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International Atomic Energy Agency

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**STRENGTHENING OF THE AGENCY'S TECHNICAL
CO-OPERATION ACTIVITIES****Report by the Director General to the Board of Governors
and to the General Conference*****Background***

1. In resolution GC(40)/RES/13, the General Conference last year, requested the Director General "to pursue efforts to strengthen the technical co-operation activities of the Agency through the development of effective programmes aimed at improving the scientific and technological capabilities of developing countries, in consultation with Member States, and taking into consideration the infrastructure and the level of technology of the countries concerned, in the fields of peaceful applications of nuclear energy, including both the applications of nuclear methods and techniques and the production of electricity". The resolution also emphasized "that these programmes should contribute to achieving sustainable development in developing countries". It requested the Director General "to follow up actions on initiatives with regard to TCDC activities to encourage developing countries to provide more experts, training and equipment". It further requested the Director General "to continue to take account of the view of the General Conference on this question when requesting Member States to pledge their respective shares of the Technical Co-operation Fund target and to make timely payments to the Fund".

2. In addition, the General Conference requested the Director General to report to the Board of Governors periodically and to the General Conference at its forty-first regular session on the implementation of this resolution under an agenda item entitled "Strengthening of the Agency's technical co-operation activities".

I. Follow-up actions on initiatives presented to the General Conference's 1996 session

3. The most significant developments since the 1996 General Conference continue to relate to:

- Model Projects;
- Country Programme Frameworks (CPF).
- Integrated Evaluation Methodology and project performance;

Model Projects

4. The proposed TC programme for 1997-98 includes thirty-six new Model Projects, including six that are regional in nature, and two that are interregional. Model Projects represent 18% (\$22,210,615) of the total core activities and nearly 21% (\$9,350,133) of the footnote-a/ financed activities. Nearly 60% of Model Project budgets reflect the priorities of Food and Agriculture (27%), and Radiation Safety (32%). The final suite of model projects resulted from a rigorous review and selection process, one that considered more than double that number of candidates. In some cases, the TC Department organized missions to gather additional information and refine project design. The proposed new Model Projects are financed predominantly from the TCF.

5. The Model Project concept has taken a firm hold in the TC Programme. Each region now contains at least one regional Model Project, and almost half of the recipient Member States will have a Model Project operational during 1997-98. Several of the original group of projects approved by the Board in December 1994 are nearing completion, with many producing significant results. Examples of successful Model Projects are contained in the Regional Highlights section of the Technical Cooperation Report for 1996.

6. Model Project standards will be extended to the entire TC programme. This is the central objective of the new Strategy for Technical Cooperation announced by the Director General to the TACC meeting in November 1996. The details of the TC Strategy will be subject to further internal review, and a final review will be conducted by SAGTAC prior to submission to the TACC meeting in November 1997. An internal management plan will be developed in 1997 to achieve the objectives set out in the Strategy. The plan will be revised annually along with individual work plans. Progress toward the objectives outlined in the Strategy will be contained in the annual Technical Co-operation Report.

Country Programme Frameworks

7. As presented last year in the report on Strengthening of the Agency Technical Co-operation activities the CPF is compiled in co-operation with and with the agreement of a Member State. The CPF in fact focuses the medium-term technical co-operation programme in a few priority areas where Agency assistance can make a key contribution.

8. An evaluation during 1996 was undertaken by the TC Department to assess the adequacy of the CPF approach and the progress achieved thus far. The findings and conclusions of the evaluation panel, which included both in-house and external experts, have been formulated after extensive review.

9. The evaluation panel recognized that a good start towards more interactive planning has been made, but there was a mix of experience and results. The major shortcomings demonstrated the need for success criteria and the development of a standard method for project formulation. This would fill the existing gap between CPF and the approved country programme with a systematic project preparation scheme.

10. As a result of the evaluation, the CPF guidelines were revised, feeding back the experience to date and providing measurable success criteria to demonstrate the benefits of the CPF process. One success criterion is that the definition and agreement on the project opportunities resulting from the CPF process must be sufficient to establish a specific and detailed plan of actions leading to further project formulations.

