



# To be, or not to be

The future of nuclear power in India after Fukushima

IN MARCH THIS YEAR, SEVERE DAMAGE caused to Japan's Nuclear Power Plant in Fukushima by the twin effects of a severe earthquake and a tsunami, rekindled public fears across the world about the safety of nuclear power. The damage to the reactors led to the release of toxic radiation and radioactive contamination over a significant swath of territory. While there have been no fatalities from the release of radiation nor any evidence of long-term and adverse health consequences, there is little doubt that there is now pervasive anxiety in several countries concerning the safety of nuclear power.

The Fukushima fall-out may have serious consequences for India's ambitious nuclear energy programme unless the government is able to allay the growing fears and sense of vulnerability among communities living close to existing or proposed nuclear power plants. Earlier during the year there were public protests at one of the proposed sites for new generation nuclear power plants at Jaitapur in Maharashtra. The government tried its best to reassure people that the new reactors would incorporate the most advanced safety measures and would boast of a number of back-up mechanisms to cope with unexpected emergencies. These have only partially allayed public fears, but the central and Maharashtra governments have declared their intention to go ahead with the construction of the new plants.

There has been an even more serious public outcry over the activation of the two-unit Kudankulam Nuclear Power plant, which would have added 2000 MW of stable, base-load power, to be shared between Tamil Nadu and the Southern grid. The government has been forced to defer the activation of the plant. The Department of Atomic Energy has shed its culture of silence to engage directly with the local community and share detailed information about the Kudankulam reactors and their state-of-the-art safety features. The former President of India, APJ Kalam, a

distinguished scientist himself, visited Kudankulam a few weeks ago to personally review safety features at the plants and declared that he was satisfied about their efficacy. However, the protests have continued and it is not clear how the project will be taken forward. This is a serious development since four new reactors of 1000-MW each are to be established at the site in collaboration with the Russians. If they are delayed in execution, there will be cost over-runs. The economic viability of the plants may be put in question.

We have seen similar public allergy to nuclear power at the Hirapur site in West Bengal as well, where US made reactors are likely to be sited. What should the government's response be in these circumstances? Unless the matter is properly handled, India's plans to expand nuclear power from the current level of about 4000 MW to over 60,000 MW by 2030-1 would be rendered chimerical. It would indeed be a pity if having succeeded in opening the international market in nuclear energy to India after it was frozen out by sanctions post-1974, the country is now prevented from capitalising on this opening due to post-Fukushima safety concerns.

In a democratic country like India, it will not be possible to ignore public sentiment and go ahead with plans to expand nuclear power capacity. It is noteworthy that local political leaders have shown no compunction in aligning themselves with community opinion even though the latter may be based on irrational fear and prejudice. The only credible response is to be as transparent as possible, disseminate information and directly confront the anxieties and concerns of people through reasoned debate and argument. There should be a clear setting out of both the risks involved but also the benefits that accrue to the community. A sustained public education campaign on nuclear power is the only antidote to the sometimes misinformed and prejudiced judgments that people are prey to.

It is also necessary for government to recognise that a rapid and significant expansion of nuclear power in the country, will pose challenges for regulatory and safety authorities in country. Regulating and monitoring a 4000 MW industry is a different order of challenge from managing a 60,000 MW nuclear power sector, with a variety of different designs, technologies and specifications. Not only would it be necessary to have a much more fully-empowered and independent regulatory authority, its procedures and methods of work, its capacities for monitoring, surveillance and enforcing accountability would also need to be greatly strengthened. This may require close collaboration with similar bodies in friendly countries which run much larger nuclear power programmes than India. The US Nuclear Regulatory Commission is a leader in the field and is ready to share its expertise with India.

One should welcome the decision of the government of India to undertake an independent, authoritative and comprehensive review of the safety procedures of all our existing and proposed nuclear reactors. This is already underway and its results should contribute to an intelligent debate about the safety of India's nuclear power plants. The decision to set up a truly independent regulatory authority, with members who are highly respected and knowledgeable scientists, will also go a long way in creating confidence in the industry. The industry should welcome regular audits by the IAEA as well as the well-respected World Nuclear Operators' Association based in London. India's nuclear power plants have enjoyed high reputation among these international bodies for the professionalism with which they are run and the very serious attention that is accorded to maintaining the highest standards of safety. After all, the Kudankulam reactors were able to cope with the tsunami in 2004/05 precisely because of their well-planned safety and back-up systems.



