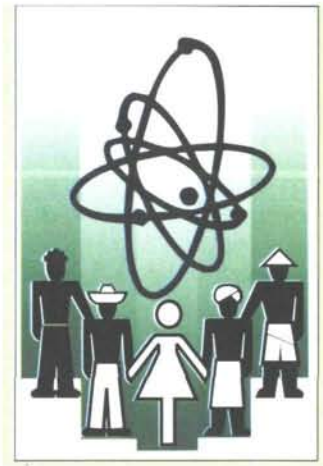
INSIDE
TECHNICAL CO-OPERATION
International Atomic Energy Agency



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Sri Lanka sets sights beyond the human eye

A large facility to irradiate and store a variety of human tissues for medical use on the Island and throughout the region is now near completion in the Sri Lankan capital of Colombo. A 10, 000 curie US-built irradiator provided from IAEA Technical Co-operation (TC) funds is now in place and the tissue bank is already in operation.

Tissue banking in Sri Lanka began nearly 20 years ago with one man and his home refrigerator when Dr. Hudson Silva launched his campaign to preserve eyes donated by his patients so that others who had lost their sight might see again.

The non-governmental organization (NGO) that Silva set up, Sri Lanka Eye Donation Society, popularly known as the Eye Bank, has since been approved by the government as a tax-free charity. Over 10,000 people in Sri Lanka have regained their vision with the aid of the society. In the last 30 years the bank has sent more than 30,000 sight-restoring corneas to

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The "right" stuff

In the rugged Peruvian highlands around Acobamba District, about 350 kilometres east of Peru's capital Lima, some unusual things have been happening this summer and autumn, even though the tenor of everyday work and life may not have been disturbed too much. The centre of activity has been four schools and especially 300 primary school 6-to-11 year old children who are being nutritionally evaluated using stable isotopes.

The exercise is the first part of a Technical Co-operation Model Project which began in July. TC's $700,000 funding is riding piggy-back on an on-going $15 million government programme that provides 524,000 breakfasts each day to poor school children; a number which President Alberto Fujimori

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Nutrition studies are part of Peru's efforts to improve children's health. (Credit: C. Fjeld/IAEA)

Nuclear methods detect infant diseases

Congenital diseases can kill babies and cause lasting disability to infants who survive them. *Neonatal hypothyroidism* is one which can occur when the mother's diet is short of iodine — not uncommon in communities where nutrition is inadequate. In some places farm soil depleted of natural iodine is the principal cause. Neonatal hypothyroidism is seldom fatal but, arguably a fate worse than death for the victims and their families if it seriously retards the child's physical and mental growth.

Happily, if diagnosed in the **first days of life**, it can be treated with hormonal replacement regimes that allow the child to lead a near-normal productive life. How to detect it so soon? A nuclear technique called radioimmunoassay (RIA) can do it. This simple, safe, and relatively inexpensive diagnostic tool is now widely used to detect a large number of conditions, before classical symptoms surface.

Technical Co-operation has helped transfer this technology to many developing countries. There are variations on the RIA theme and each disease needs its own reagents and diagnostic know-how. Two of the most recent TC Model Projects, in **Tunisia and Uruguay**, target neonatal hypothyroidism. Both satisfy all the basic criteria of such projects: they are in tune with national policy; they dovetail into the country's health programme; they are sure to reach the end-users; and they are assured of support and commitment by the government.

Both countries have cleared the legal and bureaucratic hurdles for maximum project impact: Tunisia by Ministerial directives and Uruguay by a law that mandates the screening of newborn infants for hypothyroidism. Both countries have experience in the use of RIA, from earlier Agency and RCA (see back page) programmes. Both have adequate infrastructure in place to screen, analyse samples and prescribe treatment.

