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First CEO of NUS nuclear institute lays out plans to help energy transition

He sees its role as assisting policymakers to make decisions on tapping nuclear power

With around two decades in the civil service and nearly three years at the Energy Market Authority (EMA), Mr Low Xin Wei wants to ensure that the research coming from Singapore's young nuclear institute addresses the challenges of the country's energy transition.

In March 2026, he was appointed the first chief executive of the 10-month-old Singapore Nuclear Research and Safety Institute (SNRSI) at the National University of Singapore (NUS). The institute evolved from a decade-long nuclear research initiative at NUS.

Mr Low, 45, envisions the institute as a technical adviser to policymakers, so they have the scientific understanding to make informed decisions on tapping nuclear energy in Singapore.

Singapore has not made a decision to go nuclear, but is laying the groundwork to study it thoroughly as an alternative energy option. It is also monitoring developments in advanced nuclear technologies like small modular reactors (SMRs).

SMRs are advanced and compact reactors that can be factory-assembled and installed in dense urban areas. They are also designed to be safer than traditional large reactors.

While the institute of more than 50 researchers has expertise in the science – studying advanced nuclear reactors, the spread of radioactive particles, and the effects of low-dose radiation on living things – it also needs to examine the engineering aspects of running a power plant, said Mr Low.

It must also consider how atomic power could fit into the country's future energy mix, which will include renewables, he told *The Straits Times* in his first interview as SNRSI's chief.

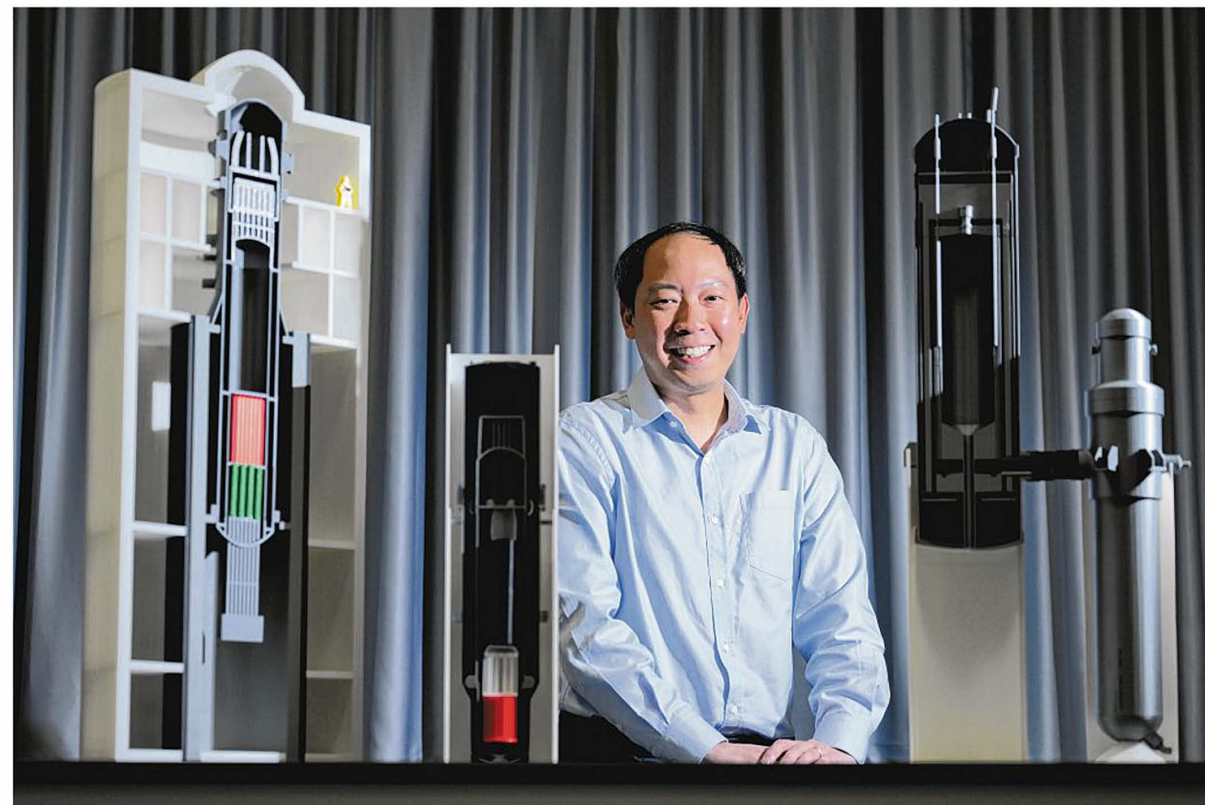
He said: "The energy transition is a tricky business; you not only have to look at the promise behind the technology itself. You have to answer questions like: 'How can it scale?', 'How can costs be driven down?' and 'Will the supply chain work out?'"

