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Malaysia's next energy advantage: Making the system work smarter

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COORDINATING ASSETS

Malaysia's next energy advantage: Making the system work smarter

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MALAYSIA'S energy system is entering a more complex phase.

Renewable energy is expanding, electricity demand is growing and new sources of demand are changing how and when power is consumed.

At the same time, energy must remain reliable and affordable as the system transitions.

Malaysia has spent the past decade building capacity and, more recently, integrating new technologies and solutions.

The challenge ahead is therefore not simply about adding more infrastructure. It is about making the different parts of the energy system work better together.

Generation, storage, demand, grid infrastructure and digital technologies all have a role to play.

The opportunity lies in coordinating them effectively, anticipating changes in supply and demand, responding with greater flexibility and making better use of available energy resources.

FROM MANAGING SUPPLY TO ANTICIPATING THE SYSTEM

A more diverse energy mix creates new possibilities, but also greater complexity.

Solar and wind generation vary with weather conditions, while electricity demand fluctuates. Storage and flexible demand can help balance these variations, but the challenge is making these components work together effectively.

Digitalisation can help. Better data, advanced forecasting, digital twins and artificial intelligence can provide greater visibility across energy assets and improve how generation, storage and demand are coordinated.

This complements, rather than replaces, physical infrastructure.

Tenaga Nasional Bhd's RM43 billion investment in grid infrastructure reflects the modernisation underway to support rising demand and increasing renewable penetration.

The opportunity lies in combining this infrastructure with greater intelligence and coordination among generators, aggregators, grid operators and regulators across the energy ecosystem — using assets within the system effectively while strengthening reliability and resilience.

FROM SUPPLYING DEMAND TO UNDERSTANDING IT

The other side of the equation is changing just as quickly.

Traditionally, energy planning focuses on ensuring sufficient supply to meet projected demand. However, the nature of that demand matters as much as its size.

Data centres illustrate this shift. Their rapid growth in Malaysia is creating large, concentrated and highly reliability-sensitive electricity requirements, with data centre demand in Peninsular Malaysia projected to reach 31 per cent of total electricity demand by 2035.

But they are part of a broader change.

Electrification, advanced manufacturing and electric mobility will also influence when, where and how electricity is consumed. This creates an opportunity to think of customers as participants in a more flexible energy system.

For large energy users, renewable generation, storage, demand management and digital optimisation can be considered together.

Greater flexibility in how electricity is consumed can complement flexibility on the supply side.

For energy providers, this means moving beyond individual assets towards understanding how customers use energy and designing integrated solutions around those needs.

FROM NATIONAL OPTIMISATION TO REGIONAL OPPORTUNITY

Southeast Asia has diverse renewable resources, demand patterns and geographies.

A more interconnected Asean energy system could enable countries to draw on complementary resources, diversify supply and strengthen resilience.

The Asean Power Grid provides the broader framework for this ambition, but regional integration requires more than transmission infrastructure.

Governments, utilities, regulators, developers, financiers and customers must also work together on the commercial frameworks, market rules and investment models needed to enable cross-border electricity trade.

FROM INDIVIDUAL ASSETS TO AN INTEGRATED SYSTEM

The next phase of Malaysia's energy development will require a broader definition of progress.

Renewable capacity, stronger grids, storage, digitalisation and regional interconnection all matter. However, they deliver the greatest value when they work together.

This is where the role of energy players must also evolve.

At Gentari, our focus is increasingly on connecting renewable generation, storage, customer demand and market opportunities into integrated solutions; working alongside utilities, policymakers, technology providers, customers and partners across the energy ecosystem.

No single company or technology can optimise an energy system on its own.

Malaysia's opportunity is to combine infrastructure investment with better coordination across supply, demand and markets. Doing so can accommodate new sources of growth while strengthening the reliability, resilience and cost predictability businesses and consumers depend on.

The next energy advantage may come not just from how much we build, but how intelligently we make it all work together.

The writer is Gentari's chief strategy and portfolio officer.