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THE TECHNICAL CO-OPERATION STRATEGY: THE 2002 REVIEW

I. INTRODUCTION

1. The technical co-operation (TC) programme is part of the Agency's mandate "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world." The IAEA's role under this programme is that of a scientific and technical agency making a discrete but significant contribution to sustainable development goals through the development and transfer of nuclear science and technology. This transfer takes place primarily through the provision of training, expert advice and equipment — designed to build, strengthen and maintain Member State capacity for using nuclear technology in a safe, secure and sustainable manner. Technology transfer is underpinned by the Agency's technical expertise, quality control capabilities and information networks.

2. The main aims of the 1997 Technical Co-operation Strategy¹ are to ensure a demand driven approach to technical co-operation, the relevance of TC projects to development priorities and improved project quality. At the heart of the Strategy is its Strategic Goal:

to increasingly promote tangible socio-economic impact by contributing directly in a cost-effective manner to the achievement of the major sustainable development priorities of each country.

3. Both the strategic goal and the concepts presented in the 1997 TC Strategy remain valid and have proven to be an effective framework for progress. The status of the expected results to be achieved by 2000, including the lessons learned during implementation, were the subject of a progress report to the Board (GOV/INF/2000/24). This experience served to sharpen the Agency's understanding of the challenges involved and the tools required for meeting those challenges. The purpose of this review is to refine the 1997 Strategy: to update concepts where appropriate, and — in keeping with the Agency's new results based programming and the one-house approach — to define a number of new objectives, outcomes and performance indicators.

¹ GOV/INF/824, 24 October 1997.

II. CURRENT AND FUTURE AREAS OF TC PROGRAMME SUPPORT

4. In keeping with its mandate and the guiding principles laid out in INFCIRC/267 (March 1979), the Agency supports the application of a broad array of nuclear and related technologies that can assist Member States in meeting development needs:

- In the field of **human health**, nuclear medicine and radiation therapy are used to diagnose and treat cancer; radiology and nuclear medicine are used to diagnose a variety of diseases; radioisotopes are used to identify drug-resistant strains of malaria, tuberculosis and other diseases; radiation is used in sterilizing bone, skin and other tissues required for tissue grafts to heal serious injuries; and nuclear techniques are used to optimize malnutrition studies.
- **Agricultural productivity and food security** are enhanced by: the development of new plant varieties through radiation induced mutation; using irradiation to increase food safety; and applying the sterile insect technique (SIT) to control and/or eradicate pests such as the New and Old World screwworms, the fruit fly and the tsetse fly.
- **In water resources management**, isotope hydrology is used in mapping underground aquifers to improve groundwater management, as well as to investigate contamination events and support recovery efforts; it is also being used increasingly as a means of improving dam safety and sustainability.
- **Environmental protection** efforts benefit from the use of nuclear techniques to conduct surveys of pollutants in marine, atmospheric, and terrestrial environments, thereby assisting in the management and remediation of contaminated zones.
- Radiadiation and radioisotopes are used in **physical and chemical applications** to: process medical and industrial products; conduct non-destructive industrial testing; develop radiopharmaceuticals; enhance analytical quality control measures; and process industrial waste water.
- For **sustainable energy development**, comparative assessments of different sources of electricity generation are used to attain the optimal energy mix; and capacity building enables improved performance and quality assurance for Member States that use or intend to use nuclear energy for electricity generation, desalination or research.

The important role of the TC programme is to ensure that these and other technologies are transferred to Member States sustainably, with tangible results to support the recipient States' efforts for economic and social development.

5. Pursuant to the Statute, all Agency TC activities are subject to the application of the Agency's relevant safety standards² and, where applicable, to IAEA safeguards. The Agency helps Member States to establish the legal and technical infrastructure needed to ensure appropriate national regulatory oversight of the safety and security of the technologies transferred. These efforts should result in appropriate regulatory infrastructures, strong safety performance, high reliability of nuclear installations, proper security of radiation sources, sound waste management, and safe transport of nuclear and other radioactive material.

6. A number of trends in the world at large will be likely to influence the Agency's TC programme in the next several years:

- The use of nuclear technologies in developing countries is growing as local infrastructures improve and technology transfer increases.
- Interest is increasing among both donors and recipients in technologies that help respond to and accelerate the achievement of development goals (e.g. relieving hunger, improving health care, providing access to safe drinking water).
- Some countries and institutions are becoming more self-reliant as viable markets develop for nuclear technologies, based on an increased awareness of their benefits.
- As facilities age, safe strategies for life extension and for decommissioning are assuming increasing importance.
- As the nuclear workforce ages, the management of nuclear knowledge is also gaining increasing importance, including the need to maintain the safety case.
- Concern is increasing related to the potential for malicious acts involving nuclear facilities or unsecured nuclear and other radioactive material.

