India: Why Grassroots People's Movements Oppose Nuclear Power

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Even before history's worst nuclear reactor accident happened, at Fukushima in Japan on March 11, 2011, the world witnessed vigorous protest movements against nuclear power generation. Many of them took the form of NIMBY (not in my backyard) campaigns, which highlighted the perception that most people and communities do not regard nuclear reactors as good or safe neighbours. India was no exception to this trend and saw sustained anti-nuclear protests from the 1970s onwards, beginning with the proposed plants at Kakrapar in Gujarat and Narora in Uttar Pradesh.

At Fukushima, where core meltdowns occurred in three reactors—compared to only one at Chernobyl in Ukraine—the crisis continues four years on, with huge radioactivity releases. Cleaning up the site alone will take four decades and cost at least $200 billion. After Fukushima, the anti-nuclear movement has acquired a more global, universal character and gathered great energy.

Along with the crisis of the global nuclear industry, which is turning graver by the month, popular opposition could spell the end of what has been promoted as the world's nuclear dream—the never-fulfilled promise of atomic power as an abundant, manageable, clean and safe source of cheap electricity, "too cheap", it was said, "even to meter".

People everywhere know that if a grave accident could take place in a highly industrialised, technologically advanced society like Japan, it can happen anywhere else, especially in a technologically backward society like India, with its poor safety culture and a record of serious nuclear accidents.

Anti-nuclear Arguments

That's why Koodankulam in Tamil Nadu, Jaitapur in Maharashtra, Mithi Virdi in Gujarat, Kovvada in Andhra Pradesh, Gorakhpur in Haryana and Chutki in Madhya Pradesh, where new reactors are planned, have all witnessed huge protests, defying ferocious state repression. In Koodankulam, where the police filed First Information Reports against more than 55,000 people, and charged 6,800 with "sedition" and "waging war against the state", the movement refuses to die down. It is gathering great momentum at other sites too. [1]

What inspires the anti-nuclear movement? The movement, to simplify matters a little, advances six arguments: Too Little, Too Late, Too Centralised, Too Secretive, Too Expensive, Too Dangerous [2]. They add up to a formidable case against nuclear power. Consider each one of them.

Too Little: Contrary to propaganda, nuclear power accounts for just two percent of the world's final

primary energy consumption, compared to the 18 per cent share of renewable sources, including wind power, solar photovoltaics, solar- thermal, biomass, hydroelectricity, etc. Nuclear's long-term contribution to energy is severely limited by uranium reserves, whereas the potential of renewables is almost unlimited. India's indigenous reserves cannot even sustain 10,000 MW (megawatts) of atomic power generation, of today's existing total electricity capacity of about 240,000 MW.

Currently, India's nuclear power capacity is under 4,800 MW, compared to 15,000 MW in wind and 2,000 MW in solar. Nuclear reactors contribute less than three per cent to India's total electricity generation and less than one per cent to total energy consumption. Even if all the grandiose plans announced by the government for nuclear expansion materialise, such as a tripling of capacity in eight years, nuclear's contribution to electricity production will still not exceed five per cent.

But no target set by the Department of Atomic Energy (DAE) has ever materialised. In the 1960s, the DAE said India by 2000 would have 43,500 MW in nuclear capacity; it had 2,700 MW! Tripling assumes that 19 reactors would be started and completed in six years, when average global construction time is 10 years, and in India, 12 years.

Nuclear power is rapidly shrinking worldwide. Its share in global power generation has declined from a peak of 17.6 per cent in 1996 to 10.8 per cent. Its contribution to the world's commercial primary energy production has also fallen to a new low (4.4 per cent).
The number of nuclear reactors operating worldwide peaked in 2002 at 438. It now stands at 390. Nuclear has seen no major technological innovation for decades: 170 reactors (44 percent of total) are 30 years old/ older. But only 65 new reactors are under construction, four fewer than a year ago.

Too Late: Given the grim reality of the climate crisis, all energy generation must be judged on the criterion of how quickly and richly it can contribute to peaking and reducing greenhouse gas (GHG) emissions. The world must make GHG emissions peak by 2020 if it is to avert catastrophic global warming, with irreversible changes in the climate system, leading to a rapid melting of icecaps and glaciers, a rise in sea levels, more ferocious cyclones and storms, floods alternating with droughts, and other extreme weather events.

Nuclear power scores poorly here. Although nuclear reactors do not directly emit greenhouse gases like carbon dioxide, the entire nuclear fuel cycle—including uranium mining, ore processing, fuel fabrication, reactor construction with steel and cement, transportation of materials, storage and reprocessing of nuclear waste, etc—generates GHGs. Their life-cycle GHGs emissions per million units of power generated are much, much higher than those of renewable energy sources, which are maturing as competitive alternatives to both nuclear and fossil-fuel based power.

