

Perils of going nuclear

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Zia Mian

For fifty years, atomic energy commissions everywhere have promised that nuclear reactors can supply abundant, cheap, safe electricity. This promise has been broken so often in so many places that people have stopped believing it. The high costs, safety problems, and terrible consequences of nuclear accidents have led environmentalists, concerned citizens, and governments around the world to start finding ways to end the nuclear age. Pakistan seems dead set in heading backwards into the future.

The most recent sign of the waning of faith in nuclear energy came on October 27 when Taiwan announced that it had decided to stop construction of its newest nuclear power plant. Key to this decision was the public pressure against nuclear energy which helped elect Prime Minister Chang Chun-hsiung in March of this year. Even though the nuclear plant was one-third complete and had already cost \$1.4 billion, the new Prime Minister justified his decision by saying, "We have to make a rational, responsible and conscientious choice for the sake of Taiwan's posterity." He went on, "I believe that today we can tell our children that we made a brave and correct choice."

In August, in a very significant move, Japan's Atomic Energy Commission called for the scrapping of government targets for nuclear electricity generation, as well as lifting the target date for the commercialisation of previously planned fast-breeder reactors. These steps came in response to intense public fears over nuclear safety. These fears gained in strength after the September 1999 nuclear accident at the Tokaimura uranium processing plant. On October 13, 2000, Japan's official Science and Technology Agency reported it believed 667 people had been exposed to radiation; in addition to the two workers who died from the radiation, 56 people are estimated to have been exposed to ra-

diation doses greater than the annual exposure limit.

In July of this year, Turkey announced that it was cancelling its plan to build its first nuclear power plant. In an interview with a Turkish daily newspaper, Prime Minister Bulent Ecevit explained, "The world is abandoning nuclear power." Ecevit said Turkey would instead focus on energy conservation and invest in natural gas, hydro-electricity, as well as solar and wind generation. Money played a role: the nuclear plant was estimated to cost \$2.5 billion. But it was not just the cost; there were public protests

total electricity supply dropping from its present 80% to 50% or below. On July 5 of this year, a colloquium on "Exiting nuclear" was organised at the French National Assembly, which included the Minister of Environment, the industry minister, and the chairman and chief executive of the French national electricity company. In the national dialogue that seems about to begin, the safety record of the French nuclear complex shall be an issue. Over the last decade, the number of safety-related incidents at French nuclear installations reported to the national authorities has increased from

last November and the Barseback 2 reactor is scheduled for shutdown next July.

The Netherlands is unlikely to accept any extension of the life of the country's only remaining nuclear power station beyond 2004. The indignity marking the end of the nuclear age is most evident in the Philippines which mothballed its Bataan Nuclear Power Plant as soon as it was completed in 1984, and is considering plans to turn the site into a liquefied natural gas-fired power station.

It is not just the high financial cost and safety problems of nuclear energy that have become increasingly evident. The possible consequences of an accident have grown more vivid and stark. In April this year, World Health Organisation researchers reported new research showing that the 1986 Chernobyl disaster may lead to 50,000 new cases of thyroid cancer among young people living in the worst-affected regions.

The studies show that in areas close to the accident over one-third of children aged under four on the day of accident can expect to develop thyroid cancer. In Pakistan, things are heading the other way. At the end of September, the Pakistan Atomic Energy Commission took charge of the Chinese designed and built Chashma Nuclear Power Plant. While the PAEC takes pride in its new reactor, China has announced that it will order no new nuclear power plants at least for the next 3 years, because of the high cost of nuclear electricity.

PAEC has not revealed the final cost of building Chashma, or the terms of the contract for its uranium fuel (supplied by China), or the expected price of producing electricity. PAEC is also trying to keep the Karachi Nuclear Power Plant working, the reactor started in 1971 and close to the 30 years for which it was designed. PAEC refuses to make public its studies on the actual costs of safety of either nuclear plant. Without these there can be no informed debate or decision-making. We march blindfold into the future.

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about the safety of the proposed nuclear reactor, especially the possible danger of earthquakes at the site, including concerns expressed by leading seismologists.

While Turkey decided to not even start out on the nuclear road, in June of this year Germany announced a plan to end its reliance on nuclear power, and phase out its 19 nuclear reactors. The decision fulfilled a 1998 election pledge made by the coalition German Social Democrat Party and the Green party. Even though nuclear power provides one-third of its electricity, the pressure from environmentalists was sufficient to make Germany the first major industrial country to take such a decision. France, which is very heavily dependent on nuclear electricity, has also begun to debate the future place of nuclear power.

In May 1999, a study of the future of nuclear energy was commissioned by Prime Minister Jospin and the Environment Minister, Dominique Voynet, a leader of the French Green party. All the options studied show the share of nuclear power in France's

just over 400 in 1990 to over 600 in 1999, with the overwhelming majority of incidents (almost 500) taking place at nuclear reactors.

There are growing problems also in the United States, which was initially responsible for the exaggerated promise of nuclear energy. The watershed was the 1979 accident at the Three Mile Island nuclear power plant. Seventy-four plants that were under construction at the time of the accident were subsequently cancelled, while thirteen that were operating have been permanently shut, and no new nuclear plants have been built in the United States. Since 1984, safety related problems have led to 23 nuclear reactors having to be shut down for longer than a year. Six reactors have closed since 1996 because they had become too expensive to operate. These are by no means the only countries that are turning away from nuclear energy. Some countries decided to do so long ago. Sweden voted in a 1980 referendum to close down the nation's nuclear plants: the Barseback 1 reactor was shut down permanently