11. The increased focus on pre-project planning has produced valuable results in connection with the 1997-1998 TC Programme. 17 of the new Model Projects approved for the new programming cycle resulted from the CPF process. The Regional Highlights section of the Technical Co-operation Report for 1996 provides details on the progress in introducing the CPF process in each region.

Integrated Evaluation Framework and project performance

12. As recommended by the 1995 TACC, efforts were made to introduce the "Integrated Evaluation Framework" based on a logical approach for project cycle management commonly used by most development organizations.

13. This approach for project evaluation provides a tool to analyze the cause-effect relationships that should exist between the main elements of project design: overall goal, project objectives, outputs, inputs and activities. The results obtained concerning efficiency, effectiveness, impact, relevance and sustainability are qualitatively rated in this framework using four categories: High Satisfaction; Acceptable Satisfaction; Low Satisfaction; and Not Achieved.

14. The integrated evaluation framework was applied in 1996 to 74 ongoing projects including four Model Projects, the programme of TC with the Islamic Republic of Iran, projects in the agriculture sector in Africa and training courses. For 1997, the integrated evaluation framework will be applied to other projects as proposed in the 1996 evaluation report. Guidelines on the use of the logical framework in screening relevant projects and improving design quality will be prepared in 1997 by the TC Department and widely distributed to improve management of the TC project cycle by Member States and the Agency. Training on the utilization of this logical framework will be carried out during the year. Further information on the Integrated Evaluation Framework and additional details on 1996 project evaluations were reported in the 1996 Report to TACC (GOV/INF/800) and are also found in section D of the 1996 TC Report. SAGTAC will examine at its fourth meeting the integrated evaluation framework and will provide further advice and recommendations.

II. Improving scientific and technological capabilities

15. The TC Programme for 1997-98 includes several new initiatives to build scientific and technological capabilities in Member States and consolidate the base for extending the Model Project approach. Beginning in 1996, lengthy consultations were initiated with Member States to identify capacity and infrastructure requirements for meeting their developmental objectives as part of the CPF process. A number of significant activities in the five regions focused on capacity building.

16. Strengthening and sustaining the **nuclear safety** regimes and regulatory bodies of Member states with operating nuclear power plants requires the availability of adequate numbers of staff capable of carrying out recognized regulatory and licensing functions and the ability of the nuclear establishments to carry out self-assessment and quality assurance of their own activities. In the field of nuclear safety regulatory and legislative infrastructure, the new 1997-98 TC Programme includes a new Model Project (RER/9/052) to introduce or upgrade capabilities in Member States with particular emphasis on strengthening the nuclear safety regimes and regulatory bodies of the Central and Eastern European Countries and the countries of the former Soviet Union. This project, along with several national projects, is expected to enhance national capacities to carry out assigned regulatory functions in accordance with internationally recognized good practice, thereby promoting safety culture and public confidence in the peaceful uses of nuclear energy.

17. Nuclear safety and **safety assessment** of NPPs are issues of special concern for responsible authorities in all countries, particularly where internationally recognized standards and practice were recently introduced. The Agency has assisted Member States in developing their local capabilities in all the aspects of safety assessment and has transferred knowledge on international standards, safety assessment methodology, and the use of analytical tools developed for pressurized water reactors (PWR) as well as their adaptation to local conditions. In Asia, operational and safety issues are being addressed through the second phase of RAS/4/015, which is developing collaborative efforts on management issues relating to the safe and reliable operation of NPPs. Nuclear safety and safety assessment are also being addressed through several national TC projects, including a new Model Project in Pakistan on Safe Operation of the Karachi NPP. In Europe, support for safety assessments and building capacity for self assessments are the objectives of RER/9/046, and RER/9/047 respectively.

18. The shortage of qualified personnel is one of the major impediments to the successful establishment of an appropriate **radiation protection** infrastructure in several Member States. In order to systematically address this issue new initiatives were undertaken. In this respect considerable resources within the Model Project, "Upgrading Radiation Protection Infrastructure", (INT/9/143) and regional projects in Africa, Asia and Latin America, were devoted to training through fellowships, scientific visits and the provision of national, regional and interregional courses and workshops in specific aspects of radiation protection. A national Model Project (SAF/9/002) will assist in establishing a university-based centre in South Africa for education and training in all aspects of radiation protection at the basic, professional and specialization levels. Such a centre will support future manpower development in the region.

