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# What is the future of nuclear power in Brazil post Fukushima?

Inter-American Dialogue's Latin American Energy Advisor

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***Q and A: What is the Future of Nuclear Power in Brazil Post Fukushima?***

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Brazil doesn't plan to invest in new nuclear facilities until at least 2020, Marcio Zimmermann, the energy ministry's executive secretary, said earlier this month. However, he added that future plans could include the construction of four to eight nuclear plants by 2030. What is the current outlook for nuclear power in Brazil and other Latin American countries? How did last year's Fukushima accident affect nuclear development in the region? Have major offshore oil and shale gas finds diminished the appeal of nuclear power?

**A: Cláudio Frischtak, president of Inter. B Consultoria Internacional de Negócios in Rio de Janeiro:**

"After Fukushima, the scenario for nuclear power as a source of energy has arguably become far more clouded worldwide and particularly in countries with an active civil society, such as Brazil. People have again been made aware of the catastrophic risk which nuclear power poses and for which no insurance (other than the government) is available. On this basis, the real cost of nuclear power could be far higher than it appears. The third Brazilian nuclear reactor that will supply base power (Angra III) will move forward and be most likely completed in 2015. However, there is no visibility ahead. By 2020, nuclear power will make up just 2 percent of electricity capacity (1.6 percent today) versus 71.1 percent hydro, 6.8 percent natural gas, 6.7 percent wind power, 5.4 percent biomass, 5.8 percent fuel oil and diesel, 1.9 percent coal and 0.4 percent process gas. By any standard, this is a relatively 'clean' and uncontroversial power matrix, and much will depend on the ability of renewable sources to keep up with demand growth once hydro sources are exhausted. It is estimated that the country can still double its hydro capacity to 160 GW by the end of the next decade, but afterward it will have to rely on other sources. The major gas discoveries, in particular, are sometimes regarded as providing a viable alternative if high carbon taxes are not slapped on fossil fuels. Wind and solar power will be expanding in the coming years, but many question the ability of such sources to respond to demand with high-quality energy. Thus, nuclear power may make a comeback, but it will take possibly a decade before we see major investment commitments."

**A: José Goldemberg, physics professor at the University of São Paulo and former environment minister of São Paulo State:**

"Planning for the expansion of electricity supply in Brazil is made through two instruments: 1) Expansion plans for the next 10 years conducted by the EPE (Empresa de Planejamento Energético) which is realistic and determines where investments are made. 2) Indicative expansion plans for the next 25 years made by the Ministry of Mines and Energy. These plans are really exercises and are not binding. The next plan for 2035 is being prepared. The assumptions on which this plan is made are very dubious. They are assuming that energy consumption and gross domestic product grow together at the same rate, which has proven to be incorrect in a very large number of countries. What Marcio Zimmerman said earlier this month is that the only real activity in nuclear expansion in Brazil is the conclusion of the reactor in Angra dos Reis (Angra III) by 2015. Such work is already delayed by at least 18 months due to a revision of safety measures. No realistic plans for further expansion exist at the moment. He indicated, however, that the plans for 2035 (not 2030) 'could include the construction of four to eight nuclear plants.' The nuclear sector is lobbying for that, but the inclusion of such proposals in the 2035 Energy Plan is no guarantee they will be built. In my view, it is unlikely they will be built."price between sugar and ethanol. The industry is committed to overcoming these challenges in order to continue to provide this sustainable biofuel for Brazil and abroad."

**A: Ricardo Baitelo, Brazil energy campaign coordinator at Greenpeace:**

"Fukushima brought some lessons to Brazil. The country has delayed investment in new nuclear power plants, state governments in the northeast that had applied for these new plants changed their minds and Energy Minister Edison Lobão stopped saying that he had plans to see 50 plants built by 2050. The abundant supply of wind energy and hydropower in the country opens space for Brazil to abandon the nuclear option, while the viability of new sources increases progressively. Nuclear energy supplies less than 2 percent of Brazil's energy needs at a higher price than other generation sources. Brazilian wind potential is 143 GW, enough to meet all current electricity demand. The wind generation cost in Brazil is currently the world's most economical. About 2,000 MW of wind energy are contracted annually in energy auctions, which equals more than the installed capacity of the two Brazilian nuclear plants. Solar energy could also supply the entire domestic demand if using 2 percent of the urbanized area of the country. Prices are dropping considerably and legislation for net metering of solar panels has been approved recently. Argentina is the other South American country that relies on nuclear energy, with two reactors that represent 6 percent of the total electricity matrix. The country's plans are to extend the lifetime of the Embalse reactor, in addition to building three new reactors. Venezuela, which had plans to build reactors, backed down after the accident in Japan. The recent pre-salt field discoveries represent the increase of the oil industry in the country. The fuel is intended to be used both domestically (mainly in the transportation sector) and exported to the United States and China. Even though gas will be used for thermal generation, the most likely scenario for Brazil is that hydro and wind energy will reduce the potential market for nuclear energy in the future. The space gets narrower for nuclear plants if solar energy develops at the same impressive pace as wind energy in the next 10 years."

**A: John Albuquerque Forman, president of J Forman Consultoria in Rio de Janeiro and former ANP director:**

“Fukushima, although a very large accident, did not kill or wound scores of people. In fact, it caused fewer deaths than automobile accidents almost every day all over the world. It did raise, once again, the primitive fears regarding nuclear power. It will take some years for clear analysis and plans for future plants to be remade. Brazil is no different and, so not to be politically incorrect, the plans were delayed. The target date is now 2030. Hydro plants that may be built are mostly in the Amazon region and face massive resistance from environmentalists, as is the case for Belo Monte, which has been under discussion and dispute for more than 20 years. Large amounts of energy cannot be generated by alternative sources like wind or solar. When the demand for energy grows, the answer, in Brazil, will have to be hydro or nuclear. We will have to wait and see which will be the more powerful lobby. Oil is out of question and gas, although apparently plentiful in the pre-salt, is far off the coast and demands solutions which are under study but have not been found yet.”

*The Energy Advisor welcomes responses to this Q&A. Readers can write editor Gene Kuleta at [gkuleta@thedialogue.org](mailto:gkuleta@thedialogue.org) with comments.*