7. It is difficult to forecast precisely how these trends will influence the assistance requested by Member States, but the Secretariat foresees increased emphasis on the following new and expanded *nuclear technologies for sustainable development*: the feasibility of using isotope hydrology to enhance river basin management and to assist in understanding sedimentation build-up in dams; the possible application of molecular based isotope techniques for monitoring the emergence of HIV-1 strains resistant to therapy; the feasibility of using SIT to combat the malaria bearing mosquito; expanded use of SIT to support eradication of the tsetse fly across larger areas of the African continent; development of isotope techniques for improvement of animal production; continued development of new plant strains adaptable to cultivation in saline lands; radioisotopes and radiopharmaceuticals for targeted therapy; use of new techniques in nuclear medicine and radiotherapy; radiation processing technology for industrial products and the feasibility of using electron beam technology for improving water quality; the feasibility of using nuclear instruments to detect and support the removal of landmines; energy planning assessments; use of nuclear energy for

² These include, inter alia, the International Basic Safety Standards (BSS) for Protection against Ionizing Radiation and for the Safety of Radioactive Sources. In addition, the completion of Milestones 1 and 2 of the project on Upgrading Radiation Protection Infrastructure is a prerequisite for the Agency to assist Member States in TC projects involving use of radiation sources.

desalination; life extension and decommissioning of nuclear power plants; and waste management and transport of radioactive material.

8. In addition, the Secretariat foresees increased requests for assistance in the following areas of *radiological protection and nuclear safety*: establishment of an “integrated safety service” to provide more effective support to safety priorities in a given country; improved safety of research reactors; reduction of doses in medical diagnostic uses of radiation; prevention of accidental exposures in therapeutic uses of radiation; recovery and control of orphaned radioactive sources; radio-ecological assessments and remediation strategies for radiologically contaminated areas; and strengthened emergency preparedness in Member States for responding to nuclear and radiological emergencies.

9. A range of additional measures were recently developed by the Agency to assist Member States in strengthening the *security* of their nuclear facilities, nuclear material and other radioactive sources. The value of using TC as one of the possible vehicles for carrying out some of these new activities was recognized by the Board of Governors, on the understanding that this should not interfere with priorities identified by Member States under the TC programme, and that additional funds would have to be provided to the TC programme if it were to participate in the implementation of some of these activities additional to the approved TC programme.

10. It is important to emphasize that the capabilities, needs and priorities of Member States vary, and that it will remain the prerogative of Member States to identify their priorities and the types of assistance they wish the Agency to provide in their efforts to build up their capacities and infrastructures in the above and other areas.

III. EVOLUTION OF CHALLENGES AND TOOLS FOR IMPLEMENTATION

11. The Secretariat has reviewed the challenges to reaching the Strategic Goal and the tools designed to meet them. In the 1990s, the challenges were to improve the quality of projects and to increase their relevance to national authorities by working with those authorities to select projects that could be used to help resolve priority development problems. To accomplish these tasks, the Agency successfully applied three tools: Model Projects, Country Programme Frameworks and Thematic Planning.

12. The Model Project concept introduced in the 1997 Strategy reflected an awareness that demand driven, needs based projects were more likely to produce results. That is, by linking a project to a Member State’s development priorities and securing the government’s commitment, the probability increased that sustained benefits would be delivered to the intended beneficiaries. Experience has shown that the most important factor is strong government commitment and support to the project. The Model Project concept has therefore evolved into a *central criterion* that is widely used in the prioritization and selection of projects. A project meets the central criterion if it addresses an area of real need in which there is a national programme enjoying strong government commitment and support. Such projects take two forms: (a) those that produce a tangible socio-economic benefit in an area in which nuclear technology holds a comparative advantage; and (b) those that clearly support an enabling environment for the use of nuclear technologies (such as safety infrastructures or energy planning). The central criterion thus embraces the government’s commitment to sustaining the benefits of technical co-operation activities.

13. The use of *Country Programme Frameworks* (CPFs) as a planning tool improves the project selection process by placing it in the context of national priorities. CPFs help national authorities to identify the problems to be addressed with nuclear technologies, to outline the results expected in a given time frame and to take ownership of the programme. CPFs can also be used to identify possible areas of contribution to the TC programme. Periodic reviewing of the CPFs in consultation with Member States is essential. Experience has shown that, while the process used to complete CPFs has proven useful to focus TC programming on a few key areas where this is likely to have an impact, the signing of a CPF document, by itself, is no guarantee of success. The key has been to engage central authorities and end users in discussions of actual problems they are intent on resolving and for which there are nuclear-based solutions. Only then has there been a shift in thinking from an individual project context to a national and regional programme context that is central to achieving the maximum impact of technical co-operation. This shift in management thinking has not yet taken place in every recipient Member State; there are still some country programmes made up of a collection of small, unconnected projects which consume excessive effort to implement. This is not to say that countries must concentrate TC activities in only one thematic area. What it does suggest is that national authorities need to have a clear idea about those few specific problems they wish to solve with nuclear techniques, and the results they expect to achieve in a given time frame. For this they will need to assume increased ownership of the CPF process, as emphasized by the Standing Advisory Group on Technical Assistance and Co-operation (SAGTAC). Working with Member States to design and implement projects in fields where significant impact is likely will assist in raising awareness of the value of the nuclear technologies involved, fostering new partnerships and identifying additional funding sources for these projects.