19. A serious shortage exists in many countries for specialist personnel with training in areas such as radiotherapy, diagnostic radiology (imaging) and nuclear medicine. Hospital staff and patients undergoing treatment with ionizing radiation require the services of these specialists to ensure the correct application of therapeutic and diagnostic techniques under the strictest possible quality control. To improve the capability of Member States in these specialties, several new and ongoing projects seek to develop national training programmes in **medical physics** education and training (RER/6/008 and ARG/6/007, COL/6/008, MAL/6/016, MEX/6/005). These programmes have led in certain of these countries to the establishment of MSc degrees in medical radiation physics that will help meet current and future needs for national capacity in radiotherapy, radiodiagnostics and nuclear medicine.

20. Strengthening the capacity of Member States to **maintain and repair nuclear instrumentation** is a common objective in Africa, Asia and Latin America. A regional model project (ARCAL XXIII - RLA/6/027) to improve the utility of the existing nuclear equipment in Latin America started in 1995. The technology and the know-how for upgrading old or obsolete gamma-cameras have been established at three regional centres through this project. A similar effort in Africa (AFRA IV-20, RAF/4/014) seeks to consolidate the regional capability for maintenance and repair of nuclear electronic instruments and medical equipment in AFRA Member States. The main beneficiaries within the region will be hospitals with medical equipment used in nuclear medicine and radiotherapy.

21. Improving national capabilities to assess **marine environmental pollution** using nuclear techniques is a growing area of importance for Member States. Several conventions on the protection of marine environment have now been signed in various regions of the globe. However, without the availability of regional and national capabilities to analyze the relevant radionuclides and pollutants assessment programmes cannot be established. TC activities for building the technical capabilities in this field are co-ordinated with other parallel programmes including the European Commission, the European River Ocean System 21, the Global Environment Facility and the Intergovernmental Oceanographic Commission/UNESCO. In Europe, a regional project (RER/2/003) has been established to assist participating laboratories in the Black Sea to identify radioactive and non-radioactive sources of contaminants in marine samples. In Asia, national capability to apply radiotracer techniques is an important element in RCA activities to assess the marine and coastal environment of Member States (RAS/8/076).

Human Resource Development

22. Human Resource development is a basic requirement in nearly all TC projects. But these requirements vary from country to country and between regions. In recognizing the special training needs of Member States, the Agency has initiated mechanisms to establish basic national technical infrastructures which allow the use of relevant nuclear applications. For the 1997-98 TC Programme, four regional projects and 26 national projects, including a project for the Territories under the Jurisdiction of the Palestinian Authorities, will provide training, fellowships and scientific visits for candidates proposed by Member States to help build national capacity in nuclear science and technology.

23. The deteriorating economic situation in most African Least Developed Countries (LDCs) presents difficulties for many counterpart institutions in adequately operating projects with the Agency, due to insufficient qualified staff and aggravated by serious personnel turnovers. In order to reinforce the scientific and technological base essential for successful Agency activities, a regional TC project, "Institutional Support for Least Developed Countries", (RAF/0/012), was introduced to offer training opportunities on a "sandwich pattern" described in last year's report, leading to advanced degrees in basic sciences and nuclear technology as part of an alternate educational training programme. SAGTAC will also address this issue in the near future.

24. Planned training activities comprising fellowships and scientific visits total 6,495 months during 1997-98 (compared to 5,500 months for the 1995-96 TC Programme), while the approved programme for training courses increased by 15.4% over the previous cycle. This emphasis suggests that Member States are increasingly interested in developing the human resources necessary to enhance the contribution of nuclear science to economic and social development.

25. Other examples of the development of the scientific and technical capacities of developing countries for the peaceful application of nuclear energy are included in section B "Regional Highlights" of the TC Report for 1996.

