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What Malaysia can learn from Asia`s energy transition

The Edge, Malaysia

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CLIMATE AND Environmental Governance

BY WONG SENG KEE

Malaysia's energy transition is at a critical juncture. The energy sector accounts for nearly 80% of national greenhouse gas emissions, placing it at the heart of the country's decarbonisation efforts. Yet the transition must also ensure energy security and continued economic development. In addition, Malaysia faces unique challenges: federal-state governance complexities; subsidy dependency; and an industrial-heavy economy. Addressing the energy trilemma: security of supply; affordability; and sustainability demands a whole-of-nation approach, underpinned by clear policies, targeted investment, innovation and inclusive partnerships.

To accelerate progress, Malaysia must engage more deliberately with lessons emerging from across Asia. Over the past years, ERM (Environmental Resources Management) has been actively supporting governments, investors and companies across Asia to examine the region and navigate the complexities of energy transition. This article draws on those experiences to highlight what Malaysia can adopt, adapt and act on now.

A region in flux

Asia's energy demand has grown by more than 80% since 2000 and is projected to triple by 2050. Yet the region remains heavily reliant on fossil fuels, with coal still playing a dominant role. Many countries, including Malaysia, have yet to reach peak emissions.

Despite these challenges, momentum is building. Over three-quarters of Asia's emissions are now covered by net zero targets under long-term strategies submitted through the Paris Agreement. Countries such as Japan, Indonesia and Vietnam have committed to meaningful 2030 emissions reductions. Based on the National Energy Transition Roadmap (NETR), Malaysia has also set an interim target of 45% carbon emission intensity reduction against gross domestic product (GDP) by 2030. However, in many developing economies, decarbonisation must take place alongside broader goals, such as energy access, affordability and industrial competitiveness.

Promote energy efficiency and demand side management (DSM)

Promoting energy efficiency (EE) must be prioritised first. Mandating energy efficiency measures such as mandatory minimum energy performance standards (MEPS) for appliances and equipment, enforcing advanced building energy codes for new construction and incentives for industrial retrofits can reduce peak loads and lower the need for costly generation expansion. Japan's Top Runner Programme, South Korea's rigorous MEPS programme and Singapore Green Mark Scheme are some good examples to consider. Empower the energy utilities — Tenaga Nasional Bhd (KL:TENAGA), Sabah Electricity Sdn Bhd and Sarawak Energy Bhd — to develop robust, cost-effective DSM portfolios through load management, rebates and audits. Accelerate national smart meter rollout to enable time-of-use tariffs. The electricity tariff rationalisation strategy and expansion of the Energy Efficiency and Conservation Act (EECA) are steps in the right direction. The government is encouraged to stay the course on planned rationalisation of fuel and electricity subsidies in a phased, transparent manner; earmark a portion of the subsidy savings for EE rebate programmes and public transport upgrades; and support low-income households to adopt efficient appliances.

Emerging models

Across Asia, governments are beginning to implement strategies that reflect both ambition and pragmatism. These approaches offer important signals for Malaysia.

On the policy and technology front, countries such as Australia and Indonesia are positioning themselves as carbon storage hubs. Malaysia's Kasawari Carbon Capture and Storage (CCS) project — with its first injection planned for 2026 — reflects early ambition, though regulatory clarity is still needed to attract investment and scale.

Hydrogen development is also gaining momentum. Six countries in Asia — including Japan, South Korea and India — have national hydrogen strategies, with others in development. Japan's revised Hydrogen Basic Strategy outlines a pathway to low-carbon hydrogen and targets a 10% global share in electrolysers.

Governments are introducing financial tools to spur investment. Japan's dual-subsidy model for hydrogen, Singapore's S$5 billion (RM16 billion) Future Energy Fund, and Malaysia's Investment Tax Allowance for CCS are steps forward. Still, more targeted incentives are needed to de-risk early-stage projects.

Transparent government targets help set direction and build investor confidence, but they must be backed by stable, evolving policy frameworks. Singapore's carbon tax is one example of how consistent signals can support business investment. Governments must move beyond headline targets to sustained delivery.

Efforts to phase out coal-fired power remain difficult. Indonesia's Just Energy Transition Partnership (JETP) shows the challenge of balancing climate goals with energy security and social equity. The earlier retirement of the SLTEC coal-fired power plant of ACEN (energy arm of Ayala Group) in the Philippines offers lessons on managing such transitions. Social equity must remain central, especially for coal-reliant economies.

Unlocking renewable demand requires electricity market reform. The Philippines is enabling corporate buyers more flexibility in sourcing clean power. Malaysia has green tariffs and third-party access, but these must be scaled and streamlined.