"In any academic setting, there is this danger of looking at the world through rose-tinted lenses: 'If my science is sound, downstream adoption shouldn't be a problem.'"

While it is not wrong to be optimistic, Mr Low said SNRSI has to not only produce excellent science, but also perfectly tackle real-world issues such as engineering constraints, building a plant on time without exceeding budget, and educating the public.

The five-storey institute at NUS officially opened in July 2025, led by director Chung Keng Yeow, who had also been head of the institute's predecessor, the Singapore Nuclear Research and Safety Initiative, since 2018.

In late 2025, Mr Low heard that the institute was seeking its first CEO, from a call put out by NUS



Singapore Nuclear Research and Safety Institute chief executive Low Xin Wei said a key task of the institute is educating the public about nuclear energy, to help address potential apprehensions. Since its launch, it has hosted 10 public lectures on issues related to nuclear science and technology. ST PHOTO: NG SOR LUAN

and a ministry.

He said: "Having just a university-based academic director was not quite sufficient. SNRSI will look a little bit more of a different animal than just a research-performing entity."

The institute needs to be a school, possess a strong outreach arm, coordinate research across different institutes, and work with agencies on a myriad of nuclear-related issues, Mr Low added.

The institute is also exploring introducing Singapore's first master's programme focused on nuclear engineering in 2027.

Currently, NUS' mechanical engineering department offers a graduate module on nuclear ener-

gy technologies.

When he was assistant CEO of energy technologies at EMA, Mr Low covered markets, transition planning into cleaner energies, and emerging tech. Previously, he was group chief technology officer of the Public Sector Science and Technology Policy and Plans Office, which sits under the Prime Minister's Office. He started his career helping to set up the National Research Foundation in 2006.

One of the advanced SMR designs that the institute has a keen interest in is the high-temperature gas-cooled reactor – deemed to be among the safer nuclear tech available.

The heightened safety lies in

how the uranium fuel is stored. In a gas-cooled reactor, poppy seed-size uranium kernels are coated with layers of temperature-tolerant and protective carbon and ceramic materials.

Thousands of these kernels are then further sealed with carbon inside a sphere the size of a billiard ball. With the fission reaction contained in each kernel, it can be meltdown-proof.

Unlike other SMRs that are used to produce electricity, a high-temperature gas-cooled one can also produce industrial heat.

China has one plant using such reactors operational in Shandong province since 2023, and it is building a second one – mainly for in-

dustrial heating – for the petrochemical sector. The US' X-energy is building a similar reactor.

In April, SNRSI entered a partnership with Tsinghua University's Institute of Nuclear and New Energy Technology, which was the birthplace of the advanced reactor's technology in China.

"It is one thing to hear from those selling the reactors on how they work. It is also important to get to the source, understand from those who design these reactors – whether or not the maths and science behind the reactors are entirely valid," said Mr Low.

SNRSI's researchers also use specialised computer programs that simulate various SMRs to under-

stand their normal performance as well as their behaviour during severe accidents.

While forging partnerships with countries that are ahead in nuclear usage, the NUS institute is also planning to collaborate with other local institutes and potentially fund related research.

For example, while SNRSI is adept at modelling how radioactive pollutants disperse through air or water, it may need to work with weather and air pollution experts to understand how radiation-emitting particles could behave in the context of South-east Asia's weather and urban settings.

"Could humidity cause the particles to adhere differently to concrete? Perhaps the way we then have to clean (contaminated) concrete surfaces would differ from how it was done with Chernobyl and Fukushima."

On SNRSI's role in building nuclear talent, Mr Low said the types of talent will be built in phases. Now, Singapore needs PhD holders and nuclear engineers to guide and advise policymakers. The institute plans to grow its talent pool to around 130 by 2030.

The planned master's programme will create a local training route, as most nuclear experts in Singapore have so far been trained abroad. The institute also aims to provide professional training and short courses for policymakers, financiers and others in the nuclear ecosystem.

If and when Singapore decides to go nuclear, the country will have to ramp up talent further to have a sufficient workforce to run a plant, said Mr Low. After that, it could take 10 years to 15 years to build the plant.

At one point in the interview, Mr Low held up his phone to show his screensaver featuring his two-year-old toddler. He said: "The people who are likely going to be the first fresh grads operating the plant are probably this young now."

Another key pillar of SNRSI is to educate the public about nuclear energy, to help address the apprehension the topic can often evoke.

Since its launch, the institute has hosted 10 public lectures on issues related to nuclear science and technology. These included talks by the French nuclear authority on safety.

To date, 400 students, from secondary schools to universities, have visited SNRSI to learn more about nuclear fission, reactor technologies and safety.

The institute is also working with the Ministry of Education to develop a module on nuclear energy for the online learning portal used in schools.

Mr Low said public education and outreach has to be done carefully and responsibly.

He added: "As an institute, we focus on explaining the fundamentals of nuclear science, rather than advocating positions. So, public understanding is built on evidence rather than emotion."

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