Technical co-operation for development

Trends reflect the Agency's response to increasing demands

by Mohammad Ridwan

As an organization with a mandate to promote technology transfer, the IAEA provides development assistance in numerous fields where nuclear techniques either offer advantages over others or serve as valuable adjuncts to non-nuclear ones.

It is widely assumed that nuclear energy means the generation of electricity by nuclear reactors. Activities related to nuclear power do concern the organization, but they by no means represent its only focus for technical assistance, and they are not immediately relevant to all developing countries. Consequently the scope of the technical co-operation programme is broader, encompassing many fields and activities related to health, agriculture, industry, hydrology, radiation protection, environmental monitoring, and others. In providing assistance, the Agency contributes the services of experts, equipment, and training, and it stands ready to advise Member States on their nuclear energy development programmes. Hence, unlike many other organizations in the United Nations system engaged in development assistance work, the IAEA's focus is not on sectoral development. Rather, its focus is on particular sciences and technologies associated with nuclear energy and its various applications. The primary objective of IAEA technical co-operation is to assist Member States in achieving self-reliance in nuclear science and technology through manpower/human resources development and by strengthening institutions.

Fields of activity

From the standpoint of a country's overall development, nuclear science and technology falls into four major areas:

- **Basic human needs.** ***This area includes water resources development (assess-***

Scenes from the IAEA's interregional training course on radiation protection in the mining and milling of radioactive ores, held in Poços de Caldas, Brazil, in November 1986. (Credit: Ahmed, IAEA)

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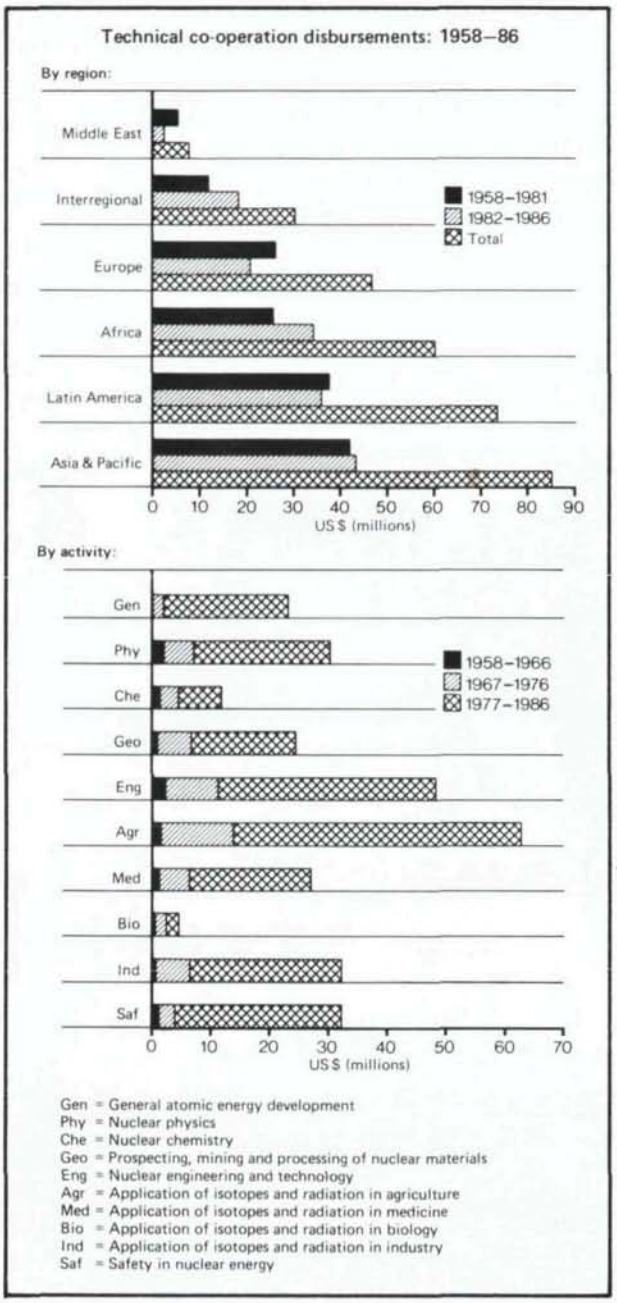

ment of ground and surface water resources and dynamics); agriculture (mutation breeding, fertilizer and soil nutrition, pest control, agrochemicals); animal husbandry (reproduction, health, nutrition); and health care (radiation therapy, nuclear medicine/diagnostics, sterilization of medical products).