Malaysia's geography and renewable base also make it a natural anchor for a more integrated Asean electricity grid. Cross-border trading with Singapore offers a promising test case. Still, regional integration must be approached with care — with the recently estimated price tag for a pan-Asean grid at over US$100 billion (RM420 billion), it shows that there is a need for prioritisation and governance clarity.

Grid modernisation is also needed to support this. Malaysia can draw lessons from India's experience in upgrading its grid to manage variable renewables. Investments in forecasting, transmission planning and flexible markets helped reduce outages and curtailment while enabling renewable uptake.

The same applies to carbon management. Countries with limited geological storage — such as Singapore and Japan — are pursuing carbon export agreements with storage-rich neighbours like Malaysia and Indonesia. Malaysia's bilateral deals on CCS and hydrogen with Japan and South Korea now need to translate into concrete projects and aligned policies.

Malaysia's opportunity

Malaysia is well-positioned to lead Southeast Asia's energy transition — but it must act decisively. The 13th Malaysia Plan, currently under parliamentary debate, is expected to set ambitious new targets for renewable energy capacity — surpassing the 31% goal under the NETR — with a strong push for rooftop installations, large-scale solar, and emerging technologies like floating solar. To support this, Malaysia must address grid bottlenecks and invest in transmission upgrades, smart grid systems and energy storage solutions. These infrastructure improvements are critical to integrating intermittent renewables and preparing for full Asean Power Grid (APG) participation.

The country is already playing a strategic role in the APG initiative, with active involvement in the Laos-Thailand-Malaysia-Singapore Power Integration Project and the launch of Energy Exchange Malaysia. These efforts are expected to unlock RM6 billion in private investment and create 50,000 green jobs. The development of a Renewable Energy Certificate framework and deep-sea cable projects from Sarawak to Peninsular Malaysia and Singapore further reinforce Malaysia's position as a regional clean energy hub. At the same time, it is important that large-scale energy users, such as data centres, are held to higher efficiency and transparency standards, to avoid passing costs to consumers or overstressing national resources.

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Heavy industries such as cement (pictured: a cement plant), steel, and the energy sector must be prioritised. These industries are central to Malaysia's economy.

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and the energy sector must be prioritised. These industries are central to Malaysia's economy but require technical solutions, capital investment and enabling policies to decarbonise effectively.

To fully realise its energy transition ambitions, Malaysia must also reform market mechanisms to encourage competition and transparency, including potential revisions to the single buyer model and enhanced feed-in tariff or auction schemes. Deepening regional partnerships and investing in shared infrastructure — including interconnectors and harmonised regulatory frameworks — will help Malaysia scale its energy ambitions and shape the future of energy in Asean.

Governments must also balance private ambition with public interest. Energy-intensive sectors such as data centres benefit from subsidised electricity and water, which can come at the expense of ordinary consumers. Similarly, the potential of public transport remains underdeveloped, even in parallel with the promotion of electric vehicle adoption. A more integrated, long-term strategy for clean and affordable mobility is urgently needed.

Malaysia's large biomass resource base remains underused, with incentives favouring biofuels rather than power generation. As the country considers sustainable aviation fuel production, careful attention must be paid to potential trade-offs between food, feed and fuel.

Legal exposure under investor-state dispute settlement clauses also presents risks as energy policies evolve. Governments must ensure regulatory reform does not trigger investor claims — especially as fossil fuel subsidies are withdrawn or legacy contracts challenged.

Ensuring a just transition

As energy transition plans accelerate, companies are starting to consider the social impacts on workers and communities. Insights from a recent ERM-WBCSD study show that while many businesses in Asia have signalled commitment, structured planning remains limited. Informal workers — a major part of the regional workforce — are often left out of transition efforts.

Examples from companies like ACEN (Philippines) and Tata Power (India) show how workforce assessments and reskilling programmes can be built into transition plans. But broader collaboration, clearer policy support and sustained investment are needed to ensure no one is left behind.

The role of corporate boards

Corporate boards are uniquely positioned to drive climate action, especially in public-listed companies. By embedding climate risk and opportunity into strategy, overseeing transition planning and championing innovation, directors can steer their organisations towards long-term value. Board-level advocacy for policy clarity and market signals is also critical to create the enabling conditions for energy transition success.

Looking ahead

Asia's energy transition is complex, but not without precedent. From policy design to financing models and cross-border collaboration, the region offers valuable insights. For Malaysia, the path forward lies in translating these lessons into context-specific actions, supported by regulatory reform, public-private coordination and bold corporate leadership. ■

Wong Seng Kee is country managing partner of ERM Malaysia and Brunei. This column is part of a series coordinated by Climate Governance Malaysia, the national chapter of the World Economic Forum's Climate Governance Initiative. The CGI is an effort to support boards of directors in discharging their duty of care as long-term stewards of the companies they oversee, specifically to ensure that climate risks and opportunities are adequately addressed.