III. Achieving Sustainable Development

26. Many considerations in project planning and formulation address the fundamental issue of sustainable development. Sustaining TC project **results** and their socio-economic impact are perhaps the most important and key criteria underpinning the Model Project concept. As Model Project standards are extended throughout the entire TC Programme, the sustainability of activities will become an important indicator for assessing programme quality. In the interim, efforts continue to link TC projects to ongoing national programmes, to involve the private sector as an end user of technology, and to continue activities after the completion of projects. Examples given below of TC projects included in the 1997-98 programme illustrate this process:

- In Uganda, groundwater is the major source of water for rural communities in the arid and semi-arid zones, which constitute over 90% of the population. Due to the increasing demand for water, there is a need for reliable estimates of groundwater

recharge in the semi-arid rural areas and in weathered zone aquifers. A project on isotope hydrology was identified and integrated with a national project on groundwater management supported by the Danish International Development Agency (DANIDA). DANIDA is committed to providing US \$6 million to the Ugandan Government over five years. This opportunity is expected to enhance the impact and sustainability of the project.

- A new Model Project - *Assistance to Complete Eradication of Rinderpest from Africa* (RAF/5/043), was formulated for the new 1997-98 programme to complement other international efforts in support of the Pan African Rinderpest Campaign (PARC) which aims at eradication of the disease. The PARC strategy is to vaccinate all cattle in infected areas, then to stop vaccinating while carefully monitoring the disease. The key to this strategy is the use of diagnostic technology that not only serves to verify a vaccination rate of at least 85% beyond which the virus dies out, but also to identify remaining areas of virus activity. It is this diagnostic technology that the IAEA has been able to develop and transfer to national laboratories of Member States in the region. This will enable participating countries to provide rapid identification of the disease or confirm its elimination. The total financial burden to Africa from rinderpest is difficult to estimate precisely because of the many factors involved in addition to surveillance and vaccination. Both Member States and the international community recognize that elimination of the disease threat would free large resources. The money and human resources that are now devoted to rinderpest would shift to other pressing issues in animal health and production, thus multiplying the effects of eradication. The net result will almost certainly be a large increase in animal productivity in Africa. This increase in turn will improve food security, increase earnings for livestock producers, and promote export markets that are now closed to African meat and meat products.
- In Mexico, the Model Project MEX/6/005 - *National Programme of Training in Medical Physics*, is nearing completion. Mexico has about 100 radiotherapy installations using Co-60 and clinical accelerators, more than 20,000 diagnostic X-ray units and 100 nuclear medicine centres. But it has scarcely 30 professionals in medical physics. Two four-module courses of ten weeks duration each have been completed, yielding ten diplomas in medical physics. Each course included graduates from outside Mexico (Guatemala and Nicaragua). In addition, an agreement has been reached between ININ and the Autonomous University of the State of Mexico (UAEM) to establish a programme for MSc and PhD in medical physics to help meet future needs. The programme now continues without Agency assistance, with 20 students currently enrolled.
- A new Model Project - *Sustainable Technologies for Managing Radioactive Waste* (INT/4/131), to help developing Member States manage wastes from their nuclear applications began implementation in 1997. Spent radioactive sources and other radioactive materials demand careful handling and storage after they are removed from service and declared to be waste. The technical capability to process and store these wastes is therefore essential to fulfill requirements for safety and radiation protection. Novel aspects of the project include an action team to

condition Ra-226 sources for proper storage in countries lacking the sufficient means to conduct this work on their own. It is, therefore, a complementary activity to Model Project, *Upgrading Radiation Protection Infrastructure* (INT/9/143) in those countries which have progressed sufficiently to have the basis for its implementation.

27. Related activities that strengthened the effectiveness and efficiency of technical co-operation activities and promote sustainable development during 1996 have been presented in various sections of the Technical Co-operation Report for 1996.

IV. Technical Co-operation among Developing Countries (TCDC)

28. During 1996, continuous efforts were made towards increased use of Technical Co-operation between Developing Countries (TCDC). Perhaps the most obvious example of this was the further development of the effective TCDC mechanism available to the Agency - the Regional Co-operative Agreements. The Members of the three agreements took steps during the past year to become more involved in the design and implementation of their own programmes. The Agency supported this development by strengthening the co-ordination between projects under the regional agreements and other regional and national programmes, and paying increased attention to the use of regional expertise in regional activities. The concept of regional centers-of-excellence also gained momentum during the year - both in the Secretariat and among Member States. These developments led to an increase of almost 50% in the budget assigned for technical co-operation through the regional agreements in the 1997-98 biennium compared to the cycle before.

