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The need for nuclear

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MALAYSIA is planning to go nuclear to meet its energy transition needs.

It's a good plan but the big question is: "where will the nuclear power plants be located?"

Of course, there are other questions too – like what will it do for the cost of generating electricity and the power bill that ensues.

However, the biggest sticking point is who will want to have a nuclear power plant in their backyard.

The need to have nuclear power is obvious for Malaysia given its net-zero carbon emission requirements by the year 2050.

It was announced in Parliament recently that the government has also completed a feasibility study on nuclear power.

Under the 13th Malaysia Plan, nuclear power generation is to start by the year 2031.

That will basically mean that power generation, which is the largest component of carbon emissions, will need to transition towards "cleaner" generation sources.

We have had a series of solar-power initiatives under the Energy Commission that sees the government channelling funding towards the promotion of solar energy as the future mainstay of power generation in the country.

Solar power projects have already begun in earnest despite initial hiccups.

With more cost certainty in solar generation, the main issue is going to be battery storage and also the use of fertile land to host the solar panels.

Then, there are initiatives to get solar panels on rooftops, which is the best readily available space to host the panels, given the non-intrusive nature of rooftops unlike ordinary and fertile land.

The battery energy storage systems (BESS), now being in the process of rollout, is now crucial, as we need to store the intermittent energy that will be generated from solar farms and panels.

Energy storage systems are vital in solar power generation but the worry is that it will only raise the cost of power for the end user.

That is where nuclear power comes in.

It is seen as a "seamless" replacement for coal-fired plants given its base-load potential in generating steady flows of power. Plus, nuclear energy is now seen as a cleaner alternative to coal-fired plants.

In a report, Science, Technology and Innovation Minister Chang Lih Kang says the study's initial

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■ Nuclear energy is now seen as a cleaner alternative to coal-fired plants

■ Independent power producers will likely dominate future electricity generation

findings indicated that nuclear energy has strong potential to serve as a stable, clean and reliable power source for the country.

"In line with this, six technical task forces have been proposed to support nuclear energy readiness.

"Three of these are under the ministry, focusing on technology and industry development, the development of nuclear competencies and a legal and regulatory framework," he told the Dewan Rakyat on Wednesday.

He says Malaysia was working to amend its Atomic Energy Act to allow for the ratification of key international treaties and conventions under the International Atomic Energy Agency (IAEA).

"Once approved by Cabinet, we aim to table the amended act in this Parliament session.

"This will demonstrate Malaysia's seriousness in exploring nuclear energy as one of our power generation options," he says.

Given Malaysia's geography, wind power is basically out of the question although some low intensity wind turbines have been tested.

Gas is another major source of power in the country but indica-

tions are that there will be a shift away from that towards solar and nuclear power as those two remain the most viable alternatives.

One important takeaway from generating renewable power from solar and nuclear is the cost.

BESS systems cost a lot more to maintain as an infrastructure and the national grid will need to be upgraded to handle the extra load of renewable power.

That means Malaysians will need to prepare themselves to shoulder the extra costs in going green.

Solar remains cheap in terms of capital costs and running costs even with the battery systems.

But the intermittence and reliability of such power is a question that needs answers.

The cost of sustaining nuclear power is said to be fairly cheap unlike other traditional power generation, but the upfront capital cost to build a nuclear power plant is going to be steep.

Also, the startup capital costs is an impediment, as it will be several times that of coal-fired plants. The long-term average cost of nuclear is also around three times that of solar power

generation.

Given the novelty it is in Malaysia, the cost of generating nuclear power will be substantially more expensive than coal-fired power.

Chang says Malaysia is also working closely with the IAEA through technical cooperation programmes, regional partnerships, the Asian Nuclear Cooperation Forum and coordinated research projects.

"We are progressively upgrading our research capabilities and working with countries like China, India, Russia and the United States that have advanced expertise in this area," he says.

For Malaysia, the time will come when we will need to say goodbye to cheap power.

Malaysia has one of the cheapest power tariffs in the region and that is why there is a beeline of data centres into the country.

The use of nuclear power will change that, at least domestically.

With private power companies already conducting initial research into starting up nuclear power plants, these independent power producers will likely dominate the future electricity generating landscape.

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