14. *Thematic Planning* is a process by which specific problems are identified for which the transfer of nuclear technology through technical co-operation can be expected to result in significant and sustainable impact, because of the distinct advantages of the nuclear technology involved. Field experience and feedback from projects creates an awareness of national, regional and global problems that can be matched with existing nuclear technologies, as well as problems that can be addressed through Agency safety or security services. The focus on development problems also contributes to building partnerships and identifying new and non-traditional sources of project funding. As a prescriptive management tool thematic planning helps to define priorities and identify opportunities for new applications or research, as well as to identify constraints (such as legal barriers or prohibitive costs) that would discourage emphasis in a particular area. Thematic planning should build on (and feed into) the Agency's Medium Term Strategy.³ Selected technical themes should be given greater emphasis, as appropriate, through outreach to potential partners, knowledge sharing with Member State governments, conducting feasibility studies, and increased collaboration among Member States on operational activities within the theme. Experience has shown that for the TC Programme to achieve optimal impact, the lessons from thematic planning exercises must be incorporated into the process of formulating country and regional programmes. The choice of projects by Member States and decisions on where to expend funds and effort need to be guided by full awareness of those thematic areas in which projects are likely to achieve high impact, and should lead to deliberate concentration of activities in those priority areas.

³ GOV/1999/69.

15. **Partnerships** will continue to be pursued both through co-operation between developed and developing countries and through technical co-operation among developing countries (TCDC). The Agency has begun to be recognized in Member States as a partner in development. National institutes have played an important role in facilitating these partnerships. However, other partnerships need to be encouraged: between nuclear authorities or institutes and the end users; between institutes in different countries; and between the Agency and other organizations contributing to sustainable development. Financial, strategic and technical advantages can result from these partnerships:

- **Financial:** partnerships between the Agency and large donor organizations (including regional development banks and aid agencies) provide a cost-effective means of achieving greater impact. Attracting such partnerships requires maintaining awareness of fields in which development organizations are planning major activities, in order to identify opportunities for collaboration, and highlighting specific nuclear technologies and their advantages. These donors sometimes contribute through the TC programme, but can also provide great benefit by contributing “parallel funding” directly to the Member State project.
- **Strategic:** working with well established organizations in relevant fields (e.g. with the World Health Organization on fighting communicable diseases), in an area where nuclear techniques have an advantage, can add credibility with governments and end users, and can raise the profile of the project. Raising the profile of the Agency’s TC programme — with other United Nations agencies, non-governmental organizations, private sector entities, governments and the public at large — is not an end in itself; rather, in the effort to attract partners, it promotes awareness of the nuclear technologies available and, significantly, of success stories from their application. A heightened profile will also help make decision makers aware of the contributions that nuclear technologies can make to development plans.
- **Technical:** technical partnerships often achieve synergy by combining complementary nuclear and non-nuclear technologies. For example, transferring irradiation technology to create tissue banks requires working with an organization that will help Member States by training doctors and setting up tissue donor programmes.

16. With regard to **funding** technical co-operation, it should be noted that the Agency is able to implement only part of the technically sound project proposals from Member States, primarily as a result of financial limitations. Therefore, all Member States should pay in full and on time their assessed financial dues to the TC Fund, in order to render its resources sufficient, predictable and assured. In addition, the Agency will need to leverage its limited resources and pursue supplementary sources of financing to meet the expanding needs of its Member States. In part, new funding for technical co-operation should come through partnerships with non-traditional donors as discussed above; it could also come from those Member States that are prepared to share project costs, because of the tangible benefits that accrue to them through Agency assistance.

17. A key challenge is to ensure the **sustainability of benefits**. National ownership of TC programmes, careful project selection, and leveraging of Agency resources will help to ensure the long-term viability of country programmes. Careful planning from the outset is vital to

avoid nuclear technology being transferred in a way that would inadvertently create a burden (i.e. an economic or safety liability). However, the ultimate factor in sustainability is the degree to which countries and individual institutions can achieve technical and financial self-reliance.

