THE AGENCY'S TECHNICAL CO-OPERATION ACTIVITIES IN 1987

Report by the Director General

GC(XXXII)/INF/256

Printed by the
International Atomic Energy Agency
in Austria - August 1988

INTERNATIONAL ATOMIC ENERGY AGENCY

PREFACE

Following its usual practice, the Board of Governors has requested the communication to the General Conference of the material it used in reviewing the Agency's technical co-operation activities in 1987; this material is accordingly reproduced in the present document. The review was carried out pursuant to paragraph 19 of the *Revised Guiding Principles and General Operating Rules Governing the Provision of Technical Assistance by the Agency.*[1]

1 See document INFCIRC/267.

CONTENTS

LIST OF ABBREVIATIONS

Agency	International Atomic Energy Agency
ARCAL	Regional Co-operative Arrangements for the Promotion of Nuclear Science and Technology in Latin America
CC	Convertible currency
CEC	Commission of the European Communities
FAO	Food and Agriculture Organization of the United Nations
FICS	Financial Information and Control System
IAEA	International Atomic Energy Agency
IANEC	Inter-American Nuclear Energy Commission
IBRD	International Bank for Reconstruction and Development (World Bank)
IFFIT	International Facility for Food Irradiation Technology
ISO	International Organization for Standardization
NCC	Non-convertible currency
NENF	Division of Nuclear Fuel Cycle, IAEA
NENP	Division of Nuclear Power, IAEA
NENS	Division of Nuclear Safety, IAEA
OECD	Organization for Economic Development
OPS	Office for Project Services, UNDP
RAPAT	Radiation Protection Advisory Team
RCA	Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
RIAL	Agency's Laboratories
RIFA	Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development
RILS	Division of Life Sciences, IAEA
RIPC	Division of Physics and Chemistry, IAEA
TACC	Technical Assistance and Co-operation Committee
TACF	Technical Assistance and Co-operation Fund
TCAC	Division of Technical Assistance and Co-operation, IAEA
TCMS	Technical Co-operation Management System
UNTCD	Department of Technical Co-operation for Development, United Nations
UNDP	United Nations Development Programme

UNFSSTD	United Nations Financing System for Science and Technology for Development
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

Note: All sums of money are expressed in US dollars and have been rounded off to the nearest hundred or thousand dollars in most instances. Percentages have also been rounded off in statistical tables and figures.

GLOSSARY OF TERMS AND CONCEPTS

Adjusted programme - the total value of all technical co-operation activities approved for a given calendar year plus all approved assistance brought forward from previous years but not yet implemented.

Approved programme - the total value of project and non-project assistance approved by the Board of Governors in a given year, excluding UNDP and Special Programme assistance.

Disbursements - actual cash outlays for goods provided and services rendered.

Dynamic programming - the process whereby funds released through rephasing and reprogramming are used to meet requirements of developing Member States through the implementation of approved projects for which funds would otherwise not be available; it serves to keep project planning realistic.

Earmarkings - amounts allotted for funding approved assistance awaiting implementation.

Extrabudgetary funds - funds provided by Member States for financing specific projects or activities. These funds are separate from voluntary contributions to the Technical Assistance and Co-operation Fund.

Financial year - the year in which a financial transaction takes place. In the Agency, the financial year and calendar year are identical.

Footnote-a/ projects - projects approved by the Board for which no immediate funds are available.

Funds in trust - funds received from Member States to finance assistance for themselves.

Implementation rate - a ratio obtained by dividing net expenditure by the adjusted programme (expressed as a percentage).

Net expenditure - the volume of funds obligated (new obligations) in a given period.

New obligations - the sum of disbursements during the year and year-end unliquidated obligations minus unliquidated obligations carried over from the previous year.

Programme year - the year for which an activity is planned.

Rephasing - a temporary release of funds approved for inputs which were planned for a given programme year and which cannot be implemented as scheduled. Rephasing does not change total inputs approved for a project; rather, it serves to keep project planning realistic.

Reserve Fund - an amount set aside by the Board each year for financing assistance of an urgent nature requested after the Board has approved the Regular Programme for the year in question.

Special Programme - projects identified jointly by donor and recipient Member States and executed by the Agency utilizing extrabudgetary funds and in-kind contributions especially provided for this purpose.

Technical Assistance and Co-operation Fund - at present, the main fund for the financing of the Agency's technical co-operation activities; it is supported by voluntary contributions from Member States.

Type II fellowships - fellowships provided by Member States at little or no cost to the Agency.

UNDP Programme - projects executed by the Agency on behalf of UNDP and its associated funds, including UNFSSTD.

Unliquidated obligations - obligations incurred for which no cash outlays have yet been made.

Unobligated balance - total funds available less disbursements and less unliquidated obligations against the current year.

I. Summary

- This report, "The Agency's Technical Co-operation Activities in 1987", is part of a wide range of documentation which the Agency provides to Member States on its technical co-operation activities at various times during the year. It is, in particular, complemented by the "achievement reporting" submitted to the Technical Assistance and Co-operation Committee of the Board in the annual implementation reports that give the status of the technical co-operation programmes as at 30 September in each year.

- Following the 1986 Technical Co-operation Seminar and based on continuing consultations with Member States various steps to improve the quality of the programme were taken in 1987: for example, new project request forms and management plans were introduced and preparatory assistance was expanded. Office automation was intensified and the computerized data base covering technical co-operation was enhanced further.

- Work continues on the adaptation of data provided by the new Financial Information and Control System (FICS) to the needs of the technical co-operation programmes and vice-versa. While several problems have still to be overcome, it has on the whole, been possible in this report to re-establish data comparability with previous years.

- Evaluation has become an integral part of the Agency's technical co-operation activities. In addition to on-going mid-project and end-of-project evaluations, expert services and fellowships were evaluated in 1987 and the first country programme evaluation was also undertaken.

- During 1987, a total of 962 projects were operational and 64 training courses were held. These activities involved 1808 expert assignments while 1975 persons received training abroad.

- Of the provisions in the 1987 total adjusted programme, one half was earmarked for equipment, while the other half was equally divided between earmarkings for experts and for training.

- Of the Agency's technical co-operation resources in 1987, 72.5% came from the Technical Assistance and Co-operation Fund, 13.7% from extrabudgetary resources and 7.4% from In kind contributions. UNDP provided 6.2% of the total resources.

- Total new resources grew by 5.5% over the previous year, the total adjusted programme by 7.1%. Of this total adjusted programme, 61.3% was implemented. The 67% implementation rate achieved in the TACF is higher than in any year prior to 1986.

- TACF pledges and miscellaneous income, reduced by losses on exchange, covered 88.6% of the target. The decline in percentage attainment of the target which began in 1983 continued unabated. The rate of annual increase in TACF resources declined further to 8.2%.

- The level of resources in 1987 was well below that assumed when the 1987 programme was designed. This shortfall in resources, combined with factors which favored project budget overruns, led to a level of overprogramming by year-end which was considerably above the acceptable limit.

- Measures taken in introducing the 1988 programme have in the meantime reduced this programme deficit to $5 million. Stringent control and conservative resource planning for the 1989-90 biennial programme will aim at ensuring that the approved programme will be contained within available resources.

- All future reports on technical co-operation activities covering the period starting from 1 January 1988 will present information concerning fields of activity in accordance with the Agency's Area of Activity/Project Codes (AAPC).