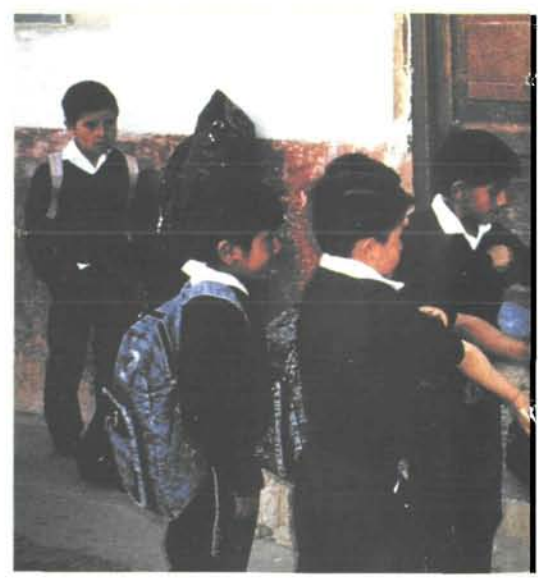
Both countries, too, have high neonatal hypothyroidism incidence rates (estimated at one in every 1000 live births in Tunisia, 1 in 3500 in Uruguay) which is ample economic justification for the effort. In Tunisia, in the early months of the project this year, one case of hypothyroidism was found (and is being treated) among 1500 newborn babies screened. Given an expectancy of working 30 years and Tunisia's per capita income of US $2000 a year, the child now has the potential to contribute $60,000 to the economy. This almost equals the total investment in the project's first nine months.

In Asia, nurses draw blood from an infant's heel to detect a thyroid disorder causing retardation.

Uruguay began a much less intensive screening programme some years back and identified seven positive cases among 21,500 newborns screened between 1990-94. Without the follow-up treatment, these children would have grown up mentally and physically impaired, possibly unproductive and a burden to both family and State. So, with an estimated occurrence rate of 1 in 3500, a large-scale screening programme was begun with Agency support involving more than 60 hospitals and clinics. About 33,000 newborns (60% of all newborns) were screened last year. On this basis, about 18 cases of neonatal hypothyroidism every year can be expected. Early treatment will permit these children to develop normal and productive lives. From a modest IAEA contribution of US $150,000, the expected economic benefit in Uruguay is US $1.4 million (assuming a working life expectancy of 30 years and average GNP of US $2,560).

The RIA procedure does not introduce anything radioactive into the babies. Instead it uses reagents — chemicals that produce chemical reactions in blood samples — that show whether the infant has the specific disease. The nasty part is the pinprick in the heel to draw out a few drops of blood for the test. It's in a good and healthy cause, and someday the 4-day old babies may just learn to appreciate that.

School children in Peru proudly show how a blood test is done.



The "right" stuff: **continued from page 1**

has promised would rise by 3,000,000 in 1996. The TC project goes beyond simply measuring what nutritional benefits the children derive from the special meals, and hopefully will contribute to intervention strategies for other undernourished regions in the developing countries.

Hunger is widespread in many developing countries. Many affected populations benefit from supplemental feeding programmes, often with bilateral and international support. These may assuage hunger but do not always provide proper nourishment. The World Health Organisation (WHO) calls it **hidden hunger**. This is especially true for susceptible groups such as nursing mothers, infants and children.

Nutritionists know a lot about which nutrient deficiencies cause what health problems, and doctors increasingly prescribe diets to treat individual patients. But it is a lot less easy when feeding whole communities, or target groups like women of childbearing age or young children as in Peru's school breakfast programme. While foods are fortified with vitamins and proteins, it is often uncertain whether the supplements meet the requirements for proper nutrition.

The essence of the TC project is to investigate definitive answers by using isotopic methods to evaluate the nutritional quality of foods and diet relative to nutritional status.

For example, WHO and most nutritionists recommend that green and yellow plant foods be eaten to combat vitamin A deficiency – the most common cause of childhood blindness. But, too often, intervention to improve vitamin A does not yield anticipated results. This is probably because of a shortage of dietary fat or poor conversion of the pro-vitamin to vitamin A.The shortage of this nutrient not only causes early blindness, it also undermines the immune system and retards growth and mental development.

The Peruvian project is assessing which ingredients (the right amount of fat and the best sources of pro-vitamin A) will optimize the conversion of the pro-vitamin into vitamin A. Another isotopic application will measure the vitamin A in the whole body. Local communities prepare and distribute the supplement to children and some parents even help with monitoring and sampling. On average, 87% of the parents in these four communities have agreed to participate.

