Questions M'sia must answer before we go nuclear
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Nuclear energy. The term undeniably evokes a feeling of unrest in people, no matter how minute it may be. This may have to do with the bad rap it has gained since the infamous Chernobyl and Three Mile Island incidents.

But are the fears unfounded? Technology, after all, evolves through time. People learn from mistakes, albeit costly ones when it comes to nuclear power. There is definitely no room for trial and error in employing the usage of nuclear energy to power up a country. One must get it right the first time.

nuclear power plant reactor fusion 040309 02Prime Minister Najib Razak has given the green light to the Ministry of Energy, Green Technology and Water to start working on the nation's intention to go nuclear by 2021. Its minister, Peter Chin says going nuclear it is the only viable option, given that energy demand keeps increasing and Malaysia's existing energy mix of gas, coal and hydropower is "unhealthy".

Bernama interviews the Water and Energy Consumer Association of Malaysia (WECAM) secretary-general S Piarapakaran on basic questions Malaysia must answer before it goes nuclear.

Are we ready for it?

Piarapakaran says many aspects need to be looked into in gauging Malaysia's preparedness to go nuclear.

"We need to do stock taking on this. We need to know how many Malaysian experts have been working in this field with real life experience."

He says Malaysia has a very small-scale nuclear plant in Bangi which operates at 1MW.

Comparatively, he says, running a 200MW or 1,000MW plant needs a totally different set of experience, especially in terms of safety and leakage prevention.

"We must also note that although the country has embarked in introducing nuclear in 1970s, it pulled out due to the discovery of new oil fields in Malaysia.

"We do not have fully experienced home grown experts. We cannot keep borrowing foreign experts, as this will put Malaysia into an uncomfortable situation when it comes to 'energy security'," says Piarapakaran.

"Furthermore, there should be a Detailed Environmental Impact Assessment (DEIA) before we make a decision. Any country can plan a nuclear plant but managing and operating it comes with huge responsibility altogether," he says.

Malaysia have yet to develop nuclear related laws and legislations. This takes time.

Advocates may argue that one of the plus points of nuclear energy is that it is "green". On a global scale, nuclear power currently reduces carbon dioxide emissions by some 2.5 billion tonnes per year (relative to the main alternative of coal-fired generation, about two billion tonnes relative to the present fuel mix).

But Piarapakaran says a clear point Malaysians need to understand is that nuclear energy is low-carbon technology, not green technology.

"It still has huge impacts to the environment via the waste generated."

What risks are involved?

It is the question playing on everybody's minds: what are the risks involved in building and living with a nuclear power plant?

Piarapakaran says there are three immediate risks that we need to look at.

The first one is the leakage of radioactive rays.

"These rays can cause severe health complication not only through direct exposure to humans but indirect exposure through water, flora and fauna that we may consume," he says.

But those who may suffer the worst of the ill effects of radioactive leaks are employees working in the reactor, who face the close proximity exposure risk. These leaks may sometimes go undetected for decades as was the case with the Vermont Yankee nuclear facility in US, earlier this year.

The second risk, which may be on everybody's minds, is explosion. This may be caused by instability in the reactor.

Such explosion will always remind us of Chernobyl, says Piarapakaran.

He says: "Based on our screening of nuclear accidents, almost all of it is related to human error factor. This places huge responsibilities for nuclear reactor employees."

This means that employees hired should have excellent hands-on experience and are skilled and professional in discharging duties, as there is zero room for error. Containment of such incidents should also be placed as a priority.

Since nuclear incidents have direct correlation to human error, the country must look into its prevention, lest we end up with many issues of leakages and nuclear accidents.

Even in countries like France, which has vast technology and expertise in handling nuclear power, more than 100 small leakages takes place in a year.

"Such leakages sometimes lead to shut down of water treatment plants and quarantine for weeks in small towns," says Piarapakaran.

But although both the first and second risks rarely take place, the relevant industry and government must view proper mitigation as a critical aspect to take care of.

Nuclear waste management is the third risk, and it is as grave a risk as the rest.

"It takes only 15kg of a nuclear waste to produce a nuclear weapon," says Piarapakaran.

"When we produce a resource that can be used as weapon for war, we need to ensure there

is enough security. Malaysia needs secured locations for storage and transfer. We will also need to beef up of national security," he adds.

Beefing up security for nuclear energy will also incur additional costs for the nation.

What are the costs involved?

Speaking of costs, what is the cost involved in the building and maintenance of a nuclear power plant?

Piarapakaran says there are three basic costs to building any power plant: the cost of construction, cost of operation and finally, cost of maintenance.

"The construction and maintenance costs are slightly static compared to the cost of operation. The cost of operation tends to fluctuate with the availability of raw materials as well as waste management," he says.

"Just like fossil fuel, uranium and plutonium resources of nuclear energy are limited resource. They will deplete one day," he added.

But an additional cost that a nuclear plant has to bear is the cost of decommissioning. After a period of operation, many parts of the nuclear plants will be radioactive.

"These parts need to be disposed safely. In the United Kingdom, the cost of decommissioning is ever increasing from estimated costs," says Piarapakaran.

He says that this is because older plants cause huge increases in decommissioning cost compared to the new plants.

"The cost of managing the nuclear waste or 'spent fuel' is still high. This will increase with the increasing support for green energy resources," he says.

Piarapakaran adds that even in Germany, the government has pledged to reduce nuclear dependency and increase solar utilisation as well as improve energy efficiency across all sectors.

This can be seen through its move to shut down more of its reactors in recent years, and its announcement to phase out the use of nuclear power by 2020.

"In such a shift, we may be losing out and may need to pay international "penalty" for using nuclear as a fuel. Tables can be turned anytime," he says.

Who will be responsible for it?

Many are confident to say that technology has come far since the days of Chernobyl. While that may be true, radioactive leaks from plants are still happening, to this day.

Piarapakaran asks: "If such leakages takes place, who will be willing to take responsibility? Damage control is beyond Emergency Response Plan (ERP).

"ERP can be easily obtained as Standard Operating Procedure from any textbooks. Actual situation cannot be defined in a textbook."

He hopes that through the DEIA and a through policy review, there will be a strong legislation to ensure that responsibility lies within the framework.

"We do not want everyone to wash hands if things go awry," he says.

When asked about suitable and practical alternatives, Piarapakaran says energy efficiency is a step that can be taken immediately.

Besides being the cheapest of all alternatives, it also ensures that all generated energy is utilised in optimum level.

He says WECAM is still conducting studies on nuclear energy and suitable alternatives.

"So far, we have not come to a clear defined conclusion. We would not like to jump into conclusion without thorough studies.

"We really need to plot the macro picture and identify all the micro issues to get the overall scenario. Doing this will make us more careful in making a decision," he says.

- Bernama

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