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Argentina Promises Nuclear Power Surge

By Benjamin Witte-Lebhar

Left for decades on the proverbial back burner, Argentina's once cutting-edge but now very much dusty nuclear power sector is experiencing a real renaissance. For the first time in more than a quarter century, the country is preparing to open a new nuclear power plant, its third. More may be on the way as Argentina looks to ease its dependence on fossil fuels, particularly natural gas.

Then a regional pioneer, Argentina opened South America's first nuclear power plant in 1974: the 335 megawatt Atucha I facility. Approximately 115 km northwest of Buenos Aires in the town of Lima, Atucha I continues to generate electricity for the country's central grid, as does the 600 MW Embalse plant, which opened a decade later in the north-central province of Córdoba. Together the two nuclear facilities account for roughly 6% of Argentina's total installed generating capacity, estimated at approximately 24,000 MW.

Construction on a third facility, Atucha II, began in 1982, just before Argentina returned to democracy following two decades of on again, off again military governments. For both political and economic reasons, the project progressed slowly and--although about 75% complete--was abandoned in 1994 during the administration of then President Carlos Menem (1989-1999), who tried unsuccessfully to privatize Argentina's nuclear power industry. With the 1986 Chernobyl disaster in Ukraine dampening enthusiasm for nuclear power worldwide, plans for several other Argentine reactors fell by the wayside as well.

In recent years, however, the center-left governments of former President Néstor Kirchner (2003-2007) and Cristina Fernández de Kirchner, the former president's wife and successor, have breathed new life into the country's long-neglected nuclear power sector.

In 2006, Kirchner promised to relaunch the troubled Atucha II project as well as revamp the aging Atucha I and Embalse facilities. He also raised the possibility of building a fourth plant. Four years later, President Fernández is ramping up the nuclear revival even more. Builders are now putting the final touches on the 745 MW Atucha II plant, which is expected to begin producing electricity in September 2011. Upgrade efforts on Embalse are scheduled to begin in 2012, while plans are also underway to resume uranium mining in the country's western highlands.

In addition, the Fernández administration now says Argentina will build not just a fourth reactor, which has already been approved by Congress, but a fifth as well. The fourth nuclear power plant, known tentatively as Atucha III, would have a generating capacity of 1,500 MW. The government plans to choose a builder before the end of the year and have the plant up and running within six to seven years. Possible contractors include Atomic Energy of Canada Limited (AECL), Areva SA of France, Westinghouse Electric Co., and the Russian state-run Atomic Energy Corporation (Rosatom).

"For the first time in many years, Argentina has a concrete nuclear plan," said José Luis Antúnez, vice president of Nucleoeléctrica Argentina S.A. (NASA), the state body that manages the country's nuclear plants.

Energy sector running on fumes

The government is hoping that by 2025, with five such power plants up and running, Argentina will generate at least 15% of its electricity from nuclear sources, in turn reducing its consumption of natural gas and other fossil fuels on which the country currently relies for approximately 59% of its electricity. Large-scale hydroelectric dams account for 35% of Argentina's installed capacity, while nonconventional alternative projects, like wind farms, contribute less than 1%.

Oil and gas reserves have dried up in recent years as a result of increased consumption and limited investment in exploration, both of which energy analysts blame in part on artificially low fuel prices. Until recently, natural gas--used not only to generate electricity and heat homes but also to run many of the nation's automobiles--was considered plentiful in Argentina, which exported significant amounts of the fuel to neighbors like Chile. Nowadays, to cover its needs, Argentina is importing natural gas--at great expense.

During the first six months of the year, fuel imports spiked 69% compared with the same period in 2009, totaling US\$2.75 billion. "In the case of natural gas, about 10% is imported, but this represents a third of the total cost," Alieto Guadagni, a former Argentine energy secretary, told Reuters news agency. "This is because gas imports cost four to five times more than what is paid to local producers."

The Fernández government insists that, by investing in reactors, Argentina can maintain its energy independence since the necessary fuel, uranium, can be mined locally. Nuclear plants have the added benefit of producing far less CO₂ emissions than thermoelectric (fossil-fuel-burning) generators, backers of the nuclear option are quick to point out.