For instance, emissions per kWh from wind are less than one-tenth of those from nuclear power, and from solar-PV about one-quarter to one-half.

Besides, nuclear reactors take at least 10 years to build, and will take even longer as safety regulations are tightened in the wake of Fukushima, and as nuclear corporations worldwide face deep financial problems, prolonging construction periods. By contrast, gas-based power plants can be built in three or four years' time. Solar or wind farms are now being routinely built in only a few months' time. This makes a vital difference given the urgency of combating climate change.

Too Centralised: Nuclear power generation is excessively centralised in two ways. First, all decision- making on nuclear energy planning, investment, execution, etc is made in highly centralised institutions such as governmental apex committees and giant corporations, which are not amenable to democratic control or rational regulation in the public interest.

This is a serious issue. In matters nuclear, the public is compelled to submit itself to bureaucracies and centralised apparatuses which are essentially unaccountable to Parliament and other democratic institutions, and which are insensitive to the environmental and social costs that are imposed on communities on account of nuclear power generation. These local communities are dispersed and cannot make their voice heard sufficiently in apex-level power structures.

Second, nuclear reactors can at best contribute to a centralised grid. They can only deliver "base-load" power and cannot alter their output according to changing demand, or what is called "peak" power. The difference between base and peak loads is huge in India: of the order of 60 to 100 percent.

This limitation of nuclear reactors is fast becoming a great disability as the world moves towards decentralised energy generation and consumption, localised grids, "smart" grids (which can switch between different sources of power and groups of consumers), and so on. In a country with 600,000 villages, and where 40 percent of the population has no electricity, decentralised sources and distributed consumption must play a major role. Nuclear power has no place here.

Too Secretive: Nuclear power comes wrapped in secrecy and opacity, and often deception. That is partly because it is a Siamese Twin of nuclear weapons. The two programmes share a common infrastructure, personnel, training, funding and command structures. The chairman of the Nuclear Power Corporation of India Ltd reports to the chairman of the Atomic Energy Commission, also secretary to the DAE, and therefore in charge of both the nuclear weapons and power programmes.

The weapons programme uses materials produced or processed in the so-called peaceful civilian nuclear power programme, including plutonium, which has dual use. Many countries have transferred or diverted materials and personnel from the civilian to the military programme, including France, the US, USSR, India and Iran.

For instance, India used the spent fuel from CIRUS (Canada-India Research Reactor-US) to extract the plutonium that was used in the 1974 Pokharan blast. CIRUS was designed and built by the Canadians, and the US supplied heavy water to it. India promised to use the products of CIRUS for entirely "peaceful" purposes, but flagrantly breached this legal commitment. That's one reason why it called the 1974 Pokharan test a "peaceful nuclear explosion", a blatant lie.

Nuclear power operators are secretive for another reason too. They have a lot to hide—breach of internal regulations, mishaps, accidents, excessive toxic exposure of plant workers, and releases of poisonous materials and radioactivity that affect the wider public. It's only rarely that the operator reveals that an accident or mishap has occurred: usually, the media does, or the affected people do.

This is especially true of India, where the DAE and NPCIL have typically failed to reveal the occurrence of accidents, including fires, collapse of safety systems, exposure of workers to tritium, breakage of containers during transportation, leaks from storage facilities, etc.

Secrecy has become a habit with the DAE and NPCIL because they have never had an independent regulator. The Atomic Energy Regulatory Board is a toothless organisation which has no independence from the agencies it is meant to regulate. Its head reports to the Atomic Energy Commission chief who is in charge of nuclear power generation. The AERB has no staff, budget or equipment of its own. None of the so-called safety audits it carried out in Indian nuclear installations after Fukushima carries any credibility.

Both the DAE and NPCIL brazenly claim exemptions from the Right to Information Act, even when the activities in question do not have any bearing on "national security".

Too Expensive: The nuclear industry has always been promoted through huge public subsidies. No bank would finance it, and no insurance company would cover it without subsidies. It has been called "the greatest failure of any enterprise in the industrial history of the world", which has lost more than $1 trillion in subsidies, cash losses, abandoned projects and damage to the public.

Nuclear power long ago failed the market test and turned to be much more expensive than virtually every other energy source. In many energy-related technology areas, unit costs fall as electricity generation capacity doubles—a benefit of "learning by doing". The reverse is true of nuclear power, itself a "mature" technology where no major innovative breakthroughs have recently occurred, leading to greater efficiency and lower costs.

