BY LEONARD WEISS

POWER POINTS

The U.S.-India nuclear agreement is the wrong deal with the wrong energy source.

As skeptics increasingly voice concerns that the proposed U.S.-India nuclear agreement could damage the world's nonproliferation regime, advocates of the deal have sought to put a positive spin on the issue by stressing the energy benefits to both countries. Secretary of State Condoleezza Rice wrote in the March 13 *Washington Post*, "Civilian nuclear energy will make [India] less reliant on unstable sources of oil and gas." Indian Amb. Ronen Sen declared in a March 21 interview with the online news site Rediff.com that "If we in India reduce our dependency on imported fossil fuels, one obvious consequence would be the stabilization of international oil prices at lower levels."

These claims, however, don't stand up to scrutiny. In 2005, only about 1 percent of India's installed electrical capacity of 120 gigawatts electric (GWe) was fueled by oil, according to figures available at Indian President A. P. J. Abdul Kalam's website. Nuclear energy accounts for only about 2.7 percent of India's capacity. Most of India's energy comes from coal (55 percent) and hydroelectric power (26.4 percent); some comes from natural gas (10.3 percent). Wind, solar, and other renewable energy sources (5.2 percent) produce more centrally generated electricity than both oil and nuclear combined.

This is not surprising. India prefers not to use its oil for centrally generated electricity, but rather reserves it for other uses such as transportation. So India's use of nuclear energy will do little to release more oil into the international market. And while nuclear energy could supplant coal energy, doing so would be far more expensive than raising the level of energy efficiency, not to mention the huge additional costs of storing radioactive spent fuel and disposing of nuclear waste.

India's Bureau of Energy Efficiency reports that, in the industrial sector alone, more efficient use of energy could conserve 15 GWe of electricity a year. Further improvements in end-use efficiency of household appliances could save another 3–5 GWe. That means an aggressive program of improved energy efficiency could substitute for all the future power output from nuclear reactors currently being planned in India between now and 2020. One argument made in favor of building nuclear reactors is that nuclear energy reduces greenhouse gases. But if India were to go the route of increasing energy efficiency over more nuclear plants, the reduction of greenhouse gases would be greater, since such improvements can be made in a much shorter time.

Of course, improved efficiency alone is not the answer. As India's economy and population grow, it will need additional energy. But according to India's own picture of what its power production would look like if it were to achieve energy independence by 2030, most of such production would not come from nuclear power. Under this scenario, the projected level of electric power production would be 456 GWe and would still be fueled mainly by coal (43.8 percent), followed by hydro (22 percent), renewables (27.6 percent), and, finally, nuclear (6.6 percent). It is clear that India does not see nuclear power as the solution to its energy problems for the next 25 years.

India's energy problems go beyond finding adequate supply. Rural areas, where 70 percent of India's population lives, use only 13 percent of the power on the grid. Nationally, only 55 percent of Indian households have power-grid connections. It is evident that India's most pressing electrical energy issue is distribution, yet more than 90 percent of investment in its power sector goes into generation and transmission.

One approach to this problem is decentralized, distributed energy generation, in which small- to medium-sized facilities are located near sites of power demand, in contrast to relying on large central power plants. Because the electricity produced by distributed generation flows shorter distances to consumers, it is cheaper than relying on a vast transmission and distribution network, which has high capital, operations, and maintenance costs, as well as significant energy losses. Distributed generation encompasses a number of options: wind power, biomass- (organic matter) and waste-driven fuel cells, microturbines, and solar photovoltaics. It includes the use of natural gas–fueled turbines for combined heat and power installations for large facilities.