II. Review of the Agency's Technical Co-operation Activities

A. Overview

1. Introduction

1. The Board is each year provided with a wide-ranging set of reports and documents dealing with the Agency's Technical Co-operation activities. They comprise:

(a) The annual report on the Agency's Technical Co-operation Activities (June Board);

(b) The report on the Implementation of the Agency's Technical Co-operation Programmes as at 30 September each year, produced for the meeting of the TACC of the Board in December;

(c) A status report covering large-scale on-going projects, as an annex to (b) above;

(d) A summary of accomplishments of all projects completed by 30 September, as a further annex to (b) above;

(e) A report on the Agency's Technical Co-operation Evaluation activities, prepared for TACC;

(f) Ad-hoc documents prepared for the TACC or the Board on specific issues pertaining to Technical Co-operation; and

(g) Thematic evaluation reports.

2. In addition to the documentation presented to the TACC and the Board, individual Member States are also provided with reports covering activities which are of specific interest to them, namely:

(a) Full Project Status reports available quarterly or on request, sorted by recipient or by donor countries for the Member States involved;

(b) Specific reports as requested by major donors of extrabudgetary resources covering the activities carried out with these resources;

(c) Expert reports including recommendations to recipient Member States, on completion of assignment in the country involved;

(d) Mid-project and end-of-project evaluation reports.

3. In order to avoid repetition and duplication, and also with a view to rational use of available manpower and other resources of the Secretariat, it is desirable that each report retains its proper focus.

4. The report in hand shows where, on what and to which extent the various funds made available for technical co-operation activities in a particular year - 1987 - were used. This is done quantitatively not only in financial terms but also in terms of man-months, number of experts, etc. The question of what was actually achieved through these activities, is of course addressed in depth through the evaluation activities, but a summary of achievements is also given in the reports mentioned under (c) and (d) in paragraph 1. These are, therefore, a direct and essential complement to the present report. In order to provide a balanced and comprehensive picture of the Agency's technical co-operation activities in a given year, it may well be more appropriate to include the achievement report in the future issues of this report, rather than as an annex to the implementation report.

5. Meanwhile a new chapter has been introduced which provides brief narratives concerning the Agency's Technical Co-operation with countries in Latin America. Similar profiles will be presented for a different region in subsequent years. This would establish a four-year cycle during which the programme in each country and region would be spotlighted.

2. General Issues During 1987

6. Throughout the year, close contacts were maintained with Member States individually or in groups to discuss a wide variety of technical co-operation issues. These on-going consultations are an integral part of the follow-up to the Technical Co-operation Policy Review and an important modality through which continuing guidance from Member States can be received. As reported to the TACC of the Board in December 1987, a number of steps identified in the policy review and during consultations were initiated in the year under review.

7. New project request forms have been introduced for the 1989-90 programme which aim to enhance the linkage between project and national development priorities. First reactions indicate that they were well received and welcomed by many national counterpart authorities.

8. Of the 42 project management plans covering large-scale multi-year projects which were forwarded to counterparts for comments and signature, 20 had been returned duly completed. As these plans provide a schedule for the delivery of the various inputs expected from the Agency as well as from the national authority, they constitute a reconfirmation of the commitments of both partners. While, at this trial stage, execution of a project is not

kept in abeyance until signature of the management plan, an urgent appeal has been made to Member States concerned to ensure that any such documents are duly signed and returned as promptly as possible.

9. Preparatory assistance was continued under the special project approved by the Board for that purpose. During 1987, 55 missions were planned, of which 50 were carried out. This involved 62 expert assignments going to 28 countries for a total of 16 months. These activities resulted in the formulation of 33 projects which have been approved for the 1988 programme.

10. The specialized technical fields in which the Agency provides assistance do not easily lend themselves to formulation of projects or action plans specifically geared to women. Nevertheless, the Agency's record in respect of women's participation, especially in training, can stand comparison with other agencies in the UN system. Instructions were issued recently to ensure that in letters inviting nominations for training events the attention of the governments is specially drawn to the desirability of nominating female candidates. A new table (Table 9) showing women's participation in various aspects of the technical co-operation programme has been introduced and will become a standard feature of this report.

11. Co-ordination with UNDP and other agencies in the UN system continues to receive full attention. An agreement was concluded with UNIDO in which areas of common interest in respect of technical co-operation were identified, and a first project proposal for a project to be jointly executed by UNIDO and IAEA was recently presented to UNDP.

12. To improve efficiency, the Department of Technical Co-operation introduced on a pilot scale an integrated, computer-based office communication facility which includes electronic messaging, word processing, document filing and retrieval, electronic telex despatch and electronic transmission of expert job descriptions. Although the pilot project has had to be carried out with insufficient equipment, the potential benefits to be derived from full-scale application have become apparent. Through a gift-in-kind announced by the United States government, sufficient workstations will become available over the next two years to enable the Department staff to make effective use of multi-user PC applications, of the mainframe-based Technical Co-operation Management System (TCMS) and of general office communication facilities. Meanwhile the computerized project-pipeline system, indispensable in programme planning, was significantly enhanced and made available to the sections involved in programming.

13. A major expansion of the TCMS took place in 1987 with full incorporation of both training course and sub-contract data. The training course data is very comprehensive and covers not only the large IAEA-organized courses, but all group training activities taking place within regional and national projects, for example executive management seminars, workshops, study tours, and training demonstrations. The TCMS now includes data on all TC activities financed from all resources.

14. It will be noted that information on fields of activity in this report is still based on the traditional classification scheme. Although the new Area of Activity/Project Codes (AAPC)

were introduced in the technical co-operation programme for 1987, it has not yet been possible to apply this classification scheme to all on-going activities undertaken in that year. In all future reports which contain data covering activities from 1 January 1988 onwards, however, this type of information will be presented in accordance with the new coding scheme. This will temporarily affect comparability with prior years in Figure 5A.

3. Evaluation

15. During the four years since systematic evaluation of the Agency's technical co-operation programme began, it has become an integral part of the Agency's technical co-operation activities and plays an important role in the efforts of the Secretariat to enhance further their effectiveness.

16. Periodic monitoring of all operational projects through the interim project implementation system, introduced in 1984, has been continued in 1987. These reports continue to be the major instrument by which national counterparts report regularly on the progress of their projects, on achievements and on difficulties being encountered; they also make recommendations for additional actions required to improve project implementation. At the request of a number of technical officers, provision has been made for the inclusion in reports of fuller information on the technical progress being made in the individual projects. Even so, these reports only partially compensate for the declining frequency with which Agency staff are now able to visit project sites. Overall, the 1987 reports indicated an improvement in the performance of Agency-supplied equipment. The two most common problems identified were placement of project-related fellows and shortages of national counterpart staff. A joint effort to address these concerns is now being undertaken by the Secretariat and Member States.

17. The Agency's provision of expert services and of fellowships were addressed by evaluations completed in 1987. In both cases, the evaluations concluded that the Secretariat had responded with considerable efficiency to the challenges associated with rapidly growing programme demands and that these services were contributing to technology transfer. A number of recommendations were made to strengthen these efforts further.

18. Mid-project and end-of-project evaluations of 63 projects were conducted in 1987. In selecting these projects, every effort was made to cover - to the extent possible within available financial resources - the full range of activities supported under the Agency's technical co-operation programme. It is hoped that, in this way, the relatively small number of in-depth evaluations that can be conducted will have a wider impact. The areas covered by such evaluations in 1987 included radiation protection, radioactive waste management, applied nuclear science laboratories, and applications of nuclear techniques.

19. The first country programme evaluation aimed at addressing the impact of the Agency's total programme of co-operation with a Member State was undertaken in 1987. Such evaluations are expected to provide guidance for future programming of Agency assistance and to provide an opportunity for in-depth examination of the link between the Agency's as-

sistance and the wider national development programme. The first such country evaluation was undertaken in Peru which, during the period 1958-86, was the third largest recipient of Agency assistance and which, in six of the last seven years, has ranked either first or second. Additional country evaluations will be undertaken at the rate of one or two per year.

