



# The future of energy security

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NIRINDER  
SINGH JOHL



## Demystifying sustainability

AS Malaysia strides into a new era of energy transformation, two critical forces – democratisation and diversification – will define the nation's future energy security.

The journey towards sustainability is not merely about reducing carbon emissions or adopting new technologies; it is about ensuring that all Malaysians have a stake in the transition and that the energy mix is resilient enough to withstand global uncertainties.

In this final instalment of the six Ds of energy transformation, we explore how democratisation will empower individuals and communities to actively participate in energy generation and how diversification will secure Malaysia's energy future through a broader mix of renewable sources, particularly via the Asean Power Grid.

### Democratisation: Power in the hands of the people

The energy landscape is shifting from a centralised model dominated by large utilities to one where individuals and communities will play a direct role.

Democratisation will see Malaysians becoming energy producers rather than just consumers, shaping the future of energy through localised and community-driven initiatives.

Rural areas in Sabah and Sarawak will increasingly benefit from community microgrids, ensuring that even remote regions have access to reliable, renewable power.

### Malaysia's direction with Cream and Cress

The recent announcement by the Energy Transition and Water Transformation Ministry regarding the Community Renewable Aggregation Mechanism (Cream) is a testament to this shift towards energy democratisation.

Cream allows homeowners to lease their rooftops for solar energy projects.

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This initiative, part of the Corporate Renewable Energy Supply Scheme (Cress), aims to boost the country's renewable energy capacity by enabling rooftop solar photovoltaic systems that supply green electricity through an open-grid access model.

The Energy Commission is currently finalising guidelines for its implementation.

This shift will not only provide electricity but also create economic opportunities, as local communities take ownership of their energy needs.

In the coming years, peer-to-peer energy trading will gain traction, allowing surplus solar energy from rooftops to be sold directly to neighbours through blockchain-enabled platforms.

This innovative approach will reduce reliance on major energy providers and encourage greater efficiency in energy consumption.

However, for democratisation to truly take hold, education and awareness must be prioritised.

Government initiatives, alongside private-sector investment, must equip Malaysians with the knowledge and resources to capitalise on new energy opportunities.

Public campaigns, workshops, and financial incentives – such as grants for community solar projects – will be crucial in ensuring widespread participation in Malaysia's energy revolution.

### Diversification: Expanding the energy mix for resilience

The key to Malaysia's energy security lies in diversification.

As the nation moves towards net-zero carbon emissions by 2050, its energy portfolio must extend beyond fossil fuels to incorporate a diverse mix of renewable sources.

Currently, coal and natural gas account for over 80% of Malaysia's electricity generation, making the country vulnerable to price volatility and geopolitical risks.

However, by 2025, Malaysia aims to increase its renewable energy share to 31%, with a further target of 40% by 2035

under the Malaysia Renewable Energy Roadmap.

Solar power will continue to dominate the renewable sector, driven by the large scale solar (LSS) scheme.

However, true diversification requires Malaysia to look beyond solar energy:

> Biomass and biogas: Malaysia's vast palm oil industry generates agricultural waste that can be transformed into energy, reducing carbon emissions while providing an alternative power source.

In the West, bioenergy accounts for 30% of energy production – Malaysia should evaluate the feasibility of reducing coal imports while exporting biofuel to Japan and South Korea for their renewable energy needs.

> Small-scale hydropower: Unlike large hydroelectric projects, small hydropower plants have historically supplied rural communities.

These stand-alone systems can now be reintegrated into rural areas, providing sustainable and low-impact electricity.

> Energy storage solutions: The future success of diversification will depend on advancements in battery storage.

Lithium-ion and solid-state battery technologies will enable better storage of intermittent solar and wind energy, making renewables more reliable.

The Energy Commission's recent tender for 400MW/1,600MWh of battery storage highlights this transition, with LSS 6 expected to incorporate storage solutions.

Investments in these diverse energy sources will reduce dependency on imports, strengthen energy security, and create new job opportunities in Malaysia's green economy.

The future of Malaysia's energy security will be shaped by collaboration between the government, private sector, and communities.

Public-private partnerships will accelerate the rollout of renewable infrastructure, while startups and research institutions will drive technological breakthroughs.

Emerging technologies such as artificial intelligence (AI) for energy optimisation and blockchain for secure energy trading will play a critical role in making

democratisation and diversification a reality.

Government policies must be forward-thinking, fostering an environment that encourages innovation through tax incentives and research grants.

The six Ds of energy transformation form the foundation of Malaysia's sustainable energy future:

> Decentralisation: Empowering commercial and industrial entities to generate their own energy, reducing reliance on large power plants.

> Decarbonisation: Driving the shift to cleaner energy sources to mitigate climate change impacts.

> Digitalisation: Enabling smart grids and AI-driven energy management for greater efficiency and micro-level energy trading.

> Deregulation: Opening up competition, fostering innovation, and lowering costs.

> Democratisation: Granting Malaysians control over their energy choices while ensuring local community involvement.

> Diversification: Safeguarding energy security by broadening the mix of renewable resources across Asean as a unified trading community.

The path forward is clear: Malaysia must act decisively to implement these principles, especially as it assumes the Asean chairmanship for the next two years.

The energy transition is not a distant goal – it is unfolding today, and its success depends on immediate and bold action.

Policymakers must set clear, actionable goals, businesses must integrate sustainability into their core strategies, and citizens must be empowered to take an active role in shaping their energy future.

Malaysia's journey towards energy security through democratisation and diversification will not only create a cleaner and more sustainable environment, but also drive economic growth and energy independence.

Nirinder Singh Johl is the founder and chief executive officer of Asia Carbonx Change Pte. The views expressed here are the writer's own.