The measurements and evaluations carried out in the project use isotopic methods because no other approach could provide answers as quickly or with as much assurance. The list includes measurement of total body water and body composition, from which nutritional status can be determined and decisions taken on which nutrients would be needed in dietary intervention. It also includes measuring total daily energy expenditure as a basis for planning the amount of calories required, and to determine whether an intervention would increase productive energy. Such measurements could be done with conventional tools in well equipped hospitals, but not in rural communities of the Peruvian highlands.

Measurement of the amount and rate of protein deposition in the body will allow selection of dietary ingredients that most efficiently convert food into growth — that is, the rate at which body protein becomes new tissue. The sensitive isotopic method can be applied without interfering with people's everyday activities. Conventional methods cause inconvenience (require people to be confined in special rooms for days and be asked to breathe into bags and the like), are costly, and/or need special expertise and time. Long-term growth of the children could be tracked of course, but it takes a long time and the results could be confounded by many factors unrelated to the dietary supplement.

The Acobamba evaluations also include iron, zinc, iodine, folic acid and immune status. Of the four schools, two are receiving the breakfast from the national programme, the other two, used as "controls", will get it in the following six months.

The project will be extended to other parts of Peru during its 4-year life. At the end it will provide solid field data that will contribute to improving fortified foods and nutritional supplements in the future. This information can also be used globally to help governments, donor agencies and the food industry plan and design effective interventions for children and other "at risk" groups.

The TC activity in Acobamba is already linked with a WHO vitamin A supplement programme, and an immunization campaign in Peru and Ghana.

Other organizations are involved as well. The United Nations' Food and Agriculture Organization (FAO) currently has an expert working with the IAEA on nutrition projects in Vienna. Other international bodies showing interest in isotopic evaluations include UNICEF and UNFPA.

In October, the Agency hosted an expert meeting to plan nutrition research and evaluation programmes within the IAEA in the coming decade. In attendance were nutrition experts from the US, the Netherlands, and the UN agencies who also collaborated to provide advice on how to accelerate the process by which nutrition science is used as a basis for food production and public policy.

A "gel" route in China

Half a million more patients in southwest China could have the organ scans and diagnostic health care they need when an unconventional method for producing **technetium** "generators" reaches industrial scale, possibly as early as next year. IAEA Technical Co-operation has been assisting with expertise and materials since 1994 to help the Chinese ensure product quality.

Technetium (Tc) — the most widely used tracer element in nuclear medicine — is extracted, from a so-called generator by a simple chemical process. Its parent "generator" is molybdenum-99 (Mo-99), which is commonly produced by fissioning uranium in a nuclear reactor. This process provides "gold standard" Mo-99, which is very expensive and requires a reactor of at least 5 megawatts.

It takes sophisticated technology to fish out the six per cent of Mo-99 from the hot fission soup which includes hundreds of other products including plutonium. Costs of imported Mo-99 are vastly increased because the radioactive isotope must be heavily shielded. Production of Mo-99 also results in a large amount of high-level waste which is difficult and costly to handle.

Recently, a simpler and less costly route has been developed by irradiating stable molybdenum (Mo-98) in a research reactor with a high neutron flux. Essentially, scientists have added a neutron to Mo-98 to get Mo-99, which is then held in a special gel rather than in the bulky lead shielding used for conventional generators. The very short-lived technetium tracer is extracted from the gel by the same process used to obtain it from fission-produced Mo-99. Gel generators have now been used in more than 100 Chinese hospitals. Clinical results have been as good as those when the technetium is obtained from fission process generators.

Both Chinese and IAEA experts anticipate that production and quality improvements will need to be made before the gel process generators can be produced on an industrial scale and be as readily acceptable as the fission-made ones.

However, several obstacles remain: gel production must be standardized, contamination with stable molybdenum reduced and the production process streamlined to enable generators to be turned out in large numbers. TC's three-year Model Project that started in 1994 has helped correct four weaknesses and introduced several improvements to the production system. Current efforts focus on improving generator performance in several ways — by experimental comparison of different processes; improving equipment and methods of quality control; enhancing the conditions and environment of the laboratory; and changing the design and construction of the production line for greater efficiency.

