

UNITED NATIONS  
ECONOMIC  
AND  
SOCIAL COUNCIL



45877

Distr.  
GENERAL



E/CN.14/108  
16 February 1961

ORIGINAL: ENGLISH

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ECONOMIC COMMISSION FOR AFRICA  
Third Session  
Provisional agenda item 7

INTERNATIONAL ASSISTANCE TO AFRICA

Statement prepared by the International Atomic Energy  
Agency for presentation at the Third session of the  
Economic Commission for Africa

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Last year, at the second session of the Economic Commission for Africa, the representative of the International Atomic Energy Agency gave a brief account of the Agency's functions and of its potential role in the African continent. It is not the intention to once more give such a summary but it does appear useful to very briefly call attention to some of the activities of the Agency that may be of particular interest to the members of ECA, including the many who have since joined.

The statement made last year drew a comparison between developments in Africa and those in atomic energy - which have their extreme rapidity in common. This has been borne out in the past twelve months but although developments in atomic science are continuing at the same rate and with them new practical uses are being found almost constantly, the actual applications lags behind somewhat.

This is not surprising. Atomic energy, particularly a few years ago, was often hailed as a cure-all; now, on more sober contemplation, it assumes its proper proportions of a very useful tool in man's struggle for a better life, better health, more food and more knowledge rather than as sufficient in itself to set the world on the path towards the solution of its material ills. In the less-developed countries that most need better health, more food and more knowledge, these primary needs must be and are being catered for first. And since for the most efficacious use of atomic energy, certain basic presumptions

must be met, a minimal infrastructure should exist, there may be a temporary tendency to relegate this technique to a second plan and to leave it at this stage to those areas that can make a more direct use of it, thereby postponing the benefits that, indeed, atomic energy may bring and, again, widening the gap between the "developed" and the "less-developed" nations.

In what way can atomic energy be of use, here and now, where it does the most good?

Nuclear power for electricity production and industrial heat is at present competitive only where certain conditions exist; where the demand warrants the construction of a relatively large power plant that can operate continuously at a high load and that is part of an integrated electric grid, and not too large a part of that grid. Also, the cost of conventional fuel should be high, to enable a choice to be made in favour of nuclear power stations.

There are signs, however, that in the not too distant future, with further technical development and decreasing costs, this situation might shift in favor of nuclear power. The Agency is engaged in studies of small and medium size power reactors of types suitable for use in less-developed areas and is doing what it can to promote the development of such installations. The information exchanged at a conference held in Vienna in September 1960 and the data on costing yielded at meetings of experts sponsored by the Agency, show that if the present trends continue, an increase in the use of nuclear power in the latter years of this decade is probable, at least in regard to large units; the prospects for economic use of small nuclear power plants appear to be of longer range. We are preparing for that moment by assisting Member States in their studies on the economic aspects of power production within the over-all framework of economic development, taking into account available resources and existing needs and industrial priorities dictated by them. I refer in this connection to document E/CN.14/96 Add.1,

relating to agenda item 13 (a) where, under part II, para 3, c the last page, mention is made of electric power production, consumption and needs and of a review of developments in the field of nuclear energy. Having been engaged in this work for several years now the Agency will be happy to assist ECA in this work and provide it with the information it may require.

To be effective, such studies must be undertaken by the country concerned on the basis of a fairly well integrated national power program. To promote this integration, the Agency advises Member States on the establishment of government authorities which can fulfill a co-ordinating and regulatory function and thereby prepare for the effective and safe use of atomic energy.

The regulatory work of the Agency is important in view of the risks created by almost all operations involving the use of nuclear energy. The Agency evaluates reactors for their safety and assists in their construction and operation with this aim in view; it is assisting Member Governments in drafting legislation regulating nuclear safety and itself issues manuals and regulations on the safe handling and operation of materials and installations which can serve as the technical basis of national legislation and is followed in projects involving Agency assistance.

It is also important that, as early as possible, specialized technicians and scientists are trained against the time when their services are required in the establishment of nuclear installations. More will be said about this anon. So much here, for nuclear power.

In the short run, particularly in the context of Africa, the uses of radioisotopes are of more direct importance. I expect it is generally known that in science and research radioisotopes have already proven to be of inestimable value and that in industry they have resulted in huge savings.

It must be stressed, however, that the use of radioisotopes is neither a separate science nor a purpose in itself, it should rather

be seen as a very useful tool in medicine, engineering, agriculture, etc. to be used by scientists and technicians trained in those general fields. As such, radioisotopes can be of direct practical use in Africa, particularly when applied as the Agency is now helping to apply them, to the special problems of tropical diseases and tropical agriculture.

These uses of radioisotopes have been enumerated on many occasions but some may be re-emphasized here. Thus, there are the many applications for crop improvement, studies of fertilizer uptake, insect tagging and the control of pests, such as the sterilization of male insects of certain species. There are the medical uses, in diagnosis and therapy, which can be particularly fruitful in existing medical centers as additional tools. There is the use of isotopes in thickness and quality testing of concrete in house and road construction, and the application of the age determination of rocks, which can be of considerable help in geological exploration. A new and promising use of special interest to Africa with its enormous arid zones is in the field of hydrology.

