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Kudankulam is no Fukushima

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The Kudankulam Nuclear Power Project should be seen in the right perspective — its reactors are of recent design and the risk from tsunamis is lower. *The agitationists are targeting India's nuclear programme itself, and are politically motivated.*

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In the wake of the tsunami that struck Japan and the accidents at the Fukushima Nuclear Power complex, public concern has been reignited over the safety of the Kudankulam Nuclear Power Plant (KNPP). Two Russian-made VVER (water moderated water cooled) Pressurised Water Reactors of 1000We are being constructed at this site. KNPP-1 is 99 per cent complete and is scheduled to go on stream by end-2011, while KNPP-2 is 95 per cent complete and is expected to start operation by mid-2012. Six more Russian VVER reactors, of a more advanced type, of 1200 MWE each are envisaged at this site in future.

The complex is located on the coastline, off State Highway 176. During the tsunami in the Indian Ocean in December 2004, waves had flooded the site and delayed the foundation works.

The Fukushima accident has caused public concern over possible tsunami threats to the NPP at this site. In addition, there are other concerns over safety and the environment, on account of radiation and thermal discharges into the sea. These concerns are legitimate and must be discussed and appraised on a sound and scientific basis, without whipping up emotions or playing politics.

Safety features adequate

The Russian VVER reactors of 1000 MWe are considered to be quite safe, unlike the Chernobyl graphite RBMK reactors. They have many safety features built in to them, and have an operating life of 40 years.

The reactors at KNPP have an added passive cooling system for additional safety. The more advanced VVER 1200 reactors, with more safety features, are being built in Russia, and would be available for the future expansion of KNPP.

While 30 VVER-1000 reactors have been built, 19 more are planned or are under construction. China has built two such reactors at the Tainwan NPP and is constructing six more. The VVER 1000 built in China has 94 per cent of its systems automated, i.e. the plant can control itself under most situations. The IAEA has referred to the Tainwan station as the “safest nuclear power plant in the world”.

Given this background, the KNPP reactors can be considered to be adequate from the safety standpoint. There would be no rational reason for stopping the project at this stage, when it is over 95 per cent completed. The main new concern relates to the risk from earthquakes and tsunamis. The sources of seismicity in the Indian Ocean are the faults generated by the movement of the Indian plate against the Sunda plate to the east, the Arabian plate to the West, and the Australian Plate to the South. The first was the site of the giant 9.1 magnitude earthquake of

December 26, 2004, at a depth of 30 km off the coast of Sumatra, close to the trijunction with the Australian plate.

Relatively protected site

While considerable information exists about seismic zones on the Indian land mass, due to civil engineering concerns, there is relatively less data on seismicity in the Indian Ocean.

It would be safe to assume that significant earthquakes can occur in future in the zone near Sumatra, and off the Oman coast, generating tsunamis. The NPP site is shielded to an extent from tsunamis from the East by the Sri Lankan land mass, and the waves would have to travel around this barrier to reach Kudankulam.

Unlike Fukushima, however, the earthquakes would be quite far away from Kudankulam, giving officials adequate advance warning to shut down the reactors well in time, with much less chances of direct structural damage from the earthquake itself. It is necessary to “harden” the NPP site against possible tsunami waves in future, and to take adequate measures to protect spent fuel storage areas from being submerged.

The AERB norms require that “the possible occurrence of a tsunami and consequent flooding at the site should also be considered while determining coastal flooding aspects”.

The KNPP-like thermal power plants require large amounts of cooling water, about 70 cubic metres per second. A 1000 MWe NPP would produce 3000 MW of thermal energy, and of this 2000 MWE has to be discharged into the environment. This cooling water is discharged into the sea. The CPCB's norms for new thermal plants located on the sea coast set a limit of 7 degrees for the rise in temperature of the discharged water.

The impact of this warm water on the marine environment is difficult to assess, and would depend on the sea depth, flow rates, and ecology. However, if there is a significant impact on marine life and fisheries, stronger limits may need to be fixed on the temperature rise of the discharged water. AERB has set the limit for radiation exposure of the public from nuclear power plants at 1 milli Sieverts per year (mSv/yr) above natural background radiation (about 2.5 mSv/yr). The actual exposure from Indian NPPs is well below 20 per cent of this limit, according to AERB.

However, there have been some allegations of the health effects of radiation on people living in the vicinity of NPPs in India, and these need to be clarified.

Over-reaction to Fukushima

The agitation against the KNPP appears to be based on fear and an over-reaction to the Fukushima accident. The situation of the KNPP is quite different from the Fukushima complex. The reactors are of more recent design, with safety features, and the risk from tsunamis is lower. Stopping the project at this stage would lead to a big setback to India's nuclear power programme. Power shortages in South India would get worse and would have a negative economic impact.

The agitators have raised 13 specific objections to the KNPP. It is relevant to ask why these have not been raised in the courts, for example by a PIL. If any serious issues are raised, they can even be looked into by an independent commission. So far, no PIL has been filed against the project. Surely, a court hearing would ensure that the objections are fairly examined and conclusions reached. But the agitation has gone into the streets.

This suggests that the real target of the agitation is India's nuclear programme itself. Linked with this are political undercurrents that have nothing to do with nuclear safety. It is time to move beyond these games. Nuclear power deserves to be given a fair chance to prove itself.

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