4. Programme Implementation and Programme Trends

Total operational projects	962
New projects in 1987	182
Completed projects	132
Reports produced	276

20. For 1987, the Board approved budgetary provisions for a total of 460 projects. Of these 100 were new, while additional funds were approved for 360 on-going projects. As at the beginning of the year, there were already 420 on-going projects which did not require new Board approvals, there were a total of 880 operational projects financed from all sources and in various stages of implementation on the books on 1 January 1987. This figure includes 36 training course projects financed from the $3.4 million approved separately by the Board for this purpose.

21. The Board also approved 65 projects or project components for which no source of financing had been identified; of these 37 were new projects. During the year, 22 footnotea/ projects were made operational. A further 18 projects were approved under the Reserve Fund. In addition, seven new UNDP projects, two special programme projects, and one funds-in-trust project were added to the programme. In August, the Director General approved 32 training courses for execution in 1988 but for which administrative and budgetary actions were already necessary in 1987. The total number of operational projects during 1987 thus reached 962 (854 in 1986). The projects varied in size from 1 month of expert services valued at $7050 to large-scale multi-year activities providing inputs through all technical co-operation modalities: experts, equipment and training. The largest on-going project in 1987 had a budget for that year of $1,737,000. Many projects were funded from multiple sources, combining and co-ordinating inputs from the TACF, from extrabudgetary resources and from in-kind-contributions.

22. During 1987, 132 projects were completed, including 36 training courses, and three projects were cancelled, so that at the end of year 827 projects were still operational. A total of 276 reports were produced and submitted to the respective national authorities in Member States. As listed in Annex III, 39 of these reports were published.

23. In addition to the assistance mentioned above, the Board also approved the use of $3.3 million for individual fellowships, to which considerable in-kind and other resources were added. A total of 1030 persons studied abroad as fellows or visiting scientists and a further 945 participated in interregional and regional training courses.

24. Of the assistance delivered in 1987, one-fifth related to nuclear engineering and technology, 18% to agriculture, 15% to nuclear safety, 13% to industry and hydrology, 9% to

nuclear physics and medicine, 8% to general atomic energy development, 4% to prospecting, mining and processing of nuclear materials, 3% to nuclear chemistry and less than one per cent to biology.

25. As there are annual fluctuations, it is perhaps more meaningful to look at the distribution of assistance over a number of years. During the past five years, this distribution has remained rather constant. With the exception of 1987, agriculture has been in first place during this period, with annual percentages ranging from 18.7% to 24.3% of total disbursements, followed by nuclear engineering which ranged from 14% to 16.4%. During the same period, nuclear safety came third, followed by applications of radioisotopes in hydrology and in industry. Uranium prospecting and processing has been declining from 6.3% in 1983 to 3.7% in 1987. There are, however, pronounced differences between regions. In Africa, assistance in respect of agriculture has clearly dominated, with annual percentages ranging from 32.9% to 44.2%, whereas during the past four years in Europe "agriculture" accounted for less than 10% of the annual assistance received.

26. The number of training course participants who attended courses in Safety in Nuclear Energy went up from 124 in 1986 to 291 in 1987. If individual fellowships are included, 518 persons received training in this field against 334 in 1986. When the man-month involved are considered, training in nuclear safety ranks first amongst all fields in which training was given in 1987. Twenty-five per cent of all man-months of training provided were in this field, against 20.5% in 1986.

5. Resources and Delivery

Total new resources	$41.5 million
Adjusted current year programme	$56.1 million
Net expenditure	$34.4 million
Implementation rate	61.3%
Disbursements and assistance in kind	$46.3 million

27. It should be noted that certain new accounting procedures which came into force during 1987 resulted in a lower level of recorded obligations, especially in the training course component of the TACF. Thus the 1987 figures for net expenditure and implementation rate are not wholly comparable to those of previous years. Based on previous years' procedures, the implementation figure would have been about $1.5 to $2 million higher, increasing the implementation rate by 3 to 3.5 percentage points.

28. Figure 1A illustrates the composition of new resources made available each year from 1981 through 1987. For 1987, the TACF accounted for 72.7% of all new resources, followed by extrabudgetary funds (including funds-in-trust) (13.7%), assistance in kind (7.4%), and UNDP (6.2%).

29. The total new resources available to carry out the Agency's technical co-operation activities in 1987 grew by $2.2 million or 5.5% over the previous year. New resources through extrabudgetary contributions remained at exactly the same levels as in 1986, while UNDP

resources fell back to the volume reached in 1984. Although assistance in kind increased by 34.4%, the "weight" of this category is small, so that the overall increase in resources was essentially achieved through a growth in the TACF fund of 8.2%. Figure 1A shows this development.

30. The sum total of all technical co-operation activities approved for a given calendar year plus all approved assistance brought forward from previous years (but not yet implemented and adjusted during the year owing to cancellations, rephasings and additions) constitutes the adjusted programme. This adjusted programme in 1987 grew by $3.7 million, or 7.1%, over 1986.

31. The actions required for project implementation taken in 1987, such as recruitment of experts, ordering of equipment, placing of fellows, holding of training courses and signing of sub-contracts, meant that $34.4 million was obligated during the year, so that a 61.3% implementation rate was reached. Assistance in kind is not considered in establishing implementation rates, since the level of actual net expenditure always equals resource levels - as both are recorded at year-end, after delivery has taken place.

32. Keeping in mind the point made in paragraph 27, the following table still offers a valid summary of the financial performance achieved during the past five years.

Rate of implementation by fund
as a percentage of the adjusted programme

Year	TACF (%)	Funds in trust (%)	Extrabudgetary funds (%)	UNDP (%)	Total (%)
1983	57.9	97.3	31.1	91.8	53.7
1984	65.0	22.7	44.4	81.6	59.3
1985	66.3	24.3	35.4	76.3	57.9
1986	75.7	68.7	32.2	83.7	67.6
1987	67.0	55.0	37.5	77.7	61.3

33. It is clear from the above table that it has not been possible to sustain the record implementation rate reached in 1986. Relatively slow resource collection in the early part of the year and resulting concern about programme liquidity, as well as concern for the Agency's financial situation, necessitated temporary slow-downs in programme execution.

34. The performance of each of the funds will be discussed in more detail in Section D of this Chapter and a more detailed overview of the status of the total programme at the end of 1987 is given in Implementation Summaries I and II.

35. Net expenditure figures are an indicator of the amount of technical assistance inputs set in motion by the Agency in a given year. They include obligated amounts which may, however, actually be disbursed at a later date, once delivery has taken place. Disbursement figures on the other hand can be considered to represent technical assistance actually received by recipient countries. The value of assistance in kind ($3 million) in 1987 is included in the disbursement figure of $46.3 million since all assistance in kind has been received. Total assistance actually received by recipient countries during 1987 thus rose by $6.4 million, an increase of 15.9% over 1986.

B. Review by Activity

1. Experts

36. The share of the expert component in the total adjusted programme, which had been steadily declining each year from 34.6% in 1983 to 25.2% in 1986, remained stable in 1987 at 25.6%.

37. The following table provides a five year perspective of the delivery of expert services.

Year	Number of persons	Number of assignments	Number of man-months	Man-months per assignment
1983	758	1,099	1,020	0.93
1984	1,017	1,530	1,550	1.01
1985	1,188	1,846	1,585	0.86
1986	1,168	1,930	1,516	0.79
1987	1,100	1,808	1,356	0.75
Increase over five years (%)	45.1	64.5	32.9	

38. Although there has been a decrease in all the indicators in the above table in 1987, the only longer-term trend that can be observed is that towards shorter assignments, which was already discussed in last year's report (GC(XXXI)/INF/244, paragraphs 16 and 17).

39. The shorter average length of assignments as well as the decline in the value of the dollar began to have a significant impact on average man-months costs in 1987. While a standard man-month cost figure of $7,050 had been assumed for budgetary purposes for the 1987 programme, average actual costs were $7,358 per man-month.