Budgets for Regional Co-operative Programmes

	1995/96 Cycle	1997/98 Cycle
AFRA	2,583,800	4,746,355
ARCAL	2,049,900	2,374,515
RCA	2,503,600	3,569,195
Total	7,137,300	10,690,065

29. Recognizing their special role in TCDC, representatives of AFRA, ARCAL and RCA convened a meeting in July 1996, to review the achievements of TCDC activities within the three regional agreements and identify future prospects. The meeting concluded that the three regional co-operative agreements had already played an important role in executing TCDC and should continue to promote this modality with increased focus and financial support in the future for the benefit of all countries. Among the recommendations of the meeting, the participating countries were encouraged to allocate a portion of their TCDC funds to nuclear related activities and to ensure the sustainability of TCDC achievements. The Model Project approach should be applied to TCDC activities along with the establishment of "twin institutions" within the region or between regions. Further streamlining of TCDC activities in the three co-operative agreements was also supported. Among future trends, the representatives agreed on the need to identify lead countries to serve as catalysts for TCDC and to create links to UN databases and other UN efforts involving TCDC.

30. There are several examples of regional co-operation where the concept of regional centers of excellence was applied in 1996: The Slovak Nuclear Regulatory Authority , which was supported under Model Project SLR/9/005, shared its knowhow and experience to help strengthen the Regulatory Authority in the Ukraine. Another example is the Central Veterinary Laboratory in Bamako, Mali which was used as a reference laboratory for the Africa-wide Rinderpest Eradication campaign. Additional examples of activities that promoted TCDC are contained in section C of the TC Report for 1996.

V. Resources

31. In September 1995, the General Conference approved a target of \$64.5 million for the 1996 voluntary contributions to the Technical Co-operation Fund (TCF) and allocated \$65.5 million for the Fund, which included \$1.0 million from other sources. The total value of pledges was \$50.5 million, or 78.3% of the target, a slight increase over 1995. Four countries pledged more than their target, and 35 pledged 100%. Unfortunately, the number of countries not pledging anything is very high: 68 Member States or 55% of the Agency's membership.

32. In considering where the TC programme could be strengthened and expanded, the Secretariat has implemented the Board's recommendation that due account be taken of a Member State's commitment, as evidenced by meeting its financial obligations, in preparing the 1997-98 TC programme. The results seems to have been well accepted and have already encouraged some Member States to look at ways to improve their financial contributions.

33. Part of the TCF income consists of assessed programme costs charged to Member States receiving assistance from the Agency. In 1996, nearly \$2.3 million was paid against amounts billed from 1995 and earlier. This represented an increase of 12.3% over the amount paid in 1995.

34. To extend the **resource base** for TC activities to non-traditional donors, the Agency will broaden its partnership by promoting planning and programming with end-users, regional planning bodies, international aid organizations, non-governmental organizations and the private sector.

To this end, a small unit was established during 1996 within the TC Department to establish contacts with non-traditional sources of funding. The result of this new effort will be reflected in next year's TC annual Report. Standard measurements for quality and success will help to meet donor requirements for project cost sharing and will improve fund raising prospects.

VI. Outlook

35. SAGTAC played an important role in moving the TC Strategy forward during the year. The essential elements of the Strategy were identified at the first SAGTAC meeting in November 1995, and its subsequent deliberations and recommendations on the Partnership in Development concept and management of the TC Process contributed to the Strategy formulation. SAGTAC's advice on the role of the private sector and contracting-out the design and implementation of TC projects have also influenced thinking on the new direction in TC. Further SAGTAC recommendations on meeting the needs of LDCs, the Integrated Evaluation Framework and Quality Control and criteria for special value technologies will influence the future course of TC activities.

36. The Secretariat will continue to inform the General Conference and the Board of Governors on progress in strengthening technical co-operation activities. The TC strategy will be presented to the November TACC and to the December 1997 meeting of the Board of Governors. Thereafter, progress in implementing the objectives of the strategy will be reflected in the annual report on Technical Co-operation Activities, along with any new initiatives to strengthen technical co-operation and accelerate and enlarge the contribution of nuclear technology to national development in Member States.