A technical report now is being prepared on the comparative studies of the performance of the gel-type generators. The reports also looks at the behaviour of the technetium to labelled sensitive molecules for its utilization in clinical health-care practice.

China has committed human resources, facilities (including two research reactors), and more than US $500,000 to the project. IAEA TC, with a budget of just over $300,000 over three years (1994-96), is helping with expert services and training. Chinese scientists have been able to visit foreign scientific centres, and two fellowships were completed late this year in India and Norway.

Why is all this important? The health and economic gains that could result are very significant. China now imports 1800 fission-produced generators a year. Demand is projected to rise to nearly 10,000 by the turn of the century.

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The atom and human health

The quality of health care available to our families and friends is a common concern for the global community.

The medical diagnostics and treatment available over the lifetime of the young "tiger" shown here will shape the quality of life he enjoys and may well influence his opportunities for success in the future. Communities and governments around the world strive to improve standards of health care in order to provide a better future for their citizens.

The IAEA's mandate is to support its Member States in finding solutions that help address national needs and priorities using nuclear applications. The Agency's human health programme gives top priority to the curative and palliative treatment of cancer, establishment of comprehensive quality assurance programmes for radiation dosimetry, the detection of diseases prevalent in children and the assessment of nutritional status and the planning and evaluation of applied nutrition programmes tailored to the needs of women and children.

Its activities span many disciplines — including radioimmunoassay, radiotherapy (especially teletherapy and brachytherapy), radiopharmaceutical production, human nutrition, sterilization techniques for organ and skin transplants as well as for medical instruments — and applications of nuclear medicine techniques and procedures.

One immediate objective of the project is to meet generator demand in southwestern China. So its immediate impact will be on the people of this region — 500,000 more could have bone scans, liver scans, and other diagnostic interventions a year — and on the productivity and cost effectiveness of health services. Equally important, this breakthrough could have similar impact on many other developing countries by providing a low-cost simpler source for technetium.

When the gel route in China to technetium production is perfected, it will progressively reduce China's imports of fission-produced generators. It will also provide a technology transferable to other developing countries where patients are now deprived of this ideal diagnostic aid. One avenue of transfer might be through TCDC (Technical Co-operation among Developing Countries) — an activity within the Agency sponsored Regional Co-operative Agreement (RCA). (See related story on last page).

Two young ladies from Lebanon are obviously happy about their restored vision, thanks to the Sri Lanka Eye Bank.

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eye surgeons in 60 countries around the world. These are without charge, but recipient institutions have made cash donations which have enabled the bank to thrive. The Sri Lanka Eye Donation Society has 325 branches all over the country with the active involvement of 15,000 volunteers.

Given such a track record, and the fact that tissue banking is now a proven and demonstrably viable technology, TC had no hesitation about helping Sri Lanka set up the new facility, which is sited on land in a prime residential area of Colombo provided by the Health Ministry. The Agency will contribute some US $375,000 over four years (1995-98). Apart from the governmental inputs, the Eye Bank and local charities will donate nearly $150,000.

Oblation of one's body is inherent in Sri Lanka's religious-cultural traditions. The Eye Bank has never been short of cornea donations. Since the processing of **amnion** began this summer, at least a dozen cadavers have been offered for the extraction of tissue and long bones.

Amnion is the inner membrane of the placenta that cocoons the fetus. This opaque material, as thin as "clearwrap" is immensely rich in hormones but is usually thrown away after the baby is delivered. Pharmaceutical companies procure it from maternity hospitals to extract hormones. It is also widely used to treat wounds and secondary burns, but its full range of medical applications is still being explored (see related report on back page).

The Colombo tissue bank has begun providing amnion to public and private hospitals. Its capacity to prepare, double package and irradiate amnion is about 350 pieces a month, while current local needs are estimated at 200 pieces. The rest can be sent abroad to meet urgent needs elsewhere. In time the Bank will similarly process and store skin and bone tissues as well as brain and spinal cord membranes, intramuscular tissue, heart valves, arterial and cardiovascular graft material.