40. The rising costs involved in the delivery of expert services did, of course, influence net expenditure, so that, notwithstanding the decrease in number of man-months delivered, the rate of implementation against the adjusted programme was very slightly above that of 1986 (55.6% against 55.1%). However, if man-months contracted are taken against the total num-

ber of man-months foreseen in the adjusted programme, an implementation rate of 53.9% emerges, very close to what the financial indicators provide.

41. The provision of expertise remains the most difficult and labour-intensive aspect of the Agency Technical Co-operation Programme. Exacting requirements and continuously more sophisticated levels of expertise have to be matched precisely with availability at the time and for the type of assignment envisaged. In addition, personal circumstances as well as fluctuations in the counterpart staffing structure may cause last minute delays and cancellations, with a consequent re-initiation of the whole recruitment process.

42. Many avenues are being used to enhance the Agency's capacity to find and secure the expertise needed and to facilititate its delivery. The Agency has signed memoranda of understanding with private enterprises to facilitate recruitment of expertise. So far it has umbrella agreements with 12 enterprises comprising any type of suitable expertise the enterprise may have. In addition, about 100 individual memoranda of understanding were concluded in 1987 whereby an enterprise supplies an expert, providing him with salary, travel and per diem, which is then reimbursed in a lump sum by the Agency.

43. While the number of assignments carried out by international experts declined from 1511 to 1339, it is worthy of note that those carried out by national experts more than doubled - from 40 in 1986 to 87 in 1987. Close to one third of the assignments were carried out by experts from developing countries.

44. More information on the expert component of the programme during 1987 can be found in Figures 2A and 2B as well as in Tables 3A and 6A which show, inter alia, where the expertise came from, where it went and in which fields it was provided.

2. Equipment

45. The situation mentioned in paragraph 33 above had a particularly noticeable impact on the implementation of the equipment component, where the rate dropped from 67.9% to 57.5%. As provisions for equipment represented 50.3% of the 1987 adjusted programme, the decline contributed significantly to the lower over-all implementation rate.

46. As new obligations had reached a peak during 1986, actual disbursements for equipment rose considerably in 1987 (by 18.5% from 19.5 million to $23.1 million). This is shown in the following table together with a number of other indicators of performance in the Field Procurement Section.

Year	Adjusted programme ($ millions)	New obligations ($ millions)	Implementation rate (%)	Earmarkings ($ millions)	Disbursements ($ millions)	Number of purchase orders
1983	19.1	11.7	61.2	7.4	14.7	2,405
1984	23.0	15.3	66.8	7.6	17.3	2,970
1985	24.9	15.9	63.8	9.0	16.0	3,391
1986	26.7	18.1	67.9	8.6	19.5	3,738
1987	28.2	16.2	57.5	12.0	23.1[a]	3,701

[a] Excluding training course equipment.

47. Most of the non-convertible currencies received for technical co-operation activities are programmed for purchase of equipment. So far this programming was based on the whole group of non-convertible currencies. However, as in recent years the Agency has been successful in fully utilizing some of the non-convertible currencies, a shortage of these particular currencies occurred, which led to postponement of orders to be placed in the countries concerned. To avoid any recurrences, the programming of the equipment component would have to be linked to individual currencies within the non-convertible currency category. This will be a difficult task, since the project requirements have to remain the decisive factor and equipment meeting these requirements will have to be matched with limited sources of supply for which a particular currency can be used. This will further complicate the task of the Field Procurement Section during the preparation of the new programme. The heavy involvement of the Field Procurement Section in this preparatory stage of Technical Co-operation activities is not reflected in the above indicators.

48. In figures 3A and 3B further information on equipment delivery is presented, showing where the equipment came from and to which countries it went.

3. Fellowships

49. The 870 fellows undergoing training in 1987 and the 4437 man-months of training provided are the highest figures recorded for any one year and exceed the already high 1986 figures by 18.5% and 23% respectively. The table below shows that the sharp increases in fellowships went hand in hand with a drop in the number of visiting scientists and the man-months involved which, compared with 1986, were down by 21% and 26% respectively.

Year	Adjusted programme ($ millions)	New obligations ($ millions)	Implementation rate (%)	Earmarkings ($ millions)	Number of fellows	Number of fellowship m/m	Number of visiting scientists	Number of visiting scientist m/m
1983	3.7	2.8	75.3	0.9	612	3055	65	34
1984	4.3	3.8	90.0	0.4	702	3423	123	67
1985	4.5	3.2	72.0	1.2	615	3323	188	108
1986	6.4	5.0	78.3	1.4	734	3610	203	137
1987	7.8	6.5	83.1	1.3	870	4437	160	101
Increase over five years (%)					42	45	146	197

50. The acceleration in the delivery of the fellowship programme and the difficulties in monitoring at the required level of detail resulted in considerable over expenditures as compared with the provisions made. Amounts saved through completions and rephasings in other components of the programme had to be reallocated to the fellowship allotment so as to avoid last minute cancellations of fellowships already awarded and placed.

51. Nevertheless the fellowship programme is still over-extended and various measures such as deferment of awards and close scrutiny as to priorities had to be introduced to ensure that commitments to fellows in the field could be met. Controls at the area level will be introduced in 1988 and future years, and the fullest possible use will have to be made of Type II fellowships.

52. Additional information on fellowships in respect of their country of origin and place of study are given in Figures 4A and 4B.

4. Training Courses

53. During 1987 a total of 64 regional and interregional training courses were planned and organized by the Training Courses Section. In addition, the Section was involved in the implementation of 45 national courses, most of which were held under the non-destructive testing project RLA/8/005.

54. Based on doubts that had arisen concerning the effectiveness of study tours and taking into account the recommendations of evaluation reviews which had confirmed that these doubts were justified, study tours were discontinued in 1987. The trend towards a gradual reduction of interregional training events in favour of regional and national courses has continued. Annex II lists the courses held in 1987 in greater detail, and it will be noted that about two-thirds of all non-national courses were held in developing countries. This percentage may grow further since for training courses on nuclear power and safety, new host countries such as Brazil, Czechoslovakia and Yugoslavia are being considered in addition to the traditional host centres for these types of course.

55. The following table provides an overview of the training course programme during the last five years. Additional information on training activities - dealing with the number of trainees, where they came from and where they went, and in which fields they received training - is given in Figures 4A and 4B, Tables 3B and 6B and, as mentioned, in Annex II.

Interregional and regional training courses

Year	Adjusted programme ($ millions)	New obligations ($ millions)	Implementation rate (%)	Ear-markings ($ millions)	Number of courses	Number of participants	Number of man-months
1983	3.3	2.5	76.7	0.8	35	659	937
1984	4.2	3.7	87.1	0.5	51	850	1220
1985	4.0	3.4	85.2	0.6	60	926	1098
1986	4.6	4.3	93.5	0.3	71	972	992
1987	4.5	2.9	65.4	1.5	64	945	915

56. During 1987 the full integration of the training course component into the Technical Co-operation Management System was achieved. Computerized basic data are now available on all courses held after 1 January 1980 and comprehensive data, including all nominations for participants, for courses held from 1 January 1987.

5. Sub-contracts

57. The share of sub-contracts as a percentage of the total adjusted programme ($56.1 million) declined further in 1987 to 1.6% ($0.9 million). The implementation rate of this component improved considerably.

Year	Adjusted programme ($)	New obligations ($)	Implementation rate (%)	Earmarkings ($)
1983	3,158,164	932,451	29.5	2,225,713
1984	6,763,730	1,774,654	26.2	4,989,076
1985	5,107,505	831,622	16.3	4,275,883
1986	1,229,604	506,740	41.2	722,864
1987	904,314	549,535	60.8	354,780

58. While in the past, sub-contracts were predominantly used in special programmes relating to extra-budgetary resources, nearly half of the value of sub-contracts placed in 1987 were financed from the TACF, while the remainder related to UNDP as well as to extra-budgetary resources.

