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Some learned from Fukushima. Did we?

KANUPP has tons of radioactive material stored in its core, can wreak destruction if a major accident happens.

By Pervez Hoodbhoy

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One year ago, on March 11, 2011, a 30-foot monster wave smashed into Fukushima Daiichi's complex of six nuclear reactors on the northern coast of Japan. Just a handful died as uncontrollable reactors inched towards meltdown and radiation poured out. But, apart from a few countries, the dream of a nuclear renaissance suddenly turned into a nightmare everywhere else.

A traumatised Japan, where nuclear power provided 30 per cent of its energy needs, has shut down all except two of its 55 reactors. Germany has decided to jump ship; within weeks of the disaster it decided to close its nuclear plants permanently. A third of the country's reactors were decommissioned immediately, others will be wound down by 2022. In the UK, 61 per cent of people said they are strongly opposed to any new nuclear power station being built near their home. Italy and Switzerland have also voted against nuclear energy, while France is engaged in deep self-reflection.

Overreaction? No! The truth about Fukushima is just emerging — and it is scary. Although Japanese leaders had spoken soothing words to the public, they had badly panicked. A 200-page report on the disaster, to be released this week, quotes the chief cabinet secretary at the time, Yukio Edano, as warning that a “demonic chain reaction” of plant meltdowns could result in the evacuation of Tokyo, 150 miles away.

Tokyo escaped, of course, but the damaged plants will need about 40 years for their melted cores to be controlled and fully disposed off. A big swathe of territory lies contaminated. Latest estimates are that a staggering 40,000 tera-becquerels of radioactive cesium were released, far greater than the 89 tera-becquerels after the US atomic bombing of Hiroshima.

The cesium has made its way into supermarket beef, vegetables, and ocean fish. Tens of thousands of Fukushima refugees are living a difficult life after fleeing the clouds of deadly radiation. A 20-kilometre no-go zone surrounds the plants. In spite of much-vaunted Japanese technology and \$13 billion spent so far on decontamination, progress is haphazard and slow.

Fukushima has also shaken China and India, though much less. They were planning 77 and 23 new reactors, respectively. But a normally passive population is speaking up in China. China's eastern province of Anhui province opposes the Pengze plant, located in a populated area. A formal appeal has been made to Beijing to stop construction.

India's nuclear programme, a holy cow until now, is also being protested. Prime Minister Manmohan Singh angrily denounced protests against the Koodankulam nuclear plant in Tamil Nadu, claiming these were being led by foreign-funded NGOs. Mass protests and hunger strikes by social movements have led to deaths, injuries and riots in Maharashtra, Tamil Nadu and Jaitapur. The construction of two nuclear plants has been delayed and West Bengal has dropped plans for six Russian reactors.

The world is still worried about Fukushima. But does Pakistan worry? Even as explosions tore through the nuclear complex, the Pakistan Nuclear Regulatory Commission flatly declared that a Fukushima could never happen here. It issued the following vanilla guarantee: “Due to geographical differences between Pakistan and Japan, the likelihood that similar extreme natural events may occur in the vicinity of the country's nuclear plants is quite small”.

Since two extreme natural events are unlikely to be similar, this is technically correct. But how would Pakistan deal with massive radioactive release after deliberate sabotage, a terrorist attack, equipment failure, or operator error? Floods and earthquakes have shown that the country can make piteous calls for international aid but lacks the capacity to deal with disasters, natural and human-caused.

Fukushima should be an eye-opener. Japan has good engineering knowledge and practices, and a strong safety culture. Pakistan does not. Looking for shortcuts, and choosing to put faith in God rather than precautions, is in the national character. Nuclear plant operators can easily overlook critical safety procedures; outsiders cannot know because everything lies under the wrap of nuclear security. Bad practices are readily covered up.

Post-Fukushima, the science journal *Nature* recently teamed up with the Nasa centre based at Columbia University to see which nuclear plants have the largest populations surrounding them and, therefore, are potentially the most dangerous. The winner turns out to be Karachi. It has more people than any other in the world – 8.2 million by their estimates – who live within 30 kilometres of a nuclear plant, KANUPP.

Located by the seaside, this aging 40-year-old reactor is chronically incontinent and has leaked heavy water often, most recently earlier this year. Supplied by Canada, it went into in operation in December 1972 and completed its 30-year life span in 2002. But since then, lifetime extensions have kept this geriatric alive.

Power production has been erratic. According to IAEA statistics, KANUPP has been down 70.4 per cent of the time. A Stanford CISAC report says: “KANUPP performance is lower than even the oldest CANDU reactors operated in Canada and elsewhere except for the Rawatbhata reactors in India.” But even if it had operated as per design (120MW of electrical power), it could supply only 5-6 per cent of Karachi’s total electrical power needs – barely enough for Golimar and Lyari.

While of doubtful benefit, KANUPP has tons of radioactive material stored in its core and can wreak terrible destruction if a major accident happens. Deadly radioactivity could be carried by the sea breeze toward the city. If lucky, the rich and the privileged might succeed in running away. But the poor would be doomed. The city would fall to looters and criminals, roads would be clogged, and vital services would collapse.

Dismissing Fukushima as irrelevant, the Pakistan Atomic Energy Commission (PAEC) has announced that it will seek to extend KANUPP’s life once again. Its chairman declared KANUPP to be safe for another 10 years and said “the plant’s operations would be made safer in case the KESC paid its dues on a frequent basis”. PAEC has further stated that KANUPP-II and KANUPP-III, each more than ten times the power of KANUPP-I, will be built at the same site. While the risk-benefit calculus of nuclear power can argued both ways, locating nuclear reactors near an unevacuable megacity is criminally foolish.

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