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URANIUM MINING SET TO LIFT OFF

As more and more countries look to uranium as a power source, it is becoming an increasingly valuable commodity. Mining uranium is likely to increase globally and Latin America is a source that should not be ignored. This paper looks at the potential for uranium mining in Latin America, with a particular focus on Argentina. It first considers the international market generally, then it moves onto the Argentine market and finally, it considers the legal framework for uranium mining in Argentina.

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Historically, the Asia-Pacific has been the major source of uranium mining worldwide. Canada and Australia have been the largest producers of uranium behind only Kazakhstan. Indeed, Australia's production may now increase due to recent announcements from the Western Australian and Queensland governments lifting bans on uranium mining and a move away from the three uranium mines policy at a national level.[1] As more and more countries look to uranium as a power source, it is becoming an increasingly valuable commodity. Mining uranium is likely to increase globally and Latin America is a source that should not be ignored.

This article will look at the potential for uranium mining in Latin America, with a particular focus on Argentina. It will first consider the international market generally, then it will move onto the Argentine market and finally, it will consider the legal framework for uranium mining in Argentina.

The market

Uranium exploration and exploitation is being expedited in Latin America as investors look to capitalize on deposits worth billions of dollars. Recent discoveries made in Argentina, Colombia and Peru will likely come online in the next five to ten years.[2] In the last decade, these countries, together with Brazil, have experienced somewhat of a mining boom. This has been brought about by government policies which are favorable to investment in the expanding economies in the region. In Argentina alone, the sector has increased by over 400% in that time.[3] With the second largest uranium reserves in Latin America, behind only Brazil, Argentina certainly has the potential to increase its mining production even further.[4]

Demand for uranium is growing internationally and particularly in the Asia Pacific. There are currently 435 operating nuclear reactors worldwide and 61 under construction.[5] According to the World Nuclear Association, the global consumption of uranium in 2012 was 69,000 tons. Given that Japan has 54 nuclear power plants, the re-opening of many of those plants will have a significant impact on the global demand for uranium. China also recently lifted suspensions on nuclear power plants to implement a new nuclear safety plan following the Japanese tsunami.[6] With the development of nuclear power in India and Korea, combined with the decisions of the Japanese and Chinese governments to reactivate nuclear power plants, there will undoubtedly be increased demand for uranium in the region from 2013 onward.

In addition to strong international demand, miners also have a ready-made market in Latin America. Nuclear power plants are in operation in Argentina, Brazil and Mexico. Brazil is the only one of those three that is uranium self-sufficient.[7] Argentina, for instance, imports the majority of its uranium from Canada as it waits to see the returns from its major uranium deposits.[8] With the price of uranium likely to increase together with demand, the impetus for Latin American governments, whether consumers of not, to get on board is strong.

There is also the factor of expertise to operate nuclear power plants. Obviously, it is not possible for a state to decide from one day to the next that they want to construct nuclear power plants and expect to do so with only local companies, who may not have the requisite expertise. We have seen across the world there are many instances of companies, typically based in states that have a longer history of nuclear power, being involved in the construction and operation of plants in other states. An example of this in the region was the use of an Argentine company as the prime contractor, undertaking the design, procurement, installation and supervision of the commissioning and performance demonstration of the OPAL reactor in Sydney, Australia.[9] This willingness of states to use external consultants in order to augment local capabilities is essential to the safe implementation of world class facilities globally.

Uranium mining in Argentina

Although Argentina has been operating nuclear power plants for decades, Argentina has largely imported to fulfill its uranium requirements. This is now starting to change. In August 2006, the Minister of Federal Planning, Public Investment and Services, Julio de Vido, announced the government's decision to

reactivate Argentina's nuclear program.[10] This led to the creation of the 2010-2019 ten year plan, which, relevantly, had as its roots the following objectives:[11]

- The technological contribution to power generation through nuclear energy.
- Ensuring uranium reserves to power Argentine nuclear power plants.
- Becoming a nuclear power plant designer country.

At its core, this represented a fundamental shift in government policy toward the active promotion of nuclear energy and, implicitly, uranium mining.

Argentina is not only one of the few countries in the world with high prospects in uranium, it is also one of the few places where this mineral can be freely extracted by the private sector, with comparatively limited governmental interference. In the 1950s, following the earliest developments in nuclear research and technology, Argentina started the exploitation of uranium mineral deposits. Between 1952 and 1996, 5,600 tons of uranium ore were extracted and used to produce 2,500 tons of uranium concentrate.[12] This was mined from eight different mining-industrial facilities distributed across the country, but mainly in Mendoza, Córdoba, Salta, Chubut, San Luis and La Rioja. Almost 90% of uranium ore was mined through open-pits and processed by means of heap-leach methods and, although the majority of uranium was mined by federal government agencies, private parties participated with a 10% share of the production and rendering services as contractors for the government.