Worldwide, nations are recognizing the benefits of this approach. According to the Britain-based nonprofit World Alliance for Decentralized Energy, in 2004 decentralized sources generated 52 percent of the electricity in Denmark, 39 percent in the Netherlands, 37 percent in Finland, 31 percent in Russia, 18 percent in Germany, 16 percent in Japan, and 15 percent in China. Moreover, Amory Lovins, a world-renowned energy analyst and CEO of the nonprofit Rocky Mountain Institute, recently published data in *Nuclear Engineering International* (December 2005) demonstrating that new nuclear plants and central coal- or gas-fired power plants are all uncompetitive with various decentralized renewables, combined heat and power installations, and efficient end use of electricity.

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has over 100 nuclear warheads deployed on ballistic missiles" and that "additional warheads are in storage" with "a stockpile of fissile material sufficient to increase or improve its weapon inventory." In July 1999, the DIA estimated the size of the Chinese nuclear weapons inventory to be roughly 155 warheads. We know that there are roughly 40 fewer warheads today due to the withdrawal of the DF-3s and the conversion of some DF-21s to non-nuclear missions.

The Pentagon and the intelligence community have not commented on this reduction but instead have emphasized that they expect China's nuclear arsenal to increase significantly over the next decade. The CIA predicted in December 2001 that "the total number of Chinese strategic warheads will rise several-fold" by 2015. In 2002 (and again in 2003 and 2004), the Pentagon predicted that the number of Chinese ICBMs capable of hitting the United States "could increase to about 30 by 2005 and may reach up to 60 by 2010." The first part of this prediction is already moot, as the number remains at 20 and deployment of the DF-31A is years away.

Past U.S. predictions about China's nuclear arsenal have repeatedly proven to be highly unreliable. Rather than continue to grow, China's stockpile appears to have leveled out at approximately 200 warheads in the mid-1980s and remained at about that level ever since.

The CIA's latest prediction of a "several-fold" increase in warheads deployed "primarily" against the United States is hardly a firm estimate since it depends upon several unanswerable questions: How many DF-31As will China deploy? Will China finally develop and deploy MRVs on its DF-5A missiles? How will it respond to deployment of the U.S. antiballistic missile system? China might not even know the answer to these questions.

Even if an increase occurs, the total Chinese stockpile would rise only moderately because warheads on older liquid-fueled missiles will have to be phased out.

Nuclear Notebook is prepared by Robert S. Norris of the Natural Resources Defense Council (NRDC) and Hans M. Kristensen of the Federation of American Scientists. A footnoted version of this article is available online, along with data for all nuclear weapon states, at www.thebulletin.org. Inquiries should be directed to NRDC, 1200 New York Avenue, N.W., Suite 400, Washington, D.C., 20005; 202-289-6868.

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Beyond this, one of the most ignored or misrepresented issues in the current debate over the nuclear deal is the huge potential of India's alternative sources of electricity. According to a study by the international management consulting firm Frost and Sullivan, India's untapped electrical generating capacity is 150 GWe from hydro (the equivalent of 150 large nuclear plants) and 85 GWe from renewables, including 45 GWe from wind power. India is already the world's fourth-largest producer of wind power, which currently produces 50 percent more electrical power than India's nuclear reactors.

All of these facts lead to the conclusion that the nuclear deal with India is the wrong deal with the wrong energy source at the wrong time. India needs outside assistance in meeting its growing energy demand, but that assistance should be focused on those energy investments with the greatest potential for meeting demand with the least cost and environmental insult.

A more appropriate energy agreement would concentrate on developing India's indigenous resources in the areas of hydro, wind, biomass, and solar; assist in improving end-use efficiency; and aid planning for more distributed generation. Since India has no choice at this point but to rely on coal until the potential of these other sources is more fully realized, clean coal technologies and coal gasification are also appropriate and important areas for cooperation.

New natural gas supplies, domestic or imported, can play an important role as well. Natural gas is the most benign fossil fuel in terms of the production of greenhouse gases, and its use in place of coal is beneficial to the environment.

With so many better alternatives than the expansion of nuclear on the table, it is a pity that the White House chose to fashion a deal that caves to the powerful nuclear lobby in India and increases proliferation risks but does nothing for the Indian energy consumer or for the world's need to conserve oil.