59. Although the use of this modality of project implementation remains small in the total programme, it is nevertheless significant in particular projects in certain countries. In Mexico, nearly one third, and in Syria nearly one half of the technical co-operation received in 1987 was provided through sub-contracts.

C. Review by Division

60. The expertise available in the Department of Research and Isotopes and the Department of Nuclear Energy and Safety continues to play a vital role in the Agency's Technical Co-operation Programme. The number of technical officers providing support to on-going projects increased from 130 to 142, and the number of projects from 854 to 962. The number of project requests received from Member States requiring appraisal by technical officers rose from 647 in 1986 to 724 in 1987. In addition, technical officers evaluated 1213 fellowships nominations in 1987, as against 1060 in 1986.

61. The average number of projects looked after by one technical officer stood for the Agency as a whole at 7 in 1987. However, in the Department of Research and Isotopes, the average number of projects per officer was 9, well above this average. In the Department of Nuclear Energy, the average was 5 projects per officer. These average figures do, of course, hide the great differences in the numbers of projects handled by individual technical of-

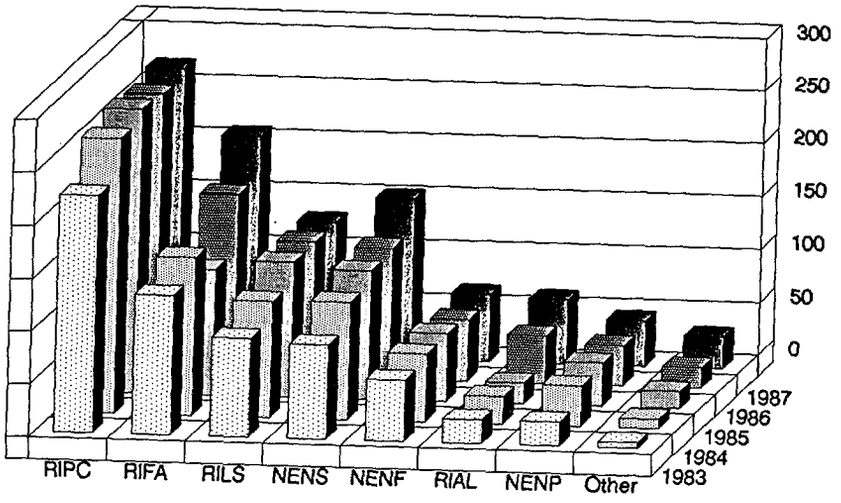
ficers. One particular technical officer still handles 67 projects, two others 49 each and one 45.

62. The training course programme profited from a growing number of technical officers who carried out assignments as lecturers (106 in 1987 as against 93 in 1986). Expert assignments declined from 356 to 301; the total man-months involved in assignments of both types decreased from 145 to 117.

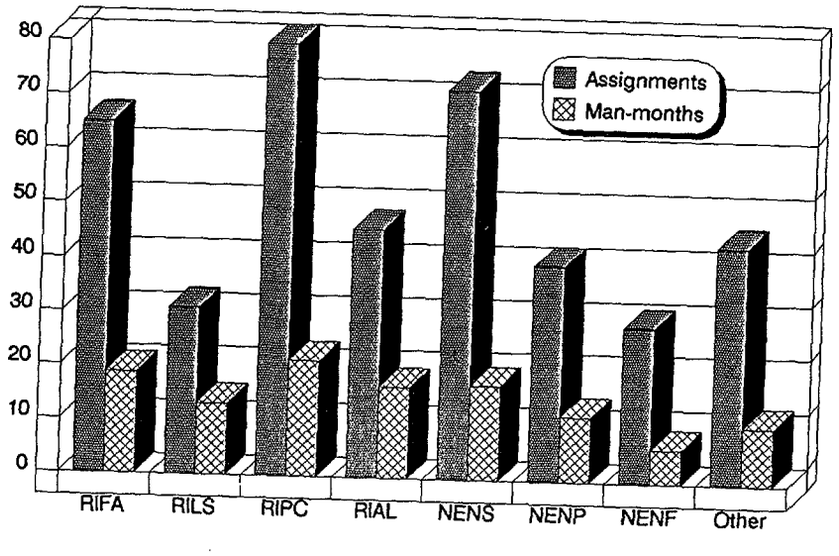
63. The table below and the bar charts that follow illustrate the involvement of the various sections in the different departments in technical co-operation activities.

Department/ Division	Number of technical officers	Number of projects supported	Number of fellowship applications evaluated	Number of expert/ lecturer assigments	Number of man-months
Research and Isotopes					
RIFA	24	207	217	65	18/23
RILS	14	129	163	31	13/04
RIPC	20	271	278	80	21/11
RIAL	13	62	51	46	16/25
Sub-total	71	669	709	222	70/03
Nuclear Energy					
NENS	30	152	272	72	17/03
NENP	12	45	103	40	12/02
NENF	13	65	102	29	6/11
Sub-total	55	262	477	141	35/26
Other	16	31	27	44	10/21
TOTAL	142	962	1213	407	116/20

PROJECT WORKLOADS BY DIVISION
1983-1987



TECHNICAL SUPPORT FOR PROJECTS: 1987
EXPERT AND LECTURER ASSIGNMENTS



D. Review by Fund

1. Technical Assistance and Co-operation Fund

Resources	$30.1 million (72.7% of total)
Adjusted programme	$40.4 million (72.1% of total)
Net expenditure	$27.1 million (78.8% of total)
Implementation rate	67.0%
Disbursements	$35.5 million (76.5% of total)

64. The total resources made available to the TACF grew by 8.2% in 1987 (10.6% in 1986). The resources of $30.1 represent 88.6% of the target for 1987. It must be emphasized that the amount on which the percentage is based includes not only the voluntary contributions but also all other sources of income to the TACF (assessed programme costs, interest income, exchange adjustments, etc). Table 1 and 2 show the growth of the TACF over the last 10 years and reveal trends which give reason for concern. From 1982 onwards, pledges against the target have been declining consistently each year, from 93.1% in 1982 to 87.5% in 1987.

65. The decline in the percentage of the target actually met through payment of pledges was offset by substantial other income which through 1983 ensured that total TACF resources met or even exceeded the target. However, from 1984 onwards, this additional income was no longer enough to cover the shortfall in pledges, so that total resources were below the target. Even more seriously, this additional income was significantly less in 1986 and 1987 due to high losses on exchange and lower interest income, so that the percentage of the target met through total resources declined: 98.8% in 1984, 97.1 in 1985, 92.7% in 1986 and 88.6% in 1987. As the target was higher each year there is still an annual increase in resources but the rate of increase has been lower each year: 20.2%in 1983, 15.5% in 1984, 13.3% in 1985, 10.6% in 1986, 8.2% in 1987.

66. To calculate the level of over or underprogramming, the programme commitments (unliquidated obligations plus earmarkings) have to be deducted from the available financial resources at the end of the year. The following table shows a ten year summary of movements in this respect (in thousands of dollars).