Observers say Argentina is well-positioned to jump back on the nuclear bandwagon--and not just because it has proven uranium reserves. It also boasts significant human capital. Starting in the early 1990s, Argentina may have lost its enthusiasm for commercial nuclear electricity production, but it never stopped investing in research, training facilities, and experimental reactors.

Argentina's Comisión Nacional de Energía Atómica (CNEA), established in 1950, operates five research reactors and has made some significant technological advances,

including developing the Central Argentina de Elementos Modulares (CAREM) prototype, a brand of minireactor (25 MW) that the Fernández government is hoping Argentina will soon be able to market for export.

"Before addressing you I went over the plant and your excellent work, which has Argentina as a leading country in producing nuclear energy for peaceful and scientific purposes," said President Fernández during a June visit to CNEA's Centro Atómico Ezeiza near Buenos Aires. "We need to keep adding value to our scientific and technological production, and that is why we are renovating the plant and contracting young engineers, physics and chemistry professionals. This is crucial for Argentina's future, and we will provide the funds."

Bold power move or just hot air?

Argentina's suddenly rekindled love affair with nuclear power has not, however, been without its critics, with some analysts saying that until authorities can offer more precise details about their numerous plans, all the talk of embracing nuclear power will remain just that--talk.

A case in point is the much-heralded nuclear pact President Fernández reached in 2008 with her Brazilian counterpart Luiz Inácio Lula da Silva. Promising to share technology, the two agreed to eventually build a joint reactor. Like Argentina, Brazil--the only other South American country with nuclear power plants--has two operating facilities with a third on the way. Two years after the Brazil-Argentina pact was signed, it's still not clear how, when, or in what capacity the two nations plan to cooperate.

Argentina reached an equally vague agreement earlier this year with Russia, whose President Dmitry Medvedev promised to invest several billion dollars in Argentina's nuclear sector. It's not clear, however, where exactly all that money would be spent, especially if Argentina decides not to award the Atucha III contract to Russian builders. Medvedev's visit to Argentina in April was the first by a top-level Russian official since the two countries first established diplomatic relations.

While completing construction of the already nearly complete Atucha II plant is one thing, the government's grandiose talk of starting from scratch on bigger and better reactors, reopening uranium mines, and exporting CAREMs is quite another, say critics.

"What the government has isn't a plan," said former energy secretary Jorge Lapeña. "The government hasn't defined what it's going to do with the uranium mines, it's hasn't clarified what type of plants it wants, using enriched or natural uranium, and above all it doesn't have a financial strategy to carry these projects out. This is not a nuclear plan."

Environmental groups have also chimed in on the issue not only to express concern about the potential dangers of nuclear plants, which as Chernobyl proved can be quite devastating, but to question the economic wisdom of such a policy shift. To groups like Greenpeace, the billions of dollars needed to boost Argentina's nuclear power production would be far better spent on safer, more environmentally friendly renewable-energy projects.

Southern Argentina's Patagonia region has long been recognized for its huge wind-energy potential. The Centro Regional de Energía Eólica in Chubut, Argentina, estimates Patagonia's potential at some 500,000 MW (more than 20 times the country's total current capacity), raising hopes that it could eventually be the Saudi Arabia of wind energy, Argentina's current wind-power capacity is roughly 30 MW.

Though slow to take off in South America, both wind and solar power are making huge strides in countries such as Spain, Germany, and the US. Between 2005 and 2008, the US nearly tripled its wind-power capacity. It now boasts an installed capacity of more than 25,000 MW (roughly the size of Argentina's entire electricity grid), making it the world leader in wind energy.

Unlike the conventional thermoelectric and hydroelectric plants favored by private energy companies, renewable-energy projects are still considered comparatively costly. As Germany, Spain, and the US have demonstrated, large-scale investment in renewables--at least for the time being--still requires a boost from the state through regulatory laws and incentives such as direct subsidies and price guarantees. But then again, so does nuclear power, as President Menem's failed attempt to privatize Argentina's nuclear plants demonstrated.

"This is an industry that's been around for more than 50 years, and it still can't mount a single project without immense state subsidies," Greenpeace Argentina campaign director Juan Carlos Villalonga explained in a 2009 press release. "All of us Argentines are paying US\$1.5 million per day to finish Atucha II, a monument to waste that is going to end up being the most expensive nuclear plant in the world--all so that the Comisión Nacional de Energía Atómica has something to keep it busy."