- **Industrial applications.** *This includes non-destructive testing; hydrology (silt movement/sedimentology and geothermal studies); radiation processing (surface-coating, radiation sterilization, and food preservation); isotopic tracers for industrial process control; nuclear gauging for industry (paper, steel, food processing, and mining industries); and radioisotope and radiopharmaceutical production.*
- **Electricity generation.** *This includes geology, mining, and processing of nuclear raw materials; fuel element fabrication; metallurgy and materials testing; research and power reactor design; reactor electronics instrumentation and control; radiation engineering and quality assurance; and energy planning.*
- **Support activities.** *This includes nuclear centres and laboratories; nuclear safety (regulation, safety standards, radiation protection and dosimetry, radioactive waste management, safety assessment of nuclear installations), maintenance of nuclear instrumentation; physics (atomic, nuclear, high-energy, solid-state, mass spectrometry); chemistry (nuclear, radio, radiation, nuclear analytical); and secondary standards dosimetry laboratories.*

Financial resources

Financing for technical co-operation activities comes from four sources that are utilized for different types of programmes:

- **Technical Assistance and Co-operation Fund (TACF).** *These are voluntary contributions made by Member States towards a target established by the Board of Governors and augmented by miscellaneous income. The fund supports the regular programme (individual projects comprised of expert services, equipment, and fellowships that are annually approved by the IAEA Board of Governors); the major portions of the fellowship programme (for individual training) and the training course programme (for group training).*
- **Extrabudgetary funds.** *These are cash contributions made by Member States over and above those to the TACF. They are used for the special programme, which consists of projects, usually large-scale ones, that are jointly identified by donor and recipient countries.*
- **Assistance in kind.** *These are contributions made by Member States in the form of cost-free experts, equipment, and fellowships. Along with extrabudgetary funds, they are used for projects under the special programme.*
- **United Nations Development Programme (UNDP).** *Funds are received for the implementation of UNDP projects for which the IAEA has been designated the executing agency.*

Resources and utilization

Resources available to IAEA technical co-operation programmes have been increasing steadily, at a rate of about 18% per year over the last decade. They amounted to approximately US $40 million in 1986. Geographically, the regional distribution of assistance has shifted in the last 5 years: The shares of Asia and the Pacific, Africa, and inter-country programmes have grown, while those of Latin America, Europe, and the Middle East have gone down slightly. More clearly evident is that more assistance, in monetary terms, has been provided in the past 5 years than in the previous 24 years combined. (See accompanying graphs.)

Since 1977, the programme's growth, as measured by disbursements, has been rapid, with the equipment component establishing itself at roughly 50% of the programme. Human resources development is another key element in acquiring technological

self-reliance, and in this respect, the IAEA has organized training courses, awarded stipends for fellowship training, and sent hundreds of specialists in various fields of nuclear energy and technology to developing countries.

As resources for technical assistance have increased from year to year, so have requests from Member States for such assistance. In fact, the increase in requests has been much higher than growth of resources. This fact suggests that nuclear technology is flourishing in developing countries. It may also indicate that the public is gradually gaining a clearer perception of peaceful nuclear applications and that the technologies being promoted through the IAEA's programmes are making an ever greater contribution to scientific progress and national development.

Some indication of what has been achieved through IAEA programmes is reflected in the data presented here. Future technical assistance projects will build upon this foundation. In 1987, they include:

- ***28 projects in 25 developing countries relating to radiation-induced mutation breeding of cultivars. Through the Agency's technical co-operation projects to date, 334 improved cultivars from developing countries have been released to farmers.***
- ***71 projects in 42 developing countries, including one regional project for Africa, in soil fertility, management, and related areas.***
- ***41 projects in 31 developing countries, including two regional projects for Africa and Latin America, in animal production and health.***
- ***69 projects in 35 developing countries in industrial applications of radiation and radioisotopes. Applications include radiation sterilization of medical supplies, nucleonic control systems in manufacturing, non-destructive testing, and industrial radiation processing of wood and other products.***
- ***3 regional projects in Africa and 52 others in 43 developing countries in hydrology and water resources management.***
- ***15 projects in 11 developing countries to assist them in radiation protection regulation, licensing, and inspection; 50 projects in 36 developing countries in the area of occupational radiation protection; and 32 projects in 21 developing countries related to radiation protection for the general public.***
- ***107 projects in 53 developing countries related to isotope and radiation applications in physical sciences and to nuclear instrumentation and maintenance; 41 projects in 24 developing countries related to research reactors and their utilization; 67 projects in 35 developing countries in chemistry; and 74 projects in 38 developing countries related to medical applications.***