Apart from equipment, IAEA technical co-operation will provide the expertise to establish a total quality assurance system for maintaining manufacturing practices at the highest international standards, as well as training of top staff to ensure that the activity is sustainable after the project ends. So far TC has provided five training fellowships in Germany, India, Japan and the United Kingdom, as well as scientific visits abroad.

The bank will undoubtedly have tissue stocks in excess of the country's needs. Like the Eye Bank, it will respond to foreign requests, free of charge. While some religious and cultural mores inhibit donation of body parts in many countries, a continuous demand for human tissues is projected within the Asia and Pacific Region and beyond.

The Sri Lanka Tissue Bank is a model project. As such it satisfies stringent criteria such as environmental and economic sustainability and cost benefit or effectiveness advantages over conventional approaches. It must also address priority needs of the country. Perhaps most importantly, it must receive solid support from national or local governments or communities. Over the years the Agency has supported several modest-scale tissue banking facilities, but the Sri Lanka Eye Donation Society has the proven experience and international network to assure that the new facility for sterilizing tissue for human transplantation will have significant impact both nationally and internationally.

The primary social and economic benefits of the project will be increased availability of tissue grafts to victims of traumatic accidents, disease and congenital defects. The very low income portion of the population, which currently has almost no access to such treatment, will benefit most. Sri Lanka currently spends an average of US $200,000 per year on imported tissue grafts. Savings of an equivalent amount can be expected as a direct economic benefit to the country, plus the invaluable benefits to international recipients of donated tissue for transplantation.

Combatting cancer in the developing world

The IAEA is directly involved in the campaign against cancer because treatment of tumours with radiation — often the most effective therapy — requires radioactive materials and training. The Agency is the only UN body that has the expertise to transfer this technology and ensure that it is applied safely and efficaciously. TC activities in radiotherapy -- slow at first while the focus was on building national infrastructures -- have increased rapidly in the past decade from fewer than 10 projects to nearly 50 today.

A number of developing countries, especially in Africa, still have no radiotherapy facilities. This is primarily because the costs of equipment, training and infrastructure are high. In other countries, facilities have become obsolete and skills have been lost.

A national committee headed by the First Lady of Ghana, Her Excellency Mrs. Nana Konadu Agyeman-Rawlings, will monitor the progress of the radiotherapy center. (Credit: P. Pavlicek/IAEA)

Ghana and Mongolia are typical of the two situations, and the TC Department has developed Model Projects to help resolve some major problems being faced.

TC assistance is delivered through technology transfer by experts, the provision of equipment and materials, and through training via scientific visits and fellowships abroad as well as workshops and hands-on experience at home. Special attention is invariably given to developing indigenous skills, so that the activity is sustained after the project's conclusion. This is why all Model Projects demand a strong governmental commitment to the achievement of objectives.

Mongolia has had cancer radiotherapy capability for many years but facilities have been neglected in the past few years. The overall need is for both the facilities and skills to be upgraded.

In August 1995, a modern Chinese-built teletherapy unit (with a new Cobalt-60 source) began treating patients in Ulan Bator. It was provided by TC to replace a machine which was beyond repair. Some staff are being retrained at home with the help of experts from more advanced neighboring countries; and radiotherapists, medical physicists and other key practitioners are being sent abroad on TC fellowships — mostly in China, India and Thailand — to catch up on recent advances in cancer treatment.

The regional emphasis in training is a deliberate part of TC policy. It is clearly more economical, and the experience gained from neighbours is often more valuable. Most importantly, regional ties tend to be more personal and longer lasting, and direct links with nearby centres make it much easier for the recipient country to sustain projects after the IAEA links end.

By 1998, when the TC project is due to be completed, 10-12 fellowships will have been completed, staff capability will be upgraded, and essential equipment will be repaired or replaced. Based on this programme, the government is already planning to set up a second radiotherapy facility, without any support from the Agency.