Year	Available financial resources			Programme			Balance		
	CC	NCC	Total	CC	NCC	Total	CC	NCC	Total
1978	4,896	3,420	8,316	6,978	1,293	8,271	(2,082)	2,127	45
1979	6,418	3,579	9,997	7,672	2,117	9,789	(1,254)	1,462	208
1980	8,267	4,467	12,734	9,470	3,925	13,395	(1,203)	542	(661)
1981	11,336	3,721	15,057	11,277	3,843	15,120	59	(122)	(63)
1982	14,186	3,670	17,856	13,788	4,071	17,859	398	(401)	(3)
1983	17,044	3,351	20,395	17,407	3,442	20,849	(363)	(91)	(454)
1984	19,240	3,274	22,514	19,583	3,782	23,365	(343)	(508)	(851)
1985	18,975	5,663	24,638	21,392	5,536	26,928	(2,417)	127	(2,290)
1986	14,002	8,813	22,815	18,146	7,706	25,852	(4,144)	1,107	(3,037)
1987	10,164	7,345	17,509	16,758	8,753	25,511	(6,594)	(1,408)	(8,002)

67. As was explained when the 1988 programme was submitted to the TACC of the Board in December[1], the precise level of actual overprogramming can only be determined after exact year-end income and expenditure figures become available. A considerable deficit was accrued during 1987, since pledges and investment income by the end of 1987 were considerably lower than could have been foreseen in mid-1986 (when the resource assumptions on which the programme for 1987 was based had to be made). With an unexpected net total unrealized loss of $1.3 million through revaluation of currency, the actual resources for 1987 were nearly $3 million lower than had been anticipated. In addition, project budget over-runs occurred because of currency fluctuations in the interval between the raising of the obligations and actual disbursement. At the same time the new computing system no longer automatically rejected budget overruns at the project level.

68. As, during the latter half of 1987, it had become clear that the overprogramming (i.e. the programme deficit) would exceed the allowable 10%, no new overprogramming was included in the 1988 programme: indeed this programme has been kept below anticipated resources. These steps have led to a reduction of the overprogramming from $8 million at year-end of 1987 to $5 million at the time of writing (April 1988).

69. Stringent control will continue to be necessary, particularly for projects earmarked in convertible currency, to ensure that no increases occur during 1988. Conservative programming for the 1989-90 biennium will be essential to reduce the overprogramming further.

70. The implementation rate of 67% for the TACF, while below the record rate attained in 1986 is still higher than in any year prior to 1986. Nevertheless, earmarkings - total value of approved assistance awaiting implementation - increased considerably. The following table providing a five-year comparison illustrates this development.

Year	Adjusted programme ($)	New obligations ($)	Implementation rate (%)	Earmarkings ($)
1983	27,107,465	15,687,881	57.9	11,419,584
1984	33,344,604	21,670,547	65.0	11,674,057
1985	34,810,179	23,064,817	66.3	11,745,362
1986	37,020,799	28,015,778	75.7	9,005,021
1987	40,436,825	27,078,352	67.0	13,358,473

71. The Board approved a Reserve Fund of $600,000 for 1987 of which $500,000 was foreseen for convertible, and $100,000 for non-convertible currency use. Virtually all the funds were allotted, namely $497,450 in convertible currency and $84,000 in non-convertible currency.

1 See paragraph 16 of document GOV/COM/8/89 of 16 November 1987.

72. During 1987, a total of 18 new projects were approved, one of which was later cancelled. Special mention should be made of the Interregional Training Course in Planning, Preparedness and Response to Nuclear Accidents or Radiological Emergencies. The interest in this course led to so many nominations of qualified and deserving candidates that it was decided to hold the course twice in 1987, the second time funded from the Reserve Fund.

73. The Reserve Fund also showed its particular value in the case of Zimbabwe. As Zimbabwe became a Member State in 1986, its first technical co-operation programme could only be approved for 1988. However, with Reserve Fund support, it was possible to start a radiation protection training project already in 1987.

2. Extrabudgetary Resources

Resources	$5.7 million (13.7% of total)
Adjusted programme	$12.4 million (22.0% of total)
Net expenditure	$4.7 million (13.7% of total)
Implementation rate	38.2%
Disbursements	$4.5 million (9.7% of total)

74. The bulk of the new extrabudgetary resources namely $3.99 million, was received for footnote-a/ projects made operational or extended during 1987. A considerable portion of this amount (71.8%) was donated in support of 32 footnote-a/ projects included in the 1987 programme. Of these, 22 were projects which were made operational for the first time. The remainder was made available for projects approved earlier.

75. The following table shows that the share of footnote-a/ projects made operational had increased in 1987; this reverses the trend observed in the past five years.

At year-end	Approved footnote-a/ projects ($)	Footnote-a/ projects & components made operational ($)	Share of footnote-a/ projects made operational (%)
1983	5,125,400	3,351,870	65.4
1984	5,187,000	3,222,260	62.1
1985	7,779,500	4,187,000	53.8
1986	8,361,205	3,455,500	41.3
1987	6,352,200	3,005,300	47.0

76. The USA was the largest single contributor of extrabudgetary funds for technical co-operation in 1987, followed by the USSR, the Federal Republic of Germany and the United Kingdom. Cash contributions were also made by Japan in 1987 for co-ordinated research within the framework of the RCA.

77. Once again, only a very modest part of the extrabudgetary programme was financed from funds in trust. They accounted for only 4% of the adjusted programme. However, the implementation rate was significantly higher for this category, reaching 55%.

78. The implementation rate for projects financed from extrabudgetary funds improved somewhat: from 34.8% in 1986 to 38.2% in 1987. As explained in previous years, implementation of projects financed from this resource can only begin after the extrabudgetary funds have been received. By end of June, only 20.6% of the 1987 extrabudgetary resources had been received, the remaining 79.4% being made available in the second half of the year. There has, nevertheless, been some improvement in that only 35.3% of the extrabudgetary resources were received in the last quarter of the year.

3. UNDP

Resources	$2.6 million (6.2% of total)
Adjusted programme	$3.3 million (5.9% of total)
Net expenditure	$2.6 million (7.5% of total)
Implementation rate	77.7%
Disbursements	$3.3 million (7.2% of total)

79. Although disbursements from activities financed by UNDP were somewhat higher than the 1986 figure, the above table shows a decline in "resources" as compared with 1986. However, it should not be inferred from these figures that there has been a decline in the portfolio of projects which the Agency is executing for UNDP. It should be noted that "resources" in the UNDP context represent the total delivery achieved, whereas the adjusted programme reflects the totality of approved projects at year-end.

80. The peak budgets for 1987 approved during that year, in other words the amount of resources that would have been available had the implementation rate reached one hundred per cent, amounted to $5.4 million, as compared with $5.3 million during 1986. In accordance with UNDP procedures, budgets are rephased during the year to keep them aligned as closely as possible with the expected delivery in that year. Therefore, as every year during the budget revision exercise in autumn, these peak budgets were revised downwards based on actual and expected delivery, resulting in a 77.7% implementation rate as shown in the table below.

Year	Adjusted programme ($)	New obligations ($)	Implementation rate (%)	Earmarkings ($)
1983	4,037,446	3,705,628	91.8	331,818
1984	3,112,964	2,541,287	81.6	571,677
1985	3,475,903	2,653,512	76.3	822,391
1986	4,157,676	3,480,543	83.7	677,133
1987	3,307,300	2,568,677	77.7	738,623

81. As has been explained in the past, neither the Agency nor UNDP itself can pre-determine the size of the UNDP programme to be executed by the Agency. The volume of such assistance depends on whether the national co-ordinating authorities can give sufficient priority to projects in the Agency's field of competence to include them in their national UNDP country programmes.

82. It is true that many agencies in the UN system are able to support their sectoral counterparts in convincing the national co-ordinating authorities that a particular project fits the national priorities and should therefore be included in the UNDP programme. However, this is achieved through intensive contacts and frequent visits, as well as through early identification of possibilities and prompt formulation of proposals. With the prevailing constraints on staffing and travel budgets, the Agency is less able to pursue initiatives actively in this respect. Nevertheless, efforts are being made to identify in UNDP country programmes those projects and fields of activity where nuclear techniques could play a meaningful role. The UNDP Resident Representative are informed in such cases of the Agency's interest to be associated with the projects concerned.

