



# Science Reporter

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## WINNING BACK THE NUCLEAR TRUST

It all started with a rumbling earthquake that unleashed a 23-foot tsunami along the northeastern coast of Japan. Even after the tsunami had wrought havoc destroying ships stationed at harbours, washing away entire villages, throwing cars on top of buildings, and leaving behind thousands dead and injured, the tragedy had still not subsided—it threatened to spill over into a nuclear catastrophe.

While the nuclear reactors in Japan that felt the rumblings of the quake shut down just as they were supposed to do, the huge tsunami waves had the better of them. The rushing waters drowned the backup generators and choked the spare batteries crippling the Fukushima Daiichi nuclear reactor. The generators were required to keep pumping water into the reactor storage pools to prevent the temperatures in the pool from rising sharply. But now with the generators gone there was nothing to keep the water in the pool from boiling and evaporating fast.

As of 13 April, the threat level at the stricken Fukushima nuclear plant had been upgraded to level 7 on the International Nuclear Event Scale (INES), the highest on the scale and the same as Chernobyl. There were plans to evacuate several towns and villages, based on wind directions and radiation measurements, beyond the 20 km radius evacuation zone around the nuclear plant already in place. Radioactivity has been detected in sea water and as far away as Tokyo. The Japanese nuclear accident is still unfolding and signs of complete control of the situation still seem far away. The world, meanwhile, has once again got down to debating whether in pursuing a nuclear agenda are we working towards making more Fukushimas happen around the world?

Well, those in favour of nuclear power point to the perils of producing power from coal as well. According to a database compiled by the Paul Scherrer Institut, from 1970 to 2008, there have been 1686 accidents in the coal industry, 531 in the oil industry and 186 involving natural gas in which five or more people died. Before Fukushima, there was just one nuclear accident at Chernobyl 25 years ago.

According to another study in Europe of the health effects of electricity generation, compared with nuclear power, coal is responsible for five times as many worker deaths from accidents, 470 times as many deaths due to air pollution among the public, and more than 1,000 times as many cases of serious illness. The study published in *Lancet* by Anil Markandya, scientific director of the Basque Centre for Climate Change in Spain and Paul Wilkinson of the London School of Hygiene and Tropical Medicine found that in Europe coal is responsible for 0.12 deaths from accidents, 25 deaths from pollution and 225 cases of serious illness per terawatt (1,000 billion kilowatt) hour of electricity generated. In comparison, the figures for nuclear energy are somewhat like this: 0.02 accidental deaths, 0.05 pollution deaths and 0.22 cases of illness.

However, the Fukushima incident has once again given ample ammunition to the agenda against nuclear power programmes. But with energy demands spiking drastically in recent times and outstripping supply, can we really hope to junk nuclear power completely? Nuclear power continues to be one of the major components of the mixed bag of technologies, along with the renewables, that hold promise of being able to provide clean energy for the future. With countries keen to follow their own development agendas there is no way demand for energy is likely to come down anywhere in the future. And surely not many of us are ready yet to jettison our air conditioners in an effort to cut down on the energy demands.

In light of the Fukushima incident, however, it becomes incumbent on nations pursuing nuclear power programmes to put safety on a high pedestal. Whether it is siting of nuclear reactors or the technology employed in the reactors, safety considerations need to be paramount. And some bit of transparency on these counts perhaps would engender more trust in nuclear power.

*Hasan Jawaid Khan*

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