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# Russia's Uranium Resources In Perspective

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MOSCOW. (Sergei Golubchikov for RIA Novosti) - On April 22 in Yerevan, Russia and Armenia signed a treaty to set up a joint venture for the exploration and mining of uranium and other minerals in Armenia.

The company is being established on parity lines and will be registered within the next three months.

It was signed by Vadim Zhivov, general director of the Atomredmetzoloto (ARMZ) uranium holding and Armenia's Environmental Protection Minister Aram Arutyunyan.

ARMZ manages all of Russia's uranium assets and runs some projects in Kazakhstan.

Today, ARMZ ranks second in the world for uranium reserves. This is the result of the nuclear industry's restructuring, and in particular the pooling of its core plants under one umbrella.

With the focus on nuclear power, Russia is now planning its uranium future carefully to warrant the successful development of its nuclear industry.

The collapse of the Soviet Union has left Russia high and dry, with many well-researched fields outside its boundaries, mainly in Central Asia (Tajikistan, Kazakhstan, Kyrgyzstan and Uzbekistan).

For now, Russia has only one uranium-containing deposit, in the Chita Region, with its Streltsovsky mining and chemical plant. Its total reserves are estimated at 150,000 metric tons of ore. Other fields in Eastern Siberia have a further 70,000 metric tons of explored raw materials. Altogether, the proven reserves amount to 615,000 metric tons. This figure also includes 344,000 metric tons from Elkon, the largest recently explored Russian field located in the north of Yakutia-Sakha.

Russia's uranium-bearing provinces present a challenge for developers. The largest of them - the Aldanskoye deposit - can be developed only by sinking. The ore occurs at a depth of 300 meters, and mining is unprofitable.

During authoritarian times that problem did not exist: northern uranium was obtained by the free labor of prisoners, including political ones. In Chukotka, for example, they supplied the material for the first atomic bombs. As prison camps closed down, uranium mining in the northern latitudes stopped.

Now a search is on for an economically feasible way of opening up the mothballed mines. Uranium prices are increasing throughout the world; over the past three years they have doubled, and not surprisingly. One cubic centimeter of uranium is equivalent to 60,000 liters of gasoline, 110 to 160 metric tons of coal, or 60,000 cubic meters of natural gas.

Being highly concentrated, this fuel can be easily and cheaply transported any distance. Its price factored in as part of generated power is comparatively small. So even a massive rise in uranium fuel prices has little effect on nuclear power costs. Since 1997 they have gone up by just 7%.

With current uranium production at 3,400 metric tons a year, its reserves

will last for half a century. How will Russia's nuclear industry fare once the explored reserves run out? There are two options. The first is to look for an alternative way of supplying fuel for the nuclear industry. One is to use so-called "fast reactors" (fast-breeder reactors).

Their advantages are moderate power intensity and low fuel consumption. Fast reactors can use uranium from poor fields, with a low degree of enrichment.

Another way is to recycle spent fuel, namely to obtain plutonium fuel separated from the uranium extracted from nuclear reactors.

Russia has cornered a sizeable part of the world's future uranium market, and its share could grow as new fields are tapped in Eastern Siberia.

It can also receive supplies from other countries - ones that have no nuclear industry of their own or lack enriching technologies.

Russia already owns 49% of the Russian-Kazakh Zarechnoye company, which is developing a field of 19,000 metric tons of uranium.

In 2007, Australia became one of Russia's uranium partners. It boasts the world's largest uranium deposits. The leaders of the two countries, Vladimir Putin and John Howard, signed an agreement in Sydney, under which Russia will receive \$1 billion worth of raw Australian uranium per year for its nuclear needs. The document will come into effect once the two parliaments ratify it.

Mongolia is also going to play an important role. Theoretically, its natural uranium resources put the country at the cutting edge of the world market, and just need to be explored.

Russia's potential uranium reserves (natural and weapons-grade) will enable it to claim 45% of the world's uranium enrichment services market by 2030 and 20% to 25% of the nuclear plant construction market.

Given closed nuclear cycle technologies (fast-breeder reactors), these resources will be able to meet global power needs for 1,000 years.

Sergei Golubchikov is an associate professor at Russian State Social University.

The opinions expressed in this article are the author's and do not necessarily represent those of RIA Novosti.

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