83. During 1987, three UNDP-financed projects were completed and seven new ones approved, so that 25 were under implementation. These projects are listed in Annex VI. The IAEA also acted as an associated agency for five UNDP-financed projects executed by UNTCD, OPS and the Government of China.

4. Assistance in Kind

Resources	$3.1 million (7.4% of total)
Disbursements	$3.1 million (6.6% of total)

84. As assistance in kind is recorded at year-end after it has been delivered, disbursements equal the resources made available and the concepts of "adjusted programme", "net expenditure" and "implementation rate" do not apply. After a decline in 1986, the assistance in kind provided in 1987 rose by $784,000 or 34.4%. As shown in Annex I, the USA remained by far the largest contributor of this type of resource, in particular resulting from its support to the fellowship programme. The second largest contributor, the Federal Republic of Germany more than doubled the amount it had made available in 1986.

85. Assistance in kind is a major factor in the execution of the Agency's training activities, to which 94% of this resource is directed. A total of 1055 man-months of fellowships, about a quarter of the total in 1987 and valued at $2.5 million, was provided through assistance in kind and 155 individual lecturers were made available to Agency's training courses, either totally or partially cost-free. The remaining 6% of the value of in-kind assistance was received through the services of 82 experts from 22 countries.

III. A Profile of Technical Co-operation Activities in Latin America

86. Whereas the facts and figures given in this report deal of necessity with the total technical co-operation programme from a central viewpoint, the Secretariat feels that it may also be of interest to highlight, from time to time, the programme activities in a particular region. Approximately one fifth of the Agency's technical co-operation activities each year is directed towards the Latin American region. The 20 Member States in the region are all at different stages in the development of their nuclear energy programmes. The Agency's collaborative programme is a natural reflection of this variety and covers the whole spectrum from basic training in nuclear applications to provisions of highly specialized expertise.

87. The following country narratives do not purport to be comprehensive country reports or to give a complete, evaluative account of all IAEA activities in a particular country during the last five years. The descriptions are only intended to give an impression of the type of activities carried out with Agency assistance in each country. Some of the successes achieved in recent years and some of the difficulties encountered are mentioned. The most important fields of activity in the on-going programmes are described and, where possible, the direction that the programme may take in future years is indicated. All monetary figures preceding the narratives are in thousands of dollars.

ARGENTINA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	150.1	150.1	0.0	83.9	21	27
1984	159.8	159.8	0.0	62.7	39	32
1985	182.0	120.0	0.0	48.1	39	147
1986	210.0	105.0	0.0	38.8	43	55
1987	207.4	121.0	0.0	44.7	37	75

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	384.0	0.0	384.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.4	0.0	174.4
1985	0.0	0.0	0.0	0.0	4.7	0.0	0.0	138.5	0.0	143.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.8	2.7	240.5
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	358.2	0.0	358.2

Although Argentina has been participating in Agency training course programmes, it has not received Agency-funded project assistance in the past five years. However, the IAEA has acted as executing agency for a UNDP project that was first approved in 1979 and is expected to end in its present form in 1988. The recipient institutions are the National Atomic Energy Commission (CNEA), Bariloche Atomic Centre, and the Balseiro Institute of the Cuyo National University.

The objective of the project was to assist the CNEA to improve its scientific and technical infrastructure in support of nuclear technology, in particular by providing training for nuclear engineers.

Both fellowships and scientific visits abroad were arranged for national personnel, while Agency experts served for various periods to advise and provide training on the full range of topics related to reactor design, control and operation, as well as to nuclear safety and radiological protection. The various activities and associated purchases of equipment as well as of information material, including publications and journal subscriptions, were planned and monitored through Government/IAEA/UNDP tripartite review meetings.

During the course of the project, the RA-6 500 MW tank-type research reactor became operational and proved to be a valuable tool in support of project activities.

The overall aim of the project is to make the various groups connected with operation and maintenance self-sufficient, able to continue the studies on performance, use and safety aspects of reactors as well as other nuclear research facilities. This is being satisfactorily achieved.

BOLIVIA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	1.9	0.0	0.0	2.2	3	0
1984	2.3	0.0	0.0	1.5	7	4
1985	2.6	0.0	0.0	2.4	4	0
1986	3.0	0.0	0.0	0.0	6	4
1987	3.4	0.0	0.0	0.0	1	16

B. Assistance approved and provided

Year	Assistance approved from TACF CC $	NCC $	Total $	Region %	Total assistance provided from all sources TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	161.4	0.0	161.4	4.4	144.1	0.0	31.0	0.0	9.9	185.0
1984	61.4	0.0	61.4	1.4	141.7	2.2	16.8	0.0	11.1	171.8
1985	206.4	15.0	221.4	4.3	194.0	0.0	20.8	6.1	0.0	220.9
1986	201.7	40.0	241.7	4.3	214.3	11.7	20.5	0.0	0.0	246.5
1987	139.8	40.0	179.8	3.0	236.6	32.9	42.8	0.0	0.0	312.3

The Agency's technical co-operation programme assisted the Bolivian Institute for Science and Technology (IBTEN) in establishing an overall development programme in the nuclear field. In this context, the following has been achieved: the setting up of an operational personnel radiation monitoring system covering 200 radiation workers, a laboratory for processing agricultural samples derived from isotope-aided soil fertilizer studies, a maintenance and repair service for radiation detection equipment to deal with simple maintenance problems and an efficiently operating nuclear medicine diagnostic service. The vigorous nuclear ore prospecting project which terminated in 1984 helped to locate some small high-grade uranium ore deposits. Extrabudgetary contributions made it possible to implement a mutation breeding programme in which several universities and the Ministry of Agriculture's experimental stations are participating.

The Agency has been co-operating in several activities related to national priorities, namely the extension of health care to the rural population and the improved management of water resources. In the first case, a national training course was organized for personnel who would be working at the nuclear medicine diagnostic centres being established by the Ministry of Public Health and Social Welfare at Cochabamba, Sucre and Santa Cruz; in the second case, a national training course has illustrated the use of isotope techniques as applied to studies aimed at quantifying underground water resources.

In recent years, severe difficulties affected the development of the Agency's Technical Assistance Programme in Bolivia. The low budget available to the government agency in charge of nuclear affairs led to loss of trained personnel from IBTEN to better salaried opportunities elsewhere, causing a constant turn-over of staff. In addition, equipment is kept in customs for unusually long periods which delays expert missions and impedes overall implementation of the projects being carried out in Bolivia.

BRAZIL

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	243.2	243.2	0.0	11.0	11	5
1984	312.8	243.2	0.0	36.7	29	41
1985	356.2	243.2	0.0	110.9	41	113
1986	411.0	243.2	0.0	70.8	29	78
1987	469.2	250.0	0.0	73.4	24	37

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	304.6	8.0	312.6	8.5	171.4	4.0	113.6	45.7	45.6	380.3
1984	470.0	13.0	483.0	10.9	395.6	4.8	213.0	0.0	12.7	626.1
1985	814.2	29.0	843.2	16.5	563.6	8.2	99.0	5.8	27.9	704.5
1986	627.4	0.0	627.4	11.2	1343.3	38.5	67.2	0.0	3.9	1452.9
1987	614.1	0.0	614.1	10.3	822.2	21.6	125.2	0.0	7.5	976.5

In the past five years, the Agency's technical co-operation with Brazil has concentrated on the various aspects of operating a nuclear power programme and nuclear power safety, with considerable emphasis on training. As part of these activities, the establishment of an independent national regulatory body, the Brazil Regulatory Agency, was actively furthered, and subsequently there was orientation towards programmes connected with radiological safety and radiation protection, with particular interest being shown in emergency planning and preparedness and procedures to be followed in the event of an accident involving radiation exposure.