In the late 1980s and early 1990s, the low international price of uranium, together with the negative impact of Chernobyl's incident, led to a significant reduction of local nuclear activity. As a consequence of this, most of the uranium mining industrial facilities were closed and mining exploration and development was suspended. However, the policy was officially reverted in 2003 and the Federal Government announced a newly created Nuclear Development Plan that led to the reactivation of public and private nuclear development activities.[13]

Today, uranium reserves in Argentina have been estimated at approximately 10,400 metric tons.[14] However, the Federal Commission of Atomic Energy has reported uranium reserve estimations of almost 120,000 metric tons.[15]These reserves are enough to cover the fuel needs of the existing nuclear reactors in Argentina for a 30-year term and the potential needs of the planned and on-going nuclear energy generation expansions. Given the potential reserves and following international trends, Argentine uranium prospecting and exploration has increased significantly in recent years. Currently, there are more than 15 private companies developing uranium mining projects.[16] Argentine President Cristina Fernández also reactivated one of the two largest uranium reserves in Argentina – the 'Cerro Solo' deposit in the province of Chubut. At the same time that production was potentially increased, internal demand has also grown with the endorsement of the extended life of the Embalse nuclear power plant, located in the province of Córdoba, and the inauguration of the Carem 25, Atucha II and Atucha III nuclear power plants.[17]

The legal framework for uranium mining in Argentina

From the 1950s until the early 1990s, the extraction of uranium was highly regulated and subject to almost absolute control by the Federal Government, because of its strategic uses for energy generation and defense. This policy was revised during the 1990s, which was a period of deregulation and liberalization in Argentina. Following changes in the 1990s, Argentine mining really started to gain traction internationally and gained the attention that would be expected of a country with such substantial mineral resources.

The former legal framework

Uranium was included in the first category of minerals, which are the most valuable and commonly mined minerals, of the National Mining Code in 1954.[18] The first uranium mining activities were carried out in secret by the Federal Government through the National Commission of Atomic Energy (in Spanish, 'CNEA'), which was created in 1950.

The former uranium mining program,[19] governed by Law No. 22,477, basically provided that uranium deposits, mines and production could only be sold to the Federal Government. During this period, concession to private parties of uranium mining exploration and exploitation permits was allowed under strict supervision of the CNEA. Additionally, any uranium mineral discovery by any party was subject to CNEA's right to reserve the mineral deposit unexploited or even expropriate the mining concessions derived from the discovery.During this period, the Federal Government, through CNEA and military agencies such as Dirección General de Fabricaciones Militares, conducted intensive research and development of uranium mining activities.

The current mining framework

At the beginning of the 1990s, following the Latin-American regional trend intended to capture foreign investment in mining exploration, uranium mining was almost completely deregulated. The former uranium program was replaced by means of Law No. 24,498 which introduced amendments to the National Mining Code allowing private investors to obtain concessions for uranium mines and conduct mining activities almost under the same regulations applicable to metals.

Argentina is a federal state organised in 24 jurisdictions, 23 provinces and the City of Buenos Aires. Each province has its own mining authority which can be organised either though an administrative or a judicial body. The general provisions for concession and extraction of minerals set forth the National Mining Code are applicable to uranium and applied by provincial mining authorities. The National Mining Code is applicable in all of Argentina and provides a degree of uniformity in the requirements across the provinces. Notwithstanding that uranium mining has been substantially deregulated and given similar treatment to other metals and minerals, uranium mining continues to have some unique requirements, which deal with both environmental and strategic concerns. According to Chapter XI of the National Mining Code, the extraction of uranium is subject to the following special regulations:

(a) *Special environmental requirements*. Mining uranium requires the filing of a special environmental recovery plan for the natural areas affected with the hazardous wastes.[20] This filing should be submitted to and approved by the environmental mining authority in the province where a given project is developed.[21]

(b) *Preservation of liquid or solid tails and hazardous wastes*. This should be performed according to international security prescriptions provided and controlled by the Nuclear Regulatory Agency.[22] Additionally, the Mining Code states that the referred wastes cannot be reused or transferred without the authorization of both the provincial mining authority corresponding and the Nuclear Regulatory Agency.[23]

(c) *Filing information reports*. If required to do so by provincial mining authorities or the Nuclear Regulatory Agency, reports in connection with mineral reserves and production issues must be prepared and filed for statistical and production control purposes.[24]

(d) *Right of first refusal in favor of the Federal Government*. Subject to market terms and conditions, the Federal Government, through the Nuclear Regulatory Agency, has a right of first refusal to purchase locally produced uranium.[25]

(e) *Controlled exports*. The export of locally produced uranium is subject to the requirement of prior authorization by the Nuclear Regulatory Agency that will consider for granting or rejecting the authorization the guarantee of local supplying and the intended destination of the exports in accordance to commitments under international nuclear treaties which Argentina is a party to.[26]

Failing to comply with any of the above mentioned clauses may give rise to the application of penalties foreseen in Sections 207 to 210 of the Mining Code, such as: (i) fines; (ii) temporary or permanent decommissioning of the facilities; (iii) license revocations. Failing to comply with the right of first refusal in

favor of the Federal Government, may lead to the application of a penalty or fine ranging between 20% and 50% of the value of the minerals commercialized.