Nuclear power comes with a lot of hidden or future costs, which are dumped on society, including the costs of "decommissioning" old reactors, of handling and storing high-level wastes, and so on. After a reactor exhausts its economic life of 30 to 40 years, it continues to seethe with radioactivity and must be "entombed" in concrete at a cost that's one-third to one-half the construction cost.

All reactors leave behind high- level wastes which remain hazardous for thousands of years. For instance, the half-life of plutonium-239 is 24,400 years and uranium-235's is 710 million years. Science hasn't found a way of safely storing, leave alone neutralising, radioactive waste.

Even if these costs are excluded from calculation, nuclear power is far more costly than electricity from coal, gas and renewables. The per-kilowatt capital costs of nuclear reactors have risen internationally from $1,000 to $6,000-9,000 (as in the case of figures quoted for the French company Areva's reactors, meant for Jaitapur). Operating costs too have risen 16 percent in three years in many countries, just as renewable wind-power and solar- photovoltaics get cheaper every month. At this rate, nuclear electricity from these imported reactors will cost Rs 15 plus a unit and bankrupt all consumers, including industry, agriculture and domestic users.

The world over, governments have tried to mollycoddle nuclear power by subsidising it through special liability laws, limiting insurance payments, etc. The Indian government also tried this on the nuclear liability issue, but has failed so far. There was no "breakthrough" on this during Barack Obama's recent visit to India—only sleights- of-hand to substitute administrative memoranda for proper laws enacted after prolonged legislative debate.
This trick, meant to please US nuclear suppliers at the expense of India's public, falls foul of Parliament's intent. But it still won't work. Westinghouse and GE, now owned by Japanese capital, are unlikely to sell reactors to India so long as any element of liability exists.

Too Dangerous: Nuclear power is inherently hazardous because it concentrates huge amounts of energy in limited spaces. Nuclear power generation is the only form of energy production which has a potential for catastrophic accidents like Chernobyl and Fukushima, which release large amounts of toxic radioactivity and poison people and huge tracts of land.

Fukushima happened not because of an earthquake and tsunami, but because these triggered mishaps in reactors which were vulnerable to catastrophic accidents in the first place. Nuclear accidents happen because of the nature of nuclear technology. Natural calamities only make them more likely. All reactor designs are vulnerable to core- meltdown accidents. International experts say there will be disastrous failures at nuclear power stations, and that this cannot be avoided. As Edward Teller, the nuclear physicist, said, "If you [try to] construct something foolproof, there will always be a fool greater than the proof."

Nuclear hazards include radiation exposure at each step of the so-called nuclear fuel cycle—from uranium mining, to fuel fabrication, reactor operation and maintenance, eventual decommissioning

of reactors, to waste handling and storage. There is no threshold below which radiation is safe. Yet, for entirely expedient reasons, the nuclear industry sets “maximum permissible” limits of exposure—simply because some exposure is inevitable if nuclear activities are to take place. It also frequently breaches these limits.

Ionising radiation damages chromosomes in the body which control the code for the reproduction of cells, leading to cancers, leukaemias and genetic damage. It also increases the burden of degenerative diseases and can lead to cell death or breakdown of DNA and RNA, which affects the ability to cope with environmental changes, and recover from diseases or illness. Radiation cannot be neutralised or fully contained. Occupational workers in all nuclear facilities, from uranium mines to reactors, to reprocessing and waste storage plants, are constantly exposed to radiation.

Nuclear safety issues also pertain to routine emissions and effluents from nuclear reactors which expose the public to hazards. Other risks from nuclear activities are equally significant, including those from transportation, handling and storage of nuclear materials.

Weapons of Mass Destruction

Nuclear power programmes pose an even graver danger: the spread of mass-destruction weapons which kill massively, indiscriminately and brutally, and against which there is no military, civil or medical defence. Countries such as France, India, Pakistan and North Korea successfully acquired a nuclear weapons capability at least partly through a civilian nuclear programme. The dividing line between civilian and military facilities or operations is always thin. Nuclear installations are also uniquely vulnerable to sabotage and armed attacks, with terrifying consequences.

These problems make nuclear power generation uniquely hazardous, and irredeemably so.

The anti-nuclear movement has a solid, rational argument to back it up. It also has growing grassroots support. It has succeeded in showing that continuing with nuclear power generation is a narrow, parochial agenda of a small cabal within the nuclear establishment and capitalist interests, which has nothing to do with public purpose.

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* http://www.lohiatoday.com/Periodicals/2015-04-19.pdf

Footnotes

[1] For more information, see www.cndpindia.org and www. dianuke.org

[2] This formulation, made popular by Achin Vanaik, is used by the Coalition for Nuclear Disarmament and Peace, set up in 2000 by more than 250 civil society groups, of whom Achin and I are founder-members. CNDP’s charter is available at www.cndpindia.org.