entitled, *Argentina, From Insolvency to Growth*. "These recommendations," charges the declaration, "have the goal of reducing to a minimum the country's capacity to develop its science and technology." The World Bank report proposes to eliminate 9,000 scientists' jobs, as well as to slash the budget of such crucial institutions as the National Commission of Scientific and Technological Research, which gives scholarships to more than 1,000 young researchers, whose future will be cut off if the World Bank plan goes through.

For certain, the Cavallo Plan, which has been touted as a model around the world, has serious difficulties in balancing the budget, as even Cavallo admitted at the last International Monetary Fund meeting in Spain in September. It is the case that privatizing the nuclear plants in operation could net the treasury some hundreds of millions of dollars, and the private completion of Atucha II, which is under construction, would reduce the national budget by hundreds of millions of dollars more, which would allow Argentina to comply with its foreign debt obligations which were acquired under the Brady Plan (of the Bush administration) and could breathe some more life into that plan. But as one of the Argentine atomic energy pioneers, engineer Carlos Martínez Vidal, put it to the Senate during hearings organized by the Science and Technology Committee on Decree 1540, the truth is that "what they really want to eliminate is not budgetary expenditures, or an adjustment in cash flow, but that capacity for autonomy which can be perfectly transferred from the nuclear sector to other sectors which are developing Argentina, as has been constantly demonstrated. . . . This autonomy is what is being paid for."

If it were only a cash-flow problem, the Argentine nuclear sector is one of the country's mostly highly competitive and could be one of the mainstays of solving the growing trade deficit. Yet, because of international pressures coming from a "technological apartheid" policy toward the nations of the South, in 1992 Argentina stopped exporting $100 million worth of nuclear technology to Iran.

Strategic, military, and scientific plan

The whole process of Argentine nuclear energy has been developed by the National Atomic Energy Commission, as part of a strategic military-scientific plan. One of the main protagonists of it was Adm. Carlos Castro Madero, a physicist who was one of the four directors which the Commission has had in its 44 years of existence. In 1990, in statements to the *Revista Argentina de Estudios Estratégicos,* Castro Madero said that "the objectives of our nuclear policy are the same ones that were defined in 1977: to increase the scientific, technical, and industrial effort in the nuclear area for exclusively peaceful ends and the exploitation of the human and natural resources of the country in this field, to contribute to national development." He added that the "integration and cooperation with Brazil in the nuclear field is mandatory to all the technological, economic, and political benefits which can be derived from it."

The Commission, founded during the first presidency of Gen. Juan Domingo Perón, in 1950, managed the nuclear plants, from their initiation through bringing them on-line. Privatization means breaking the fundamental axis of technical and scientific development which the National Atomic Energy Commission created, which is a source of national pride and a scientific-industrial model for Ibero-America and the world. As Dr. Mondino stated in a Commission publication, the National Atomic Energy Commission "is one of the most successful combinations of laboratory and factory which we find in Argentina; with a training-ground for scientists of international prestige, projects which are materialized, and two distinctive characteristics: continuity and a

CNEA—Argentina's 'jewel'

The National Atomic Energy Commission (CNEA) was created in 1950 and one year later, the National Directorate of Atomic Energy was created. As engineer Carlos Martínez Vidal explained to the Argentine Senate on Sept. 8, 1994, "This organization started to work with Argentine physicists, engineers, and mathematicians," all around 30 years of age, who took "the responsibility for orienting and advancing together with the National Atomic Energy Commission. One of the primary scientific activities was research with isotopes and radiation," which was under the direction of Dr. Llemanequer, a German radiochemist who arranged for Argentina to present an appreciable number of original papers on discoveries and characterizations of new radioisotopes and also something on uranium at the first and second international atomic energy meetings.

Another witness before the Senate, Dr. Gregorio Baro, director of the commission's radioisotopes and radiation division, explained that one of those working in the early days of the Argentine commission was Professor Elberg, "one of the pioneers in nuclear energy, who had worked with the discoverer of nuclear fission." The first reactor scientists were trained inside the radiochemistry group, and already in 1954-55 the group contributed 20 new radioisotopes, "many of which have been useful for the study of nuclear physics," said Dr. Baro. The radioisotopes started to be produced in an RA-3 reactor, designed in Argentina. Another machine to produce radioisotopes is a cyclotron, and in 1954 Argentina also installed one of these.

balanced budget."

