siti Safinah and Malayan Banking Bhd (Maybank) group chief sustainability officer Datuk Shahril Azuar Jimin during one of the panel sessions

Water Demand

The pressure extends beyond electricity, with proposed data centre developments generating water demand of about 2,000 million litres per day (MLD).

National Water Services Commission (SPAN) CEO Datuk Ahmad Faizal Abdul Rahman said the figure represents demand received from data centre developments and does not mean the entire amount has been approved.

"As of now, the demand from data centres alone is about 2,000MLD. It does not mean that we approve everything, but the demand is there," he said at the conference.

The scale represents a significant shift from conventional industrial water demand, which has typically grown by around 3% to 4% annually alongside population and economic growth.

Ahmad Faizal said Malaysia was increasingly looking at alternative water sources to accommodate new data centres without placing unnecessary pressure on treated water supplies.

SPAN guidelines encourage data centres to use reclaimed, recycled or other alternative sources, with potable water treated as a last resort where alternatives are available.

Ahmad Faizal said Malaysia currently has about 2,000 MLD of reclaimed and recycled water available, including water produced from sewage treatment plants, although much of this potential remains untapped.

"For data centres, potable water is the last resort. Unless you don't have all these things, then we will consider giving them potable water," he said.

Where a proposed data centre is located close to a reclaimed water source, developers would be expected to prioritise that supply.

Other options include raw water downstream of the last water intake, which could otherwise flow out to sea.

The approach forms part of wider efforts to ensure Malaysia's ambition to become a regional data centre and AI hub does not compromise water security.

Applications are assessed through the government's Data Centre Task Force, with SPAN and Tenaga Nasional Bhd (TNB) among the agencies examining whether proposed developments meet water and electricity requirements.

Ahmad Faizal said applications that fail to meet the requirements would be rejected, with developers required to redesign their facilities before proceeding.

Beyond Adding Capacity

The infrastructure challenge comes as Malaysia also seeks to increase RE in its electricity mix. Siti Safinah said RE accounted for 31.8% of installed capacity in 2025, with Malaysia looking to raise its ambition further.

However, greater reliance on solar brings technical challenges because solar generation is intermittent and requires complementary technologies to provide reliable supply.

However, any nuclear development would require a long lead time, with projects generally taking 10 to 15 years to develop.

Meanwhile, ASEAN Centre for Energy (ACE) ED Datuk Abdul Razib Dawood said the region's energy demand is projected to grow 3.5 times by 2060, according to modelling for the forthcoming ASEAN Energy Outlook No 9.

The projection includes rising demand from data centres alongside continued economic growth across ASEAN.

He said the scale of future demand means the region cannot depend on a single technology, with RE, energy storage, carbon capture, hydrogen and nuclear potentially contributing to the transition.

Regional interconnection could also help countries manage growing electricity demand by allowing them to share renewable resources and reserves through the ASEAN Power Grid.

However, greater certainty over governance, pricing, wheeling charges, technical standards and long-term power purchase agreements (PPAs) would be needed to make cross-border electricity trading commercially viable.

Petroleum Nasional Bhd (Petronas) VP and group chief sustainability officer Charlotte Wolff-Bye said the region faces the dual challenge of supplying significantly more energy while reducing emissions.

She said the energy transition was a "systems challenge" requiring technology, finance, infrastructure, education and skills to develop alongside lower-carbon energy sources.

For Malaysia, the rapid arrival of large electricity and water users means the challenge is no longer simply about building more capacity.