In Ghana, the radiotherapy Model Project reflects the objectives of TC policy to extend project benefits to neighboring countries. But the situation is very different from the one in Mongolia. Ghana and most of its neighbours have no radiotherapy facilities whatever, and the possibility for surgery and chemical treatment of cancers is further curtailed by the absence of oncology (study of tumours) sources.

But Ghana is committed to improving its human health by building on its capability to manage nuclear applications, methodically advanced with the IAEA's help over many years. It also has a good medical infrastructure and two medical schools and teaching hospitals in Accra and Kumasi. Centered in these two cities, the project is designed to provide bracytherapy and teletherapy for the needs of Ghana's patients, as well as those in its neighboring countries.

One important project component is training for personnel from Ghana and the region. Until now, there has been no training centre in the region for medical personnel in the fields of radiotherapy or medical oncology, not even in Nigeria. Training of Ghanaians to manage the centres has already begun. Radiotherapists, radiographers, medical physicists, and other nuclear medicine and nursing staff will receive training in China, South Africa, India and the United Kingdom.

Caspian cruise

The TC-chartered Azerbaijan hydro-meteorological research ship *Alif gadgiev* took to the Caspian Sea for the first time in September 1994. The scientific cruise 12-27 September for training and investigation returned with samples that, on analysis, are expected to shed light on why the level of the enclosed sea has been dramatically rising over the past 15 years.

The expedition's three principal objectives were: to provide basic training in use of environmental isotope methodologies to study the water cycle; to gather data on current levels of natural and human-induced isotopes and physical and chemical parameters of the Caspian; and to provide a new platform for the riparian countries to cooperate in solving the environmental crisis in the region.

Water samples were gathered from various depths at 13 locations covering the entire sea area. Results of sample analysis are expected to make a significant contribution to the comprehensive international project being coordinated by the UN Environment Programme to investigate and to help mitigate the consequences of the Caspian's rising waters.

Operation tsetse

The battle is some way from being won, but the TC Model Project to rid the island of Zanzibar of the tsetse fly — a threat to both human and animal health — has made major advances recently. The breeding colony of females at the Tsetse and Trypanosomiasis Research Institute in Tanga, Tanzania is now around 340,000 — up from fewer than 23,000 this time last year — and is now the world's largest production system.

Average weekly releases of the mass-reared and radiation-sterilized flies have now climbed to about 40,000. Soon they will total 50,000. Even at current release rates, a significant decline in the wild population is being registered.

Seawater samples hold answers to some key questions.
(Credit: IAEA-MEL)

As a result, the ratio of sterile to wild males is increasing exponentially and reached 200:1 in November. The induced sterility rate of 60% in the wild female population confirms the competitiveness of the sterile males and forecasts good prospects for success by 1997, when the project's completion is expected.

Safety upgrade

TC has reformulated its twin Model Projects to ensure high radiation safety levels and proper management of radioactive wastes in all IAEA Member States. This step will strengthen the Agency's co-ordination and support in both areas.

Analyses during the past 12 months has shown that the previous strategy of phased implementation of the two projects in five-to-six countries each year will not achieve the required objectives soon enough. The new strategy aims to have adequate radiation protection and safe radwaste management infrastructures in place in all countries receiving TC assistance, preferably by the year 2000.

The reformulation of the two Model Projects aims to rationalize all the distinct and disparate activities in both fields into one consolidated approach. Among other benefits, this would obtain a single set of common data, to be managed by one group of managers covering all infrastructure requirements and developments. This will streamline TC efforts to achieve greater management efficiency and enhance impact, and make it more cost-effective as well. A key feature of this new managerial approach is the co-operation and assistance among developing countries themselves, notably involving IAEA Member States in the African, European, East Asian & Pacific, Latin American and West Asian regions.

TC in Cyberspace

In September 1995, the IAEA's Technical Co-operation Department established its home page on the INTERNET. Placed on the global computer network were full project write-ups for the 1995/1996 TC programme as well as the first issue of **INSIDE Technical Co-operation.** In addition, the pages provide direct links to TC-related *IAEA Bulletin* articles. This medium provides a much wider access than printed media and eventually will significantly reduce mailing costs. During 1996, TC plans to greatly expand its on-line information services, allowing limited access to the TC databases.

