

What Fukushima Tells Us

Rather than question the safety of nuclear power, we should strive to strengthen it

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The accident at Japan's Fukushima nuclear power plant as result of a tsunami seems to have made a heavier impact on the public mind all over the world than the tsunami itself. This calls for a deeper understanding of the perceived as well as real risks of nuclear power.

India is the fifth largest producer of electricity in the world after China, the US, Japan and Russia. However, in per capita terms, it ranks around 150. China is at the 80th rank, Russia 26th, Japan 19th and the US 11th. Annual per capita electricity consumption, a key index of development, is at around 650-700 kWh in India. This is less than half of the average in non-OECD countries, one-fourth the world average and 14 times less than the average in OECD countries. We need to decide what our target should be. In my view, 5,000 kWh appears a reasonable number. This is significantly better than the world average and about half the average in OECD countries.

At this level of per capita electricity consumption for a projected stabilised population in India of around 1.6 billion, we need to add to Indian grids electricity generation of around 40% of the present-day global output. To realise the same target, China needs only about half as much. Our coal reserves can support electricity supply at such a level for around 11 years.

Our total hydro potential can provide for around 5% of the needed generation capacity. Other renewables excluding solar can support around 2%. Nuclear and solar energy are thus the only energy sources that can meet the challenge of our development. This does not mean less emphasis on other forms of energy generation. We need to make full use of all energy resources available to us.

Let us talk about solar first. We would need to earmark around 4.5 million hectares of area to be able to collect enough solar energy to meet our needs. This is roughly a fourth of the barren uncultivable land available in India. We, however, need aggressive development of this technology to make it cost-

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competitive. Also, since the sun does not shine on a 24x7 basis, we need cost-competitive energy storage technologies. There are other areas of development of energy technologies for the future such as fusion energy.

We may well be at the oil peak around now. Our coal is likely to run out in around 40-50 years. Alternative energy supplies at the requisite level of use would



Nuclear safety and energy security aren't mutually exclusive

need to be ready' before this time. A severe energy crisis is likely to hit us much earlier than it does most of the world.

We should look at nuclear energy in this backdrop. It already provides 16% of world electricity in a cost-competitive manner. Despite Fukushima or the earlier Chernobyl, TMI and other accidents, real risks with nuclear energy are the lowest compared to various energy forms in commercial use. The advantage of nuclear would be even higher if one factors in the additional risks associated with the predicted consequences of climate change as a result of use of fossil fuels in a business-as-usual manner. Yet nuclear energy frightens us beyond all proportion.

According to a report of the United Nations Chernobyl forum expert group on 'health' published

by the World Health Organisation in 2006, the Chernobyl accident caused 47 deaths till the year 2004 among firemen and severely exposed persons. From more than 4,000 thyroid cancer cases diagnosed in the 1992-2002 period, less than 1% died from this disease and the rest were treated successfully. We need to watch the situation further. An interesting point to note is that the effective dose as of year 2000 due to Chernobyl is already two and half times lower as compared to weapons fallout. We had Bhopal before Chernobyl when we suffered more than 3,500 fatalities. Yet Chernobyl remains a stronger image in our mind.

Fukushima so far has had no fatality caused by radiation. Seventeen workers have been exposed to doses in excess of 100 mSv, but that is lower than the

permissible lifetime dose for occupational workers. There is radioactive contamination in the public domain, which will take quite some time to normalise. But the radiation dose received by people is unlikely to cause significant harm. The tsunami, which caused the accident at Fukushima, has taken more than 13,000 lives with more than 14,000 missing. Yet Fukushima seems to occupy much larger media space.

Seismically, the only region in India somewhat comparable to Japan is the Himalayan belt. As a matter of policy we do not locate a nuclear power station there. Epicentres that can potentially trigger a tsunami are around 10 times farther away in India's case as compared to Japan, which has not shut down reactors that are operable.

This is not to justify Fukushima. Such accidents are not acceptable. We must learn basic lessons from Fukushima and strengthen the safety of our nuclear activities without being complacent. We should also make rapid progress in bringing in advanced reactor systems such as AHWR with their greater degree of inherent safety. However, the impending energy crisis, the risks of climate change and the limited time we have in tiding over these threats cannot be lost track of. The tendency to read catastrophe into anything nuclear and allowing panic to grip us and deprive India from fulfilling its aspirations would be a self-defeating exercise.

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