

harnessing nuclear energy

Dr. Sigvard Eklund, Director General of the IAEA, addressed the 49th Session of the Economic and Social Council of the United Nations, in Geneva, on 9 July. In his speech he drew attention to "a major event ... which has had an immediate effect on the work of the IAEA and which could, in the future, affect the whole structure of international relations": the coming into force of the Treaty on the Non-Proliferation of Nuclear Weapons earlier this year.

On the day when Dr. Eklund addressed the Council the Treaty had been signed by 98 nations and ratified by 55, including three Nuclear-Weapon States — the United Kingdom, the USSR and the USA. The Director General pointed out that NPT aimed not only at halting the spread of nuclear weapons "but also, in a climate of improved relations between States, to increase international exchanges of equipment, materials and scientific and technological information for the peaceful use of nuclear energy. This dual goal coincides with the statutory purposes of the Agency; it was no accident that the Agency was chosen as the control organ for NPT."

As has been emphasized in earlier Bulletin articles, Parties to the Treaty undertake to accept Agency safeguards with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. As a result, said Dr. Eklund, the Agency must now give extra assurances that the development of peaceful nuclear activities will not be hindered and that commercial secrets will not be divulged as a result of Agency inspections. Full use must be made of existing national and regional control systems; since 12 June a committee of about 50 nations — open to all members of the IAEA — had been studying these and related problems in Vienna.

The negotiations which led to NPT, said Dr. Eklund, had resulted in an increased interest in the ways in which nuclear energy was contributing to economic and social progress, particularly in the developing countries. At the end of this year about 24 000 MWe of nuclear electrical generating capacity would be installed throughout the world, of which about 2 per cent would be in the developing countries. It was expected that by 1980 the world's nuclear capacity would rise to close to 330 000 MWe, or about 15 per cent of all electric power being generated at that time. But the share of the developing countries was expected to rise only to about 7 per cent of the total nuclear capacity.

"As I have frequently stressed, the main impediment to the spread of nuclear power in the developing countries is financial," he said. "The Agency has begun a study of the needs of developing countries for external finance for major nuclear projects and of possible ways of meeting them. The first stage of this study has shown that even the modest nuclear target I have mentioned will require foreign exchange resources of \$3 - 4 billion between 1970 and 1980.

"It is clear that unless adequate capital is available from the industrial countries and international financing organizations, even this modest target will not be achieved."

"Grimy cities, polluted streams and air ... can be an object lesson. Photo: UNESCO/Dominique Roger



A second impediment, he said, was technical. Nuclear power plants at present being manufactured were too large for the power grids of most developing countries. The IAEA had tried for the past few years to promote interest in the manufacture of smaller plants which could have wider application — "But it cannot be said that the prospects for this effort are encouraging. I have said before, and developments have not disavowed me, that nuclear power will increase rather than decrease the gap between the advanced and the developing countries."

About 95 per cent of uranium reserves now being exploited were in the technically advanced countries, chiefly because these were where the search for uranium had been most vigorous. The discovery of economically workable deposits of uranium ore could be an important source of export earnings for the developing countries.

Aid, and the Environment

The Agency was itself helping these countries by promoting the use of the techniques of nuclear science in agriculture, industry, hydrology and medicine, with the close collaboration of other agencies of the UN family. Contributions from member States of the Agency toward the technical assistance programme were expected this year to reach about 85 per cent of the target of \$2 million; the Board of Governors had therefore recommended that for next year the target should be raised to \$2.5 million. This increase was not in itself sufficient to offset the eroding effects of inflation on the real value of the programme, but "it is in the spirit of Article IV of NPT, which requires Parties to the Treaty to cooperate in contributing to the further development of nuclear energy with due consideration for the needs of developing countries."

Dr. Eklund next turned to discuss the present widespread and growing concern about the impact of modern technology on the environment: in particular, concern in the industrial countries about the effects of nuclear power. He pointed out that the Agency is to hold in August a large conference on the environmental effects of nuclear power stations (at UN Headquarters, in New York); and the Agency is preparing to take part in the planned Stockholm conference on the human environment in 1972.

The Promise of Nuclear Power

"Pollution is sometimes said to be a problem that only rich countries can afford," said Dr. Eklund. "Yet, this is surely a matter in which the developing countries can benefit from the experience of the richer. The grimy cities, polluted streams and air of much of the industrial north can be an object lesson. Nuclear power offers a far cleaner alternative to oil or coal-burning plants, and a means of reducing instead of adding to air pollution. These factors should be taken into account in addition to the purely economic considerations when nations consider their energy programmes."

Dr. Eklund introduced to the delegates to ECOSOC a booklet produced by the Agency, as an addendum to its report to the Council, entitled "Nuclear Energy and the Environment." The introduction to

this publication points out that the tempo of man-made environmental change has quickened constantly during the last two centuries, and goes on: "Until quite recently, most countries were relatively heedless of the long-term damage that new industry and technology might be doing to the environment. The cost of minimizing harmful side-effects was a price that society was unwilling, and perhaps often unable, to pay. The findings of science itself have made us all much more aware of the environmental consequences of material progress and of our responsibility to preserve not only our particular national heritage, but the entire planet as a place to live in for future generations ..."

The Director General went on: "At the San Francisco Conference [at which the Charter of the United Nations was concluded] twenty-five years ago few people could perceive the vast impact that atomic energy would make on the post-war world. The founding of the IAEA in 1957, the conclusion of the Partial Test Ban Treaty in 1963, and the ratification in 1970 of the Treaty on the Non-Proliferation of Nuclear Weapons, have demonstrated that international action can be taken to harness this new source of energy for the benefit and not the destruction of mankind.

"We are a long way from achieving disarmament, but Article VI of NPT enjoins the nuclear powers to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on the Treaty on general and complete disarmament under strict and effective international control.

Balancing the ledger

"In September next year in Geneva, the Agency will cooperate with the United Nations when it holds the Fourth Conference on the Peaceful Uses of Atomic Energy. This conference will be designed for the first time to give Government planners and economists, as well as scientists and technicians, the opportunity to make a comprehensive review of the present status of all important research and applications of atomic energy, and of the prospects for the future.

"We are currently concerned with what one might call the debit side of the ledger: with the risk of proliferation of nuclear weapons and the costs and problems associated with nuclear power. It is my hope that the 1971 Conference will help us to focus attention again on the great positive contribution that atomic energy can make to the economic and social progress of all nations."

Copies of the booklet "Nuclear Energy and the Environment" may be obtained on request from the Division of Public Information, at the Agency headquarters in Vienna.