

Introduction - Latin America and Nuclear Energy

For the second time in its history, the International Atomic Energy Agency is holding its General Conference in Latin America. The first was in Mexico City in September 1972; this September the Conference meets in Rio de Janeiro (in each case, the arrangement has been possible because of the very generous hospitality of the Host Government). Therefore, it is an appropriate occasion to devote a section of the IAEA *Bulletin* to nuclear energy in Latin America.

The vast Latin American region presents many special opportunities for the introduction of nuclear science and technology. The first mission that the IAEA sent out, as far back as 1957, was to Latin America to promote co-operation in using radioisotope techniques. Today, these techniques are widely used by hospitals and medical research institutions throughout the region. Besides their medical applications, isotope techniques are also proving to be very useful in studying soils and irrigation, improving crops and livestock, and controlling insect pests. They also help make prudent use of the underground water resources in the region which, despite its bountiful rivers and tropical forests, includes many large arid areas.

The major applications of nuclear technology have come only recently to Latin America, firstly in Argentina, where a 319 MW(e) nuclear power plant began operating at Atucha in 1974. It will soon be followed by the first Brazilian nuclear power plant — a 600 MW(e) light water plant at Angra dos Reis nearing completion.

Argentina is building a second power plant at Embalse, and Brazil is planning two 1200 MW(e) plants at Angra and six more 1200 MW(e) units by 1990. Mexico is building its first nuclear plant at Laguna Verde, while other countries such as Chile and Colombia are planning the introduction of nuclear power. After a relatively slow start it, therefore, seems that nuclear power will go ahead fast in the Latin American region in the 1980's and 1990's.

This is not surprising. Despite substantial oil reserves in some areas, Latin America as a whole is not richly endowed in fossil fuels, and oil appears to have priced itself out of the running as a fuel for power production. The still undeveloped hydroelectric resources of Latin America are generally remote from its industrial centres where the power is needed. In these circumstances, the attraction of nuclear energy has steadily grown.

This in turn has led to increased interest in finding uranium deposits. The already proven uranium reserves of the Latin American countries are rather small. Of the world's reasonably assured resources of about one million tonnes of uranium oxide that can be recovered at \$15/lb or less (January 1975), Latin America accounted only for about 25 000 tonnes or 2.5%. The same holds true of presently estimated but unproven resources. However, it seems likely that these statistics reflect the intensity (or lack of it) of previous uranium prospecting rather than the facts of geology, and that more effort in Latin America will disclose substantial new deposits of which there are already promising indications in countries such as Brazil.

The discovery of such new deposits would not benefit only Latin America but the world as a whole, since there is much uncertainty about the adequacy of world-wide uranium resources for the 1990's.

Another potential source of nuclear fuel – thorium – is plentiful in one or two Latin American countries but there has been little progress so far in the commercial development of thorium. Latin America is also a potentially rich supplier of other raw materials such as beryllium, zirconium and hafnium, which are widely used in nuclear reactors.

Nuclear power and other major technological applications of nuclear energy will become of interest to a growing number of Latin American countries as their demand for electricity rises because of the expansion of industry. Nevertheless, for many years to come, the chief benefits that atomic energy can bring to Latin America will take the form of applying nuclear science techniques in medicine, water resources development and agricultural research. The medical applications are widely known and the water resources applications are highly specialized. The agricultural applications are many, but generally less well known, and this is one reason why the Agency is devoting a special meeting of the Conference to a review of the use of nuclear science techniques in agricultural research, food production and food preservation.

Latin America is the only region of the world in which substantial progress has been made towards what is now known as a nuclear-weapon-free zone – in other words, a zone in which no country possesses or seeks to possess the capacity to make nuclear weapons or other nuclear explosive devices, or permits such weapons on its territory. This has been achieved partly by the operation of Treaties and partly by the policy of individual Governments. The nuclear-weapon-free status is partly reflected in safeguards agreements with the Agency. In this way, the countries of the region are avoiding the vast waste of scarce resources that a nuclear weapons programme entails and, particularly, of scarce scientific manpower and technological skill, which they urgently need for their own peaceful development.

The Agency safeguards thus provide international assurance that the nuclear programmes of the countries concerned will not be diverted to nuclear weapons or other nuclear explosives. In this way the Agency's safeguards contribute to security and peace in the region. It is obviously of interest to all countries in the region that this *de facto* nuclear-weapon-free zone should be confirmed and strengthened. The Agency is, of course, ready to offer any services to the region or to groups of countries in it that may further this aim.