Additional requirements surrounding nuclear programs

Additionally, for national security reasons, the activities associated with uranium mining and processing were also included in the National Program of Nuclear Activities, created by Law No. 24,804. Therefore, uranium mining activities require special authorizations and permits to be issued by the Nuclear Regulatory Agency.[27]The most important permits and authorizations to legally conduct uranium exploitation activities in Argentina are:

(a) *Facility construction license*. This license should be obtained before commencing the construction of any uranium mining processing facilities and, prior to such request, the interested party must provide the Nuclear Regulatory Agency with technical documentation and information to evaluate and assess radiological security of the facility during its construction.

(b) *Mining uranium facility operation license*. Likewise, in order to attain the authorization to operate a uranium mining processing facility, the interested party must file technical documentation and information necessary to evaluate and assess radiological security of the uranium mining facility during the production stage of the project.

The request of any of the licenses and permissions necessary for conducting uranium mining activities entails assuming (i) the liabilities that may result from the improper use of the licensed activities; and (ii) the responsibility of complying with all license and security requirements. Finally, it is noted that the personnel responsible for the management of radioactive or hazardous materials or waste within the mining facilities must be registered and obtain personal authorizations from the Nuclear Regulatory Agency.

Conclusion

There is undoubtedly great potential for uranium mining and the nuclear industry generally in Argentina. As existing nuclear power plants are being expanded and new ones are being opened, there exists a ready-made market for miners. Currently, Argentina has to import in order to meet its demand for uranium. As a country that has uranium reserves, there is a clear opportunity to bridge this gap. With increasing global demand for uranium, now would seem to be an opportune moment to enter the market.

Notes:

[1] Basov, Vladimir, 'Australia's uranium industry hits turbulence', February 8, 2013. http://www.mining.com/australias-uranium-industry-in-turbulence-16546/

[2]Latin America poised to become uranium superpower, in Mining.com, available at http://www.mining.com/latin-american-posed-to-be-a-uranium-superpower-10604/

[3]'Mining in numbers', Report published by the Argentine Mining Secretariat in 2012, available at http://www.mineria.gov.ar/pdf/mineriaennumeros.pdf

[4] OECD. Uranium 2009: Resources, Production and Demand. OECD NEA Publication 6891. 2010.

[5]'Uranio, el Ave Fenix', Mining Press, published in http://www.miningclub.com/nota/3173.

[6] Ministry of Environmental Protection of the People's Republic of China, October 10, 2012. http://haq.mep.gov.cn/gzdt/201210/t20121016_238421.htm.

[7]Brasil planea ser autosufiente en uranio', in Minería Panamericana, available at http://www.cpampa.com/web/mpa/2012/01/brasil-planea-ser-autosuficiente-en-uranio/

[8] 'América Latina podría ser una superpotencia de uranio', in MiningPress.com, available athttp://www.miningpress.com/articulo.php?id=98490.
[9] Australian Nuclear Science and Technology Organisation, May 12, 2011, http://www.ansto.gov.au/discovering_ansto/anstos_research_reactor/development_of_opal.
[10] 'Argentine Atomic Energy Commission: Strategic Plan 2010-2019', CNEA, 2010, p 7.
[11] Ibid, p 10.
[12] 'The Uranium Industry in Argentina', H.C. Plaza, Federal Nuclear Agency.
[13] 'Reactivación de la actividad nuclear en la Argentina', in Comisión Nacional de Energía Atómica, available at http://www.cnea.gov.ar/xxi/noticias/2006/ago06/actividad_nuclear.asp.
[14] Energy Statistics Database, United Nations Statistics Division 2009.
[15] '*Argentine main uranium mineralization*', L. Lopez, Federal Commission of Atomic Energy, August 2008.
[16] 'Radiografía de los 150 proyectos mineros actives en la Argentina', in RedEco.com, available at http://www.redeco.com.ar/nv/index.php?option=com_content&task=view&id=9110&Itemid=43.
[17] Forte, Carlos, 'Energía nuclear: el mundo la abandona, la Argentina la inaugura', *Periódico Tribuna*, September 28, 2011, available at http://periodicotribuna.com.ar/9807-energia-nuclear-el-mundo-la-abandona-la-argentina-la-inaugura.html.
[18] Law No. 14,328, published in the Official Gazette on October 13, 1954.
[19] Governed by Law No. 22,477, published in the Official Gazette on December 28, 1956.
[20] Federal Mining Code, Section 207.
[21] The provincial mining environmental divisions (Unidad de Gestión Ambiental Minera - UGAM) are in charge of the reception, evaluation, approval and/or rejection of the duly environmental impact reports.
[22] As a consequence of deregulation process, executive powers over uranium mining activities were transferred from CNEA to the Nuclear Regulatory Agency, such transference and creation of the later agency was ruled by Federal Law No. 24,804.
[23] Federal Mining Code, Section 207.
[24] Federal Mining Code, Section 208.
[25] Federal Mining Code, Section 209.
[26] Federal Mining Code, Section 210.
[27] As set forth by Resolution No. 23/1999 of Nuclear Regulatory Agency, all licenses and permits issued by the are subject to an annual payment of a license fee collected by such agency which is calculated by means of a formula that considers the estimated number of hours required for the inspection.