



Solving Asia's Nuclear-Waste Dilemma

by Brad Glosserman

Nuclear energy is news again. It has always been an issue for some people - environmental activists and energy industry groups - but nuclear power has largely faded from public consciousness, despite periodic incidents that highlighted fears of a catastrophic mishap at a nuclear power plant. The luxury of indifference is about to end, however. New political and economic pressures will force countries to make some hard choices about nuclear energy. The contradictions between government policy and public sentiment are going to become more salient in the decades ahead.

Those contradictions were made plain in two recent developments on opposite ends of the globe. Last month, the U.S. administration of President George W. Bush announced the findings of its energy task force. That panel, headed by Vice President Dick Cheney, called for a higher profile for nuclear energy in U.S. power generation. The prospect of rising energy prices, increasing dependence on foreign energy sources and the embarrassment created by the rolling blackouts in California prompted the panel to reverse long-standing national policy that put a low priority on nuclear power.

A few weeks later, Japanese voters in the village of Kariwa rejected Tokyo Electric Power Co. plans - and those of the Tokyo government - to use MOX fuel, a mixture of plutonium and uranium, in nuclear reactors. Although the referendum was nonbinding, it sent a clear signal of public unease about nuclear energy and the use of recycled fuel in nuclear power generation. To its credit, TEPCO acknowledged that message and suspended its plan to go ahead with MOX use -- at least temporarily.

Antinuclear activists may rejoice at their victory, but the fight is only beginning. The shift in the U.S. outlook is the result of shifts far more fundamental and far-reaching than the Bush victory in last year's presidential election. Those forces will be felt around the world.

The first factor is the growing recognition that energy is a national-security issue. For Japan, this is old news. The government has always rooted energy policy in a national-security framework. But more countries will frame energy issues in those terms as their energy requirements grow, the supply-demand balance shifts and prices adjust accordingly. Economic pressures are inescapable. Juxtapose two simple facts: Global primary energy use is conservatively expected to double or triple by 2050, yet known oil reserves are half depleted.

Just as important are environmental concerns, and global warming in particular. Nuclear energy is one of the cleanest energy sources (at least when it comes to greenhouse gases). As

governments and publics get serious about cutting those emissions they are going to have to reconsider the nuclear option.

A final dimension consists of local economic considerations. For certain parts of the nuclear-energy equation - in particular, the storage problem - financial benefits will tilt the balance in decision-making. Quite simply, communities pressed to find new sources of income will be more inclined to look favorably on the idea of hosting a nuclear facility, especially given the construction costs and the compensation that frequently accompanies such decisions.

While many countries will have to reconsider the nuclear option, most will do so from the medium- to long-term perspective. East Asian governments must address pressing questions in the nuclear-energy equation now. The most important of these concern the back end of the fuel cycle. In lay terms, the problem is simple: What do we do with the spent fuel that has already accumulated?

A half century of nuclear development has left a considerable legacy. It is estimated that world accumulation of spent fuel will reach 341,095 tons by 2010; Asia's share is 50,610 tons. That is enough material to cover a road 10 meters wide and 300 km long to a depth of one meter. That mountain of radioactive waste will accumulate even if no additional nuclear capacity is installed in Northeast Asia; it is the product of plants already under construction or which were well in to the planning stage. Were that not sobering enough, there is the fact that that waste will contain 450 tons of plutonium.

Dealing with that waste is, argues Ron Smith, director of defense and strategic studies at the University of Waikato, New Zealand and who has been studying the back-end problem for several years, "the Achilles heel of the nuclear question." At a recent conference of nuclear experts*, Smith outlined the options. One is recycling it as nuclear fuel, which is the purpose of the MOX program. Unfortunately, MOX is harder to handle than conventional nuclear fuels. Those safety concerns, and the memory of the accident at the Tokaimura nuclear facility in 1999 that claimed two lives, prompted Kariwa citizens to vote down the MOX option in last month's referendum.

If the waste is not going to be used, then it has to be stored. Every nuclear plant has to have storage facilities for spent fuel and other wastes. Most of those are temporary facilities, however. Moreover, storage facilities throughout Northeast Asia are reaching capacity.

Thus the search for long-term storage facilities is taking on a new urgency. Finding them is proving to be problematic. Security tops the list of concerns. Waste is dangerous and will remain dangerous for a long period of time. Storage has to be protected against unwanted intrusion or theft - over a period that could last tens of thousands of years. At the same time, however, there has

to be access to those wastes since scientists could devise uses for them or "technical solutions" to the waste problem that we cannot now envision. If so, the material has to be available for recycling.

Then there is the problem of public acceptance. In addition to cramping Japan's plans to proceed with the MOX program, public opposition has stymied plans in the United States and Australia to develop permanent storage sites. Finland recently approved legislation to build a long-term facility, but it is only for domestic waste. Last week the Lower House of the Russian Parliament passed legislation that would permit the import and storage of 20,000 tons of foreign produced waste for a fee (\$20,000 per kg), but it too has been controversial and those plans may yet be derailed.

Smith has proposed that Asia Pacific governments jointly establish international facilities to manage and dispose of back-end products of civilian nuclear activity. Since the storage problem will first hit in the region, a local facility makes a lot of sense. In addition, history has burdened countries of this region with mutual suspicions that color perspectives of their respective nuclear energy programs. Development of a regional storage facility could serve as a confidence-building measure since its operations would have to be transparent and procedures standardized if all countries in the region would be able to use it. Ideas like this have been tossed around for a while - and invariably dismissed. Smith believes the facility would provide interim storage on an internationally monitored basis for about 100 years.

Critical to the success of any such program will be the way it is presented to the public. It is especially important that proponents take the initiative: An international facility should be seen as an opportunity to create jobs, to deal with a pressing nuclear waste problem and to pursue cooperation and confidence building on a matter that is critical to the region's future. If the negative perception of nuclear power continues to be the chief obstacle to any initiative, then framing the project in those terms should help balance the nuclear equation.

*Meeting of the Confidence Building and Security Measures Working Group of the Council for Security Cooperation in the Asia Pacific (CSCAP), Misawa, Japan, May 20-23, 2001. This CSCAP Working Group helps to promote transparency and confidence building for nuclear non-proliferation, among other areas. The parallel efforts of the Nuclear Energy Experts Group are focused on developing a web site in cooperation with the Sandia Labs Cooperative Monitoring Center to increase transparency of Asia-Pacific nuclear programs. The web site is located at [www.cmc.sandia.gov/Nuc_Trans].

Brad Glosserman is Director of Research at Pacific Forum CSIS, a Honolulu-based think tank, and a Contributing Editor to The Japan Times.