**SUPPORT FROM TOP** Former President APJ Abdul Kalam supports Kudankulam nuclear power plant

Another important development is the decision by the government to set up a 'Global Centre for Nuclear Energy Partnership' in India. This follows a commitment made by the Prime Minister of India to set up a centre of excellence in the civil nuclear field at the Nuclear Security Summit convened by President Bush in Washington in June last year. Two other countries, China and Japan also announced the setting up of similar centres. These national centres were envisaged as institutions promoting the security of nuclear, fissile and radiological materials in process, storage or in transit. Nuclear security goes beyond the narrower concept of safety and encompasses a much wider scope of activities.

Nevertheless, raising the level of confidence in the security of nuclear, fissile and radiological materials can also serve to meet public fears about nuclear power in general. It is important, therefore, for the proposed centre to also accept the challenge of educating public opinion on all aspects of nuclear science and its applications, promoting research into more safe and secure handling and management of nuclear materials and undertake research and development into a new generation of safe and proliferation-resistant nuclear reactors. As the name of the Centre indicates the proposed institution will provide a platform for pursuing collaboration with other international partners both on a bilateral as well as multilateral basis (such as with the IAEA).

This would include the drawing up of improved benchmarks and safety standards, making material accounting more precise and evolve more effective surveillance and monitoring mechanisms. Since Japan and China have proposed setting up similar centres of

excellence, Indian diplomacy should engage with these countries to put in place practical programmes of collaboration. Since India and China have the most ambitious nuclear power expansion plans in the world, it makes sense for them to work closely together in ensuring that the national and international environment remains positive for nuclear power.

It is learnt that the Global Centre for Nuclear Energy Partnership will have four schools under it, focusing on (i) Advanced Nuclear Energy Systems Studies (ii) Nuclear Security Studies, (iii) Radiological Safety Studies and (iv) Studies on Applications of Radioisotopes and Radiation Technologies. These disciplines have a direct bearing on the safety issue and will also help create the greatly expanded qualified manpower necessary to manage and regulate a rapidly expanding nuclear industry. The broader issue of nuclear security would cover the aspect of proliferation of sensitive materials and technologies to unauthorised entities, including non-state actors. These concerns go beyond the Fukushima-related issues and have been of continuing concern to the international community. In the changed environment after Fukushima, it would be worthwhile to look at both security and safety related issues in a comprehensive manner. It is hoped that global centre will fulfill this role in an effective manner.

If one looks at the record of nuclear power since the Fifties, its safety record has been quite enviable compared to other industries, including for example, the oil industry. Oil spills in pristine environments has probably done far more damage than the very few cases of nuclear accidents. India's own record of managing nuclear power safety has been

acknowledged internationally as having been of a very high standard. This does not mean that we can be complacent. In a democratic society, public concerns and anxieties have to be addressed. We are living in a world where the flow of information, good or bad, is relentless and shapes public opinion. The answer to misinformation is more objective and quality information. Prejudice can only be dispelled through reasoned debate. The culture in government has been to withhold information, to keep matters as confidential as possible.

In the nuclear field, the fact that our strategic weapons programme was inextricably mixed together with our civilian nuclear programme, meant that the culture of secrecy was even more pronounced than normal. Thanks to the civil nuclear agreement, we have separated our civilian programme from our nuclear weapons programme. While the latter will continue to be cloaked in secrecy, there is no reason why the civilian sector should not be subject to public scrutiny and held accountable for maintaining the highest standards of safety. There is also no reason why the sector should not open its doors to international review and appraisal so that it can begin to enforce internationally recognised norms. Our own domestic public opinion needs to be taken into confidence.

I believe that nuclear power is one of the cleanest and safest sources of energy. Technology is improving its safety standards almost continuously. Few industries have the kind of strict benchmarking that the nuclear industry has. Few industries are held to the high standards the nuclear industry is. Fukushima was the result of human failure as much as the victim of unprecedented natural disasters.

As long as the possibilities of human error are reduced to a minimum and back-up and redundant systems are put in place, there is no reason why the nuclear power industry cannot continue to play a significant role in our quest for energy security and for arresting global climate change. India must not make the mistake of missing the nuclear bus just when the prospects for its rapid expansion have become promising after many years of stagnation. ||

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