These examples may illustrate the direct applicability of atomic energy in less-developed areas. The Agency is directing a considerable part of the research it supports towards these uses, both by awarding research contracts on these subjects, where possible in less-developed areas, and by making special research grants.

The Agency's methods in bringing the peaceful uses of atomic energy to Africa follow the lines of assistance customary in the United Nations family.

In the first place, we have our technical assistance program, financed both from the Agency's own rather-limited funds, and from EPTA. As a rule, technical assistance projects follow the findings of so-called preliminary assistance missions: balanced teams of experts specialized in various fields of atomic energy, such as the use of isotopes in medicine and agriculture, nuclear power, geology of nuclear raw materials, and administration. The task of these missions is to acquire

a broad impression of the atomic energy requirements of the countries visited and to give general advice on how to start an atomic energy program, and to undertake certain useful activities with the means available and/or the assistance of the Agency. Particular attention is paid to existing facilities that may be used and expanded for the use of nuclear techniques and the full utilization of tools made available under bilateral arrangements. The missions so far carried out in four continents have resulted in a considerable amount of technical assistance being supplied to the states in question and in the provision of useful advice to local authorities.

In 1960 a preliminary assistance mission visited the Ivory Coast, the Republic of Mali, Morocco, the Republic of Senegal, Sudan and Tunisia. In the spring of 1961 we plan to dispatch such a mission to a number of countries in south-west Africa, Dahomey, Ghana, Liberia, Nigeria and one or two others, and we hope in 1962 to be in a position to send a third one to a number of states not visited so far.

The Agency's technical assistance activities in Africa under its own program for technical assistance, have only started relatively recently and are, of course, still limited. Briefly, Morocco has been given advice on the possibilities of the recovery of uranium from phosphate ores. In 1961 this country will be visited by an Agency expert in the application of radioisotopes in agriculture, who will help to prepare a program in agricultural research; some equipment for use in this program will also be provided. Sudan will receive the assistance of an expert in raw materials analysis and will be supplied with some equipment. Tunis, has received the visit of an agricultural chemist to assist in the introduction of radioisotope techniques in certain research projects. Assistance has also been granted to the United Arab Republic in connection with the development of the radioisotope centre in Cairo. Under the United Nations Expanded Program of

Technical Assistance, including the supplementary program for Africa, in 1961-62 assistance is being given to the following African States: Dahomey, Ghana, Mali, Morocco, Senegal, Sudan, Tunisia and the United Arab Republic. In particular, Dahomey, Mali, Ghana, Senegal, Morocco, Sudan and Tunisia are receiving fellowships in subjects such as nuclear raw materials processing, metallurgy, radioisotope techniques, and the medical applications of isotopes. A number of experts is being sent in nuclear physics, radiochemistry and the medical and industrial applications of radioisotopes. Several of the countries mentioned are receiving equipment, in some cases of considerable value.

The promotion of training and education forms an essential element in the Agency's activities. The Agency is very much aware that the lack of trained scientists and technicians is one of the most pressing problems in a large part of the African continent, that training in nuclear science technology is only one aspect of the many problems of that continent and that it is essential that a program of training in nuclear science should be integrated in a general program of training and education. Accordingly, in coming years, the Agency hopes to apply the various elements that go to make up its educational program, particularly as concerns the needs of Africa.

Within the limits of the available means, we are thinking of a multiple approach along the following lines.

To assist in the creation of a scientific cadre with a thorough basic knowledge in nuclear sciences, we plan to arrange visits of professors to African countries and award fellowships to train specialists from those countries. This would, in our view, be conducive to the development of educational and scientific institutions and help to meet the great need for teaching staff which exists at the university level.

To promote practical applications of radioisotopes, especially in medicine and agriculture (later in industry) the Agency could help

train students abroad, as well as technicians, to apply these new techniques in existing medical establishments and agricultural facilities. Some of the equipment might be supplemented by the Agency.

A preliminary exploration was carried out by the Agency, which has shown that at this stage a permanent regional nuclear science training center may still be premature and that individual regional training courses may suffice for some time to come. (It is noted that in 1960 the Agency assisted in such a course in the use of radioisotopes held in Leopoldville).

In the spring of the present year a regional course of two months duration in radioisotope techniques is being held in Cairo; it will treat such topics as isotope physics, chemistry and biology. Again, at the end of 1961, a course in the application of radioisotopes in medicine will be held in the United Arab Republic.

In view of the considerable interest that seems to exist in the possibility of establishing regional research centers specializing in the problems of tropical Africa, where also some training could be given, and of organizing regional training courses for technicians, we are seriously considering means of undertaking such activities, in conjunction with the interested organizations. We are also aware that at a later stage the Agency might assist in organizing national centers for training specialists and technicians.

In general, the Agency is prepared to assist the countries of Africa in creating technical facilities for teaching students and training specialists in atomic energy and within its means, to help them procure equipment for such facilities. So far, from 1958 to 1960, 79 fellowships were granted to candidates from Africa and a number is now being processed.

Thus, by applying such means as it has to promote the peaceful uses of atomic energy, the Agency hopes in the coming years to help spread the benefits of these new techniques in Africa and thereby make a contribution to the development of that continent.