Please visit the TC home page at the following address on the Internet's World Wide Web network services: **http://www.iaea.or.at:80/programs/tc/index.htm.**

Pioneers of regional cooperation

More than 30 years ago, the IAEA, India and the Philippines came together under a three-way agreement to jointly operate an Indian neutron diffraction machine in the Philippines. Other inter-country activities on nuclear technology applications followed. Their success begged the question: why not develop a *structure* for promoting inter-country collaboration?

So the first **Regional Co-operative Agreement** (RCA) was formalized in 1972, involving the Agency and eight countries of the Asia and Pacific region. Now there are 17 countries in the RCA, and this model of collaboration — a pioneering approach in the United Nations — has been replicated in two other regions: first in Latin American (ARCAL), then in Africa (AFRA) in 1990. Now, the region of West Asia is preparing to set up a similar alliance.

The IAEA has an unusual role in these compacts. It is typically a **partner** in projects, which run the gamut of nuclear applications in agriculture to industry to energy, hydrology and health. But the Agency is usually not a **party** of such agreements. Though TC funds help initiate and support projects and the Agency is a conduit for additional resources, all projects are owned and run by regional partner countries.

A key indicator of regional **ownership** of projects is that country partners pay for them not just by "in kind" contributions of personnel, materials, services and the like, but in hard cash. More than a third of the cash funding for RCA activities now comes from members, the rest from donors elsewhere and TC in roughly equal shares. The concept of Technical Co-operation among Developing Countries (TCDC) is an ever prominent feature of the regional co-operative agreements, by which many advanced countries in the region assist the less-developed in the region in specific activities.

Thus Thailand is making available its Gammatron irradiator for region-wide demonstration and training. China and Pakistan supply reagents for radioimmunoassay of thyroid hormones, free or at low cost. In Latin America, there is a trend to develop bilateral relationships to the same end. Links in radiation protection activities have been set up between Mexico and Guatemala, Argentina and Costa Rica, Chile and Bolivia, Brazil and Ecuador; and in the use of radioimmunoassay between Argentina and Guatemala.

Synergy characterizes the regional co-operative agreements: national activities are fostered and the regional whole becomes greater than the sum of the national parts. The experience and success of modest-scale tissue banks set up within the RCA Member States has spurred tissue banking in the Asia/Pacific region and, in turn, led to the TC-assisted Model Project (outside the RCA) to set up the Sri Lanka tissue bank in Colombo (see related story on page 1). In this instance, the RCA has successfully pooled national experiences. Now being finalized is the manual, **Tissue Banking: A Distance Learning Package**, which could be used in other regions to develop this increasingly important aid to surgical intervention.

The logical next stage is interregional co-operation, and steps towards it have already been taken. Representatives of the regional agreements met at IAEA headquarters in Vienna in 1994 to exchange experiences in reaching and involving end-users of their projects — medical personnel and private and public health services — and to consider how know-how may be exchanged among regions. As a result, an interregional TC project was started this year, to facilitate regular exchanges among the regions.

Camera upgrade

IAEA regional projects can sometimes be extended as part of a regional co-operative agreement.

A current example is ARCAL assuming control for Agency activities to upgrade aging medical instruments in the region. A large number of the Gamma cameras used in medical centres in Latin America need to be upgraded. A survey completed in late 1994 found that 261 of 723 cameras used in diagnostics were not up to present standards.

A TC Model Project launched this year will upgrade 91 of the problem cameras in public hospitals. The project will demonstrate and transfer Agency technology, which is based on the personal computer, interface cards and portable image processing software, to counterpart institutes who will do the upgrading. That leaves two-thirds of the poor performing instruments in need of attention. The new technology can be used by ARCAL members — sixteen of them now are participating in the IAEA Model Project — to upgrade the other 170 cameras.

The costs are modest. A 20-year-old unit, mothballed for eight years, was returned to clinical service in Argentina at a cost of only US $3000.

But project funds are short and new support must be found from governments and private clinics, within and beyond the region. This is now the objective of the ARCAL project, to find the funds and deploy the needed regional expertise and complete the job.

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