The Commission has everything essential for the development of the physical economy, as economist Lyndon LaRouche has so often described it: scientific research, laboratory development, technology development, and their application to production of goods for society.

Besides producing nuclear fission energy, in which Argentina is an exporter in all fields, and building reactors, the Commission succeeded in producing the full nuclear fuel cycle, from the mine to the reactor; it works in food irradiation as well as in medicine, and is also a cobalt exporter; it produces radioisotopes for medicine and for agriculture; it is about to finish a heavy water plant in the southwest of the country; it has a laboratory with its own particle accelerator; it can enrich already-used uranium and various other processes. To achieve all this the Commission has set up partnerships with private capital and with some provincial governments, creating eight companies to develop the different activities.

As Martínez Vidal put it, the Commission "is the only institution which has managed to maintain itself over 44 years with levels of excellence and quality" despite the coming and going of politicians and the economic bestiality of the International Monetary Fund. This is what makes it such a target.

Manuel Mondino himself had warned since 1992, "We are all aware that this laboratory-factory combination cannot be split up, because that would mean throwing overboard the excellence achieved over decades of work and generations of scientists."

As the result of these beginnings, today Argentine exports cobalt 60, which in Dr. Baro's estimation, "has prolonged the life of humanity . . . by 11 million years." In the line of radioisotopes, as in the rest, the National Atomic Energy Commission went from research into production. Today there are 700 centers which use radioisotopes in the country, mostly for medical purposes but also for industrial and agricultural uses. Argentina is one of the six countries which produces the fission radioisotope molybdenum 99 which requires a "very complicated technology."

Engineer Martínez Vidal reported that in 1954, too, materials studies were started and from "these activities of research and development . . . Argentina passed very rapidly into experimental development." And at the impetus of Dr. Jorge Sábato, "the ongoing struggle was begun with enriched uranium, natural uranium, so that we would not be dependent. . . . The construction of the first experimental laboratory is proposed within this concept of technological autonomy." This was the RA-1, entirely built in Argentina.

The commission opened its technical service to industry in 1959-60. Engineer Martínez Vidal underlined that "this service was an important window which allowed the Argentine industrial sector to know from the inside and to determine that 38%" of what was needed to build the Atucha I nuclear plant "was perfectly feasible to manufacture within Argentina."

In the 1960s, the commission started to crystallize the plan to install the first nuclear energy plant for Argentina. It was decided to use natural rather than enriched uranium, which was used in Embalse, the second nuclear plant in the country. It was also decided to give priority to completing production of the full fuel cycle to achieve independence. Dr. Emma López Ferreira, ex-president of the National Atomic Energy Commission, explained in the Sept. 8 Senate hearings that "the stages were being concretized leading to having the manufacture of fuel elements in a productive stage." Argentine private capital participated in this process. When embargos started during the 1970s, "then we launched the program of development of our own capacity in enrichment, which was successful."

Argentina has a uranium mine in San Rafael, Mendoza, and has proven reserves of 11,000 tons, which are enough to feed four plants for 30 years of useful life. In the Córdoba Manufacturing Complex, the fuel is purified and a product is obtained for nuclear use, uranium dioxide. Then at the Ezeiza Atomic Center, near Buenos Aires, the partner firm of the commission, Conuar (Combustiles Nucleares Argentinos) produces the uranium pellets. These capsules are placed in sheaths of a zirconium-based alloy produced by the company FAE, Fabricación de Aleaciones Especiales, which is also part of the national complex set up by the commission.

Although today used fuel elements are not reprocessed, the commission is building a Pilot Reprocessing Laboratory at the Ezeiza Atomic Center.

During 1967-68 the first gamma-ray plant was built, which was one of the first in Ibero-America. Five years ago a private plant was installed for which the commission contributed much of the technology. Today the commission has a mobile irradiator which is being used for research on eradication of the fruit fly, Dr. Baro reported.

In 1974, the Atucha I nuclear plant came on line, built in association with the Siemens company of Germany and with 38% of its construction done in Argentina. In 1992, Atucha achieved an unequaled production record by attaining 362 days of uninterrupted power generation, which shows that the campaign to claim that Atucha I was in the worst condition in its history, was pure propaganda.—*Gerardo Terán Canal*