

AFTER THE SHOCK

## Japan is Trembling

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The world's third-largest economy is struggling to respond to a disaster of unprecedented magnitude, with more than a million without water or power, whole towns wiped off the map and a couple of thousands already dead as a result of severe earthquake and tsunami in north-east Japan. Misery does not end here, rather it begins from earthquake and tsunami. The cooling system of Fukushima Daiichi No. 1, 2 and 3 nuclear power plants (NPPs) failed due to tsunami flooding. Diesel generators that normally would have worked as back-up to keep cooling systems running had also been disabled by tsunami. Pumps could not run and back-up failed due to lack of electricity because all the six nuclear power plants have been shut down due to tsunami. As a result—one after another massive explosion (hydrogen explosion) went on at the Fukushima Daiichi No. 1, 2 and 3 nuclear power plants, destroyed the building housing the reactors. The sound of explosion could be heard from 40 km apart. Roof of the reactor buildings blowing off and the walls shattering down. The scale of destruction was not yet exactly known, but there were grim signs of radiation and fear spreading around and growing. Already more than 2 lakh people have been evacuated from the neighbourhoods around the plants, as Chernobyl experience shows, for ever. Radioactive cloud is moving towards Tokyo steadily. Already Tokyo has been affected by increasing radiation. Meantime very hot nuclear spent fuel rods, which are actually very high level radioactive wastes and kept for cooling inside reactor no. 4, are under fire in the water pool. As the pool is out of water, criticality accidents can happen any time or have already happened. Japan is bravely facing disaster with all its resources, but little can be done to contain more release of radioactivity. Once the cork is opened from the bottle the Frankenstein can't be recaptured and contained in the bottle again unless he kills and injures innumerable number of people, Chernobyl shows the number of would be killed persons due to radioactivity could be more than 10 lakh in future, depending upon how much radioactivity is ultimately released. But quality of radioisotopes here is much more dangerous as spent fuel pond is under fire for a few days. Spent fuel carries good amount of plutonium-239, which is extremely fatal and has a half life of 24400 years. So once released it stays in the environment almost permanently. Large portion of two of the reactors have already been melted, which contained good amount of plutonium. So it is obvious that huge amount of plutonium is released. One gram of plutonium is divided into 10,00,000 pieces and if one inhales one part of it, in all probability he or she will suffer from lung cancer.

Japan sits on the world's most earthquake-prone regions and Tokyo is in one of its most dangerous areas, where three continental plates are slowly grinding against each other, building up enormous seismic pressure. The ability of some reactors to withstand a strong tremor has been questioned time to time. The safety of Japan's nuclear plants, which supply much of Japan's power (54 reactors having a generating capacity of 47 thousand Mwe, 29% of Japan's total electrical capacity), has come under the spotlight in recent years after a string of accidents and mishaps. A strong earthquake in central Japan has damaged a large nuclear power plant causing a leak of radioactive material three years before. A substantial amount of water containing radioactive substances leaked into the sea and a fire broke out at the plant in Kashiwazaki in 2007. In 1995, a magnitude 7.3 tremor hit the city of Kobe, killing more than 6,400 people.

Chance of nuclear power plant being severely affected by natural calamity of this magnitude is only one point why people should oppose nuclear power. And disaster like this one is sufficient to close down all the NPPs throughout the world. Now the ghosts of

Chernobyl disaster are looming around and aftermath situation of Hiroshima, Nagasaki bombings are frequently referred by Japanese people and media world over. Earthquake and tsunami are natural calamity but nuclear disaster is man made and avoidable.

Japanese nuclear disaster sent a cold wave to the nuclear industry all over the world. They fear people's wrath against nuclear estate. So the nuclear mandarins are now telling that safety of nuclear plants would be thoroughly checked. Indian Prime Minister and Environment Minister are echoing their voice. This is clearly an eyewash. They rightly think that public opinion would go against nuclear power. They are trying to get people's confidence back to their fold. These statements are part of merely public relations campaign.

In India the nuclear establishment is trying to build up nuclear plants through the coastal belt of different states. They claim nothing will happen if earthquakes or massive cyclonic floods occur. Sea life, flora and fauna will remain almost intact. Marine life and coral reefs will not be disturbed even if cooling water is returned back to sea 5 degree celcius up. On the contrary marine experts opine that even 5 degree change will severely affect marine life, fishes will be withered away as in case of Tarapur NPPs already showed. Jaitapur in Ratnagiri district of Maharashtra is in a seismic zone. They say Indian technology is safe enough and they would relook, scrutinise design and safety of the would be coming plants. And the location is high enough to face cyclone and tsunami. But the experience and opinions of the locals do not match, so they have no resort but oppose installation of NPPs there.

Narora nuclear power station in UP is sitting on seismic zone. Some experts say any time massive disaster can happen there. Under the leadership of Prof Dhirendra Sharma the plan was opposed in mid 80's, ultimately nothing happened. They went on with the programme. Haripur in West Bengal is another place where they intend to set up NPPs. In early 70's there was a tremendous cyclone which killed more than one lakh people between Contai in West Bengal to Samshergunj in Bangladesh. Aerial distance of the sea to Contai is a few kilometre. So in case of a major cyclone Haripur and other villages will be wiped out. Climate scientists say within a few decade sea level will be raised significantly and India will be affected severely. Once a NPP is built it remains there almost for ever. In this light, effect of building NPPs on the sea coasts is disastrous.

They always claim that nuclear power is not very costly, but the experiences of the world are completely different. They do not divulge how they come to that conclusion. But wherever government is not involved in nuclear power production, nuclear power has been proved to be costlier than coal, oil, gas and wind power. Deception and deceit is their chronic problem wherever nuclear power is produced. Particularly for this reason private utility is not much interested to build new NPPs in America, instead of consistent encouragement in the form of huge subsidy and other reliefs to nuclear power, contrary to less benevolent attitude towards wind, solar and other power sources by the successive US Governments of Bush and Obama. No major government in the world is spending encouraging amount for R&D in renewable energy compared to nuclear and other fossil powers.

India has witnessed more than enough grave accidents in its nuclear power stations. Even then nuclear hawks claim that tsunami in Madras could not affect Kalpakkam nuclear power-station. What they hide is the fact that affected reactor there was kept shut down for some reason much before tsunami. Even then about 2 dozens people including a few NPP's workers were killed by the water surge inside their complex due to tsunami.

In India after six decades of utmost effort and enormous subsidy nuclear industry could only produce about 4000MW or about 2.3% of the total electricity. Even then they claim that India can't go without nuclear power. Indian politicians are so childish that they believe and repeat this gospel every now and then. India has planned to set up nuclear power plants

throughout the coasts of this country. But coastal people, under the banner of National Fish Workers Forum (NFWF) have taken up the battle against nuclear power. They have joined with farmers and people from other walks of life. Protests have already started in Haripur in West Bengal, Jaitapur in Maharashtra and in other places, including Kalpakkam in Tamilnadu and Kovada in Andhra Pradesh. □□□