Transfer of Nuclear Technology to the Developing Countries

by Amadou M. Cissé,
Chairman of the IAEA Board of Governors

Since the election of my country, Senegal, to the Agency's Board of Governors, I have had an opportunity of acquainting myself with the vital role played by the peaceful uses of atomic energy in the development programmes of our countries, and in particular of the countries of the Third World.

For the developing countries the need for transfer of nuclear technology is particularly keenly felt in view of the gulf which separates their level of development from that of the industrialized States.

The International Atomic Energy Agency is deeply concerned with these matters and is endeavouring to assist its Member States to acquire the infrastructure necessary for implementation of their projects.

In the process of transferring nuclear technology to the developing countries, Africa must receive special attention since it is less well provided for than its partners in the Third World.

It may be noted that increased Agency assistance would have a beneficial effect on the implementation of training programmes.

The introduction of teaching in nuclear physics at universities in Nigeria, Tanzania and Madagascar should be extended to other universities in order further to orientate African students towards nuclear sciences.

In the peaceful uses of atomic energy the African States are concentrating their activities in the spheres of agriculture and medicine.

With the Agency's assistance our countries are drafting and implementing research programmes in agriculture and the exploitation of natural resources, including water resources.

Agriculture is the predominating element in the general economy of Africa, but the research effort — using nuclear techniques — which can provide solutions to the problems of

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On the occasion of the Iran Conference on Transfer of Nuclear Technology which took place in Shiraz/Persepolis from April 10 to 14, 1977, the Chairman of the Board of Governors of the International Atomic Energy Agency for 1976/1977, and Resident Representative of Senegal to the IAEA, Ambassador Amadou M. Cissé, delivered a speech on the transfer of nuclear technology to the developing countries, parts of which gave special highlights of the work of the IAEA for improving the benefits of nuclear technology to Africa.

African agriculture is being carried out above all at establishements situated in the advanced countries. In view of the specific nature of problems in tropical agriculture, applied research should be performed substantially in Africa, and the introduction of radioisotope services should be accelerated at all existing agricultural research centres.

Services of this kind exist in a few countries, including Senegal, Kenya, the Ivory Coast, Morocco and the Sudan.

Radioisotopes employed there make it possible, in particular, to trace the movement of fertilizers from soil to plant and to measure soil humidity.

Ionizing radiations can be used to produce genetic effects for the purpose of creating new varieties of important crop plants and selecting varieties requiring less water for their growth.

Such activities are naturally of the greatest interest to the African continent which, as a whole, lives basically from agriculture.

The guarantee of food supplies during the next decade is a subject of concern for Africa, and the prevention of losses of foodstuffs is one of the main objectives of African policy. The African countries are keenly interested in the irradiation of food commodities and are closely following the results of wholesomeness tests on irradiated foodstuffs, together with the progress made in this technique in general.

Food irradiation projects are being conducted in Ghana (on cocoa beans) and in Nigeria (on sweet potatoes) with the support of Agency research projects.

The Agency's project on the radiation preservation of fish, at present being implemented in countries in Asia, could – provided that the results are satisfactory – have important economic repercussions for the African countries.

Africa undoubtedly has the advantage of possessing a large part of the world's uranium deposits, but those which have already been identified and worked are the results of limited prospecting and there is no doubt that more thorough exploration, particularly in areas where no such work has yet been done, will reveal new deposits.

Exploration in certain of these areas is being undertaken in Madagascar, Zambia and Uganda. This activity should be rapidly extended to other countries where no prospecting has yet been undertaken.

In the medical sphere, the improvement in health facilities and services has recently been facilitated by advances in nuclear medicine, and laboratories and dispensaries able to use radioisotopes have been set up with the Agency's assistance at numerous African medical centres.

Mention may be made in this connection of the nuclear medicine centres at the Dantec Hospital in Senegal, the University Hospital of Kinshasa in Zaire, the Korle Bu Hospital in Ghana, the University College Hospital at Ibadan in Nigeria, and the Isotopes and Irradiation Centre at Khartoum in the Sudan.

In conclusion it appears that, when one takes an overall view of the problem of transfer of nuclear technology, the main difficulty which faces planners and management is the lack of liaison between development of techniques in the advanced countries and the problems which the developing States have to solve.

In the arid Hodna Basin area of Algeria water samples are taken from a well as part of an investigation of underground resources. Nearly 100 samples have been taken in a United Nations Development Programme plan executed by the Food and Agriculture Organization and assisted by the Agency.

This situation applies particularly in the case of nuclear techniques, because the use of the latter calls for very large capital investment, a high level of knowledge, a complex educational organization and also a well-developed industry capable of supplying the necessary maintenance and support services.

An adaptation of techniques is therefore called for, but the problem is not only of a technical nature, it likewise extends to the political, social and cultural spheres.

Equipment, whether in the form of a reactor or a computer, can be transferred from one country to another and, in theory if not in practice, the developing countries can meet a large part of their requirements through transfers of equipment from the advanced countries.

Our task now is to promote the transfer to these same countries of the Third World, through the Agency's intermediary, of the know-how necessary for the use of this equipment.

I feel that this is the proper task of the present Conference, and I wish you complete success in your work.