# Nuclear Is Back in Fashion

**By Shaun Walker**

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**And Not Even the Sky Is the Limit**

On June 26, 1954, 60 miles away from Moscow at Obninsk, a 5-megawatt nuclear reactor was connected to an electricity grid to provide power for the surrounding area. Less than a decade after the first nuclear weapons were used on Hiroshima and Nagasaki, nuclear power was put to civilian rather than military uses for the first time, and the Soviet Union scored a technological victory over the United States in the Cold War.

Over half a century later, Russia's nuclear infrastructure – both civilian and military – is one of the most developed in the world. After widespread fear and skepticism in the wake of the Three Mile Island and Chernobyl disasters, nuclear power is becoming respectable again, and is even seen as a source of national pride. At his annual press conference, President Vladimir Putin immediately brought up the nuclear issue when asked if Russia really deserves a place in the G8 group of leading industrial nations. "The G8 is the place where global problems are discussed," said Putin. "Can anyone imagine, for example, solving the problem of international nuclear safety without the participation of the biggest nuclear power in the world – the Russian Federation?"

Nuclear power currently accounts for around 16 percent of Russia's electricity production and the nation has plans to embark on an ambitious program of construction to increase this share to 25 percent by 2030. A recent announcement from Rosatom, the Federal Atomic Nuclear Agency, stated that a total of 40 new reactors are planned, with two to be constructed every year, beginning in 2012. With ever-increasing global demands for energy, rapidly diminishing fossil fuel resources, and the economic inefficiency of many alternative energy sources, it seems that nuclear energy is back in vogue.

"The scientific communities and leadership of all countries are beginning to admit that the energy problem cannot be solved without the use of nuclear energy," Valery Volkov, head of a Russian research project into non-fissile nuclear energy, said at a Moscow press conference. "Without nuclear energy there is no future for humanity."

While Volkov admitted that Chernobyl had left a scar on the Russian nuclear psyche, he also pointed out "three years before Chernobyl, the more responsible scientists among us warned that such an event was likely to happen."

Vladimir Orlov, the director of the Moscow based PIR Center, a think tank that deals with nuclear issues, agrees that nuclear technology is the way forward. "Things have changed a lot since Chernobyl. We have new generations of nuclear reactors and much more advanced safety measures," he said. "If you compare the current nuclear technology with other energy options, such as coal, I think nuclear is safer and has less potential for accidents. Moreover, advanced nuclear technology is highly proliferation resistant."

Proliferation issues aside, one thing that worries anti-nuclear campaigners is the issue of radioactive waste, a byproduct of nuclear energy. However, Orlov feels that the vast size of Russia is an advantage. “Russia is well equipped in terms of -facilities for storing waste. There are always risks involved in the transportation of waste, but again, I feel that they are relatively low.”

International cooperation

The main development on the nuclear front for early 2006 was an indication of renewed cooperation between Russia and other former Soviet countries on nuclear issues. Sergei Kiriyenko, the head of Rosatom, spent January undertaking an active program of visits, including meetings with Kazakh President Nursultan Nazarbayev and Ukrainian Prime Minister Yury Yekhanurov. In the immediate aftermath of the “gas row” between Russia and Ukraine, the two announced that Russia had suggested to Ukraine that the two countries should engage in the joint construction of atomic energy stations in third countries. At the Eurasian Economic Community summit in St. Petersburg, Kazakhstan and Uzbekistan joined the alliance. While most of the activities of the Soviet nuclear program took place in what is now the Russian Federation, essential elements were located in other parts of the Soviet Union – uranium is mined intensively in Kazakhstan and Uzbekistan, while automated control systems, pumps and turbines are produced in Ukraine. “Everything on the territory of Russia, Ukraine and Kazakhstan is part of a single complex,” Kiriyenko told journalists in the Kazakh capital Astana after meeting President Nazarbayev. “My task is to revive that complex under market conditions.”

In late January, Putin went into more detail. “There should be international centers carrying out the nuclear fuel cycle, including enrichment, which would operate under the control of the IAEA and provide free access for all countries,” he said. “Russia has already suggested this kind of initiative, and is ready to create this kind of international center.”

Putin said that this plan would be presented by Russia at the G8 summit in July in St. Petersburg. U. S. President George W. Bush has already spoken out in favor of the idea, and suggested that the United States should be another venue for such a center. He also announced the allocation of major funds for nuclear research in his proposed budget, announced in February.

“In the list of the international projects Russia has prepared for its chairmanship of the G8 this year, this is one of the most attractive,” said the PIR Center’s Orlov. “It is practical, emphasizes technological and scientific strengths that Russia already has, serves the economic interests of a number of players, and may solve urgent non-proliferation problems.”

The International Atomic Energy Agency Press Office in Vienna declined to comment directly on the proposal, but pointed out that it was in line with recommendations that the agency’s director general, Mohammed El-Baradei, had made in the past.

The impetus for the development of international centers seems to have come from the frenzied debate over Iranian nuclear ambitions in recent months. Russia’s proposal

to enrich uranium in-country and then transport it to Iran is seen by many as the only possible exit route from the current standoff between Tehran and the West. But, while this is the current burning topic, Orlov feels that eventually the initiative could be put to much broader use. “We shouldn’t think of this as being about only Russia and Iran. This will also involve at least two countries that Putin himself has mentioned – Uzbekistan and Kazakhstan – and could turn into a genuinely international project.”

Structural changes

To cope with all this up-scaling, 2006 should also see structural changes in Rosatom, with plans afoot to incorporate the government department and turn it into a state-owned company along the lines of Gazprom. Business daily Kommersant reported that the specifics of the assimilation of private-owned and Gazprom-owned enterprises that would be part of the new “Atomprom” had yet to be worked out, but that Rosatom would not be privatized due to the national security issues involved.

The most promising new technological initiative is the plans for the BN-800 fast breeder neutron reactor. Estimates are that $1.59 billion will be required in investment to make the reactor, earmarked for the Beloyarskaya power station in the Sverdlovsk region, near the Ural Mountains, a reality. Sizeable funds have been allocated from the 2006 federal budget, which Kiriyenko has described as “better than before, but less than what we need.”

“We are not that close to a fast breeder reactor,” said Orlov. “It will be a project that will consume a lot of time and finances. But there is a need for this technology, and a market for it, both in Russia and in other countries.”

Even further on the nuclear horizon, one idea worth bearing in mind is the use of helium-3 in thermonuclear reactions to produce energy. While the fast breeder reactors in development go a long way to solving the problem of proliferation, they still come with the thorny issue of radioactive waste.

“Helium-3 is the only source of nuclear energy that does not come with the production of radioactive materials,” said Erik Galimov, director of the Vernadsky Institute of Geochemistry and Analytical Chemistry in Moscow. “However, there is also a problem here. There is almost no helium-3 on our planet.” However, major reserves of helium-3 are to be found a giant leap away, on the moon. Not as much of a problem as it might sound, according to some.
Nikolai Sevastyanov, head of Energiya Space-rocket Corporation, released a report recently stating that by 2015 Russia should have a permanent base on the moon, and by 2020 the country plans to start the industrial mining of the helium-3 isotope. “Whoever gets to grips with helium first will win the race for leadership in the world energy stakes, ” he said.