18. Assisting countries and institutions that are ready to move towards self-reliance will be a key element in the future.⁴ The Agency has a role to play at three different levels to help its counterparts become self-reliant. At the *institutional* level, this role includes encouraging management to develop “markets” or “customers” for their products and services. At the *national* level, it means encouraging Member States to enhance strategic planning for the nuclear sector, to solidify their support for areas in which nuclear technologies can best serve national priorities. At the *regional* level, it involves encouraging Member States to work collectively towards rationalizing services and products so that individual institutions can remain viable. After self-reliance is achieved in a given country or institution, the Agency will continue to be active as a source of quality assurance (e.g. for certification of laboratories or dosimetry calibration), a focal point for information exchange and a catalyst for regional and international co-operation.

19. One method of encouraging self-reliance — as well as extending limited Agency resources — is to “outsource”, with the necessary quality control, some TC programme implementation to Regional Resource Centres⁵ and other “accredited national institutes”. The Agency encourages the more advanced national institutes to focus on regional problems, and fosters partnerships with other institutions in the region. As a result, more experts and training are being derived from or conducted in countries within the same region. Management of selected projects by these institutions can be more cost-effective, because of their proximity, shared language, lower costs, better access to participants and familiarity with regional conditions. This practice encourages TCDC and builds competency and ownership.

20. Capacity building is intended to achieve self-reliance. As such, it is a *long-term* challenge; although some Member States and their institutions are well on their way to achieving self-reliance, many countries will continue to rely on technical and financial support from the Agency to help build or improve basic nuclear infrastructure. The Agency will naturally continue to work with all countries across the full spectrum of development — with the ultimate aim of helping them all to move towards self-reliance in the future.

⁴ In resolution GC(45)/RES/11, the General Conference requested the Director General to promote, within the framework of the TC programme, activities supporting self-reliance, sustainability, and further relevance of national nuclear entities in Member States, particularly in developing countries, including encouraging regional and inter-regional co-operation.

⁵ Member State designation of particular national institutes as Regional Resource Centres has helped in recent years to strengthen technical co-operation among developing countries, particularly when these Centres have become widely accepted and used by other Member States in the region.

IV. OBJECTIVES, OUTCOMES AND PERFORMANCE INDICATORS

21. Central criterion

Objective 1:

- *To produce sustainable benefits within the framework of national development plans.*

Outcomes:

- A TC programme that is linked to national development plans and, where relevant, to the efforts of other donors working in the same area.
- Strong government commitment for the TC programme in Member States, and for the institutions managing it.
- Increased capacity in Member States through continued provision of the support needed to ensure the transfer of safe and secure applications of nuclear technologies, in keeping with priorities set by Member States.

Performance Indicators:

- At least 70% of TC projects meet the “central criterion” by 2007.
- At least 80% of recipient States have Country Programme Frameworks by 2007.

22. Strategic Partnerships

Objective 2:

- *To gain recognition as a partner in resolving development problems through the cost-effective transfer of nuclear technologies.*

Outcomes:

- Partnerships with development organizations in joint planning and priority setting in areas of common interest.
- Broadened awareness in the media and among international organizations, decision makers and the public at large of the Agency’s role as a partner in the cost-effective transfer of nuclear technologies that serve development needs.

Performance Indicators:

- New partnerships with development organizations by 2007.

- At least one new joint activity per year undertaken with a partner organization.
- Increased requests from other organizations to either co-ordinate or facilitate technology transfer and/or provision of expertise as an executing agency.

23. Funding Technical Co-operation

Objective 3:

- *To increase the level of funding for technical co-operation activities, particularly from non-traditional sources, and to increase the number of opportunities for direct and “parallel funding” to help resolve development problems.*

Outcomes:

- TC projects addressing development problems that meet the interests of and the criteria for support by funding institutions.
- TC projects attracting “parallel funding” by development organizations.

Performance Indicators:

- An increasing number of countries meeting fully their target share of the TC Fund.
- An increase of 25% in extrabudgetary funding for the TC programme by 2007.
- Leveraged “parallel funding” for an increased number of projects.
- Agreements with at least three non-traditional partners by 2007.

24. Sustainability

Objective 4:

- *To strengthen the capacity of institutions in Member States using nuclear technologies to become more technically and financially self-reliant.*

Outcomes:

- Member State institutions providing services nationally and regionally after having benefited from the Agency’s technical co-operation programme.
- Member State institutions having strategies and action plans for revenue generation.

Performance Indicators:

- Institutions achieving significant revenue generation from providing goods and services to both the public and private sectors in at least 10% of recipient Member States by 2007.
- Regional Resource Centres designated in multiple thematic areas and used by other Member States in each geographic region.
- At least 10% of the TC programme handled through “outsourcing” arrangements with Regional Resource Centres and other “accredited national institutions”.