In connection with possible locations for nuclear power plants, a project was approved that initiated long-term monitoring of sites to assess their seismic and geological characteristics. A main-frame computer was provided to help analyse the data, and the necessary training was provided. The results are providing a better understanding of the seismotectonic features and the data are of value also for the general national geological survey.

In the area of fuel element design and engineering, assistance has been provided mainly for quality assurance in fuel element manufacturing, fuel element components and Zircaloy tubing.

Applications of atomic energy and isotopes in agriculture and in medicine are also receiving support, while a major on-going project is concerned with the effects of changing land use on the ecology and climate of the Brazilian Amazon, initiated in 1984. As part of the activities of that project, a team is undertaking a study of increasing salinity of shallow groundwaters in a semi-arid area in northeastern Brazil, the changes resulting from both natural and man-induced causes. Other topics being studied in depth comprise the hydrological cycle, the nitrogen, sulphur and phosphorus cycles, tree physiology and water vapour routing both in connection with forest water budgets and global climate modelling. The project of necessity involves detailed planning, and a planning workshop was held in 1986 to improve co-ordination and timing. A particular constraint, however, has been the lack of national funds to provide urgently needed local staff as well as supporting services and local training. This project is receiving both regular and extrabudgetary funding and, as a number of countries have expressed firm willingness to contribute to financing, the activities are expected to increase significantly.

Agency efforts were also aimed at increasing the production of the stable isotope nitrogen-15. This has made it possible to expand investigations in nitrogen fixation in tropical environments as well as in plant mutation. The work which was initiated under a UNDP-financed, Agency-executed project several years ago at the University of Sao Paulo's Centre for Nuclear Agriculture, Piracicaba, has resulted in the establishment of one of the best known tropical agriculture research centres in the world. These nitrogen studies are closely correlated with the nitrogen cycle investigations being carried out within the Amazon ecology programme.

In 1987, the Agency provided prompt help in connection with the Goiania radiation accident by sending an expert to assist the national authorities under the "Emergency planning and preparedness" project, with other types of support being provided subsequently in connection with other relevant on-going projects. The Agency's response, allied to and in co-operation with the considerable bilateral assistance provided to Brazil, has made possible a detailed analysis both of the incident itself and of subsequent actions taken, and the findings will have world-wide repercussions regarding safe disposal of radioactive materials being used for peaceful purposes outside the nuclear industry.

It is clear that Brazil has reached a high level of development in the nuclear field, and assistance to be provided, in particular with respect to the nuclear industry, will tend to be reduced and become more selective. The areas of safety and radiation protection will continue to receive emphasis. As stated, the Brazilian Amazon ecological study is expected to expand.

CHILE

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	13.3	13.5	0.0	1.1	5	1
1984	15.8	15.8	0.0	3.4	7	1
1985	18.2	18.2	0.0	5.3	8	23
1986	21.0	21.0	9.2	11.4	10	30
1987	23.8	23.8	0.0	4.0	9	24

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	160.2	0.0	160.2	4.3	179.6	0.0	0.0	5.0	0.0	184.6
1984	319.6	0.0	319.6	7.2	183.2	0.0	0.0	0.0	5.2	186.4
1985	198.1	0.0	198.1	3.9	223.9	0.0	0.0	0.0	44.5	268.4
1986	417.0	0.0	417.0	7.4	339.6	0.0	0.0	35.7	31.5	406.8
1987	411.9	0.0	411.9	6.9	437.7	0.0	0.0	5.3	15.9	458.9

Over the past five years, the Agency's technical co-operation with Chile has covered a wide range of activities, reflecting the broad scope of the country's uses of atomic energy for peaceful purposes. In addition to support for nuclear reactor operation and prospecting for nuclear raw materials, and mining and processing these, there was assistance with applications of isotopes and radiation in agriculture, including animal husbandry, in industrial and environmental studies and in medical diagnostics.

A project that was completed in 1987 had the aim of studying the sources of recharge of the groundwater in the Pampa del Tamarugal, a vast area in the north of Chile. The aquifers form the main water source for the area and for the town of Iquique. Growing demand resulting from population increases and mining operations makes it necessary to obtain a full understanding of hydrological parameters. The project was started in 1982, using isotopic analysis to determine source and age of water; as work progressed, it was realized that studies of evaporation from both streams and the extensive salt marshes as well as the part played by flash flooding had to be added to the project objectives. The data collected and its analysis provide the basis for a computer-based model of the hydrological cycle which is to be prepared by the national Directorate-General for Water in conjunction with the University of Chile to make it possible to undertake long-term planning for utilization of groundwater resources.

Another project completed during the same year was that concerned with utilization of phosphorus on soils of volcanic origin that cover an area of some 200 000 square kilometres between the Central Valley and the Andean foothills. Seven of the traditional staple crops are grown here and the grasslands are used for grazing livestock. The high phosphorus retention of these soils has meant that large quantities of phosphate fertilizer have had to be imported. Improving the phosphorus availability would both increase economic yield and save on foreign exchange. The main objectives was to transfer knowledge of how to use labelled phosphorus to study uptake by plants and retention in soil of various fertilizers, including quantification to allow practical conclusions to be drawn. Experiments were conducted in the laboratory, in greenhouses and in the field, and recently a co-operation agreement between the Chilean Atomic Energy Commission and the Institute for Agriculture and Livestock was concluded which allows the latter's experimental stations to be used for testing. In particular, the knowledge of techniques gained by the Commission's staff will be transferred to "users" through the Institute's services, so that advances in knowledge can find immediate application. This work is now being continued nationally, the impetus given by the Agency in the form of technical co-operation having provided the desired level of local "know-how" for self-reliant progress.

In 1987, a new project was initiated that aims to promote the more efficient utilization of the existing Herald 5 MW research reactor at the La Reina Research Centre by upgrading the facilities for neutron activation analysis, permitting determination of trace levels of several elements simultaneously. A second, with funding for two years, was approved with the objective of facilitating the establishment of a cadre of experts trained in the use of isotope

techniques. This would provide a national capability in tracer technology and in making seepage measurements so as to improve water resource management in the country. Particular emphasis was to be placed on conservation of the waters of Lake Laja, and this work has already resulted in the unexpected discovery of two geothermal springs at the bottom of the lake which also have outlets below the dam and whose energy cannot, therefore, as yet be fully utilized. A third project was designed to assist the government to prepare regulations specifying the conditions under which nuclear-powered vessels would be allowed to enter Chilean ports and waters, with formulation of the corresponding radiological monitoring programme. Among the on-going activities, the transfer of technology involved in the management and handling of radioactive waste is worthy of particular mention.

Significant advances were made in solving certain long-standing problems affecting programme implementation. A uniform system of processing the shipment of equipment and materials was established and, with the active assistance of the national counterpart in obtaining proposals from local representatives, a viable solution was found for expediting the purchase of a computer system, the one originally proposed not being eligible for a licence for export to Chile. It is hoped that the remaining procurement difficulties will be solved in the near future.

A gradual increase in the percentage of funds devoted to fellowships and training directly related to approved projects is noticeable. On the whole, IAEA support has been instrumental in upgrading national nuclear programmes.

COLOMBIA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	20.9	20.9	0.0	1.3	4	6
1984	24.8	24.8	0.0	2.0	10	14
1985	28.6	0.0	0.0	3.9	5	2
1986	33.0	33.0	0.0	2.8	8	20
1987	44.2	0.0	0.0	2.0	8	1

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	137.6	5.0	142.6	3.9	158.0	4.5	22.4	70.9	23.0	278.8
1984	242.2	0.0	242.2	5.5	200.2	1.6	6.5	1.9	14.6	224.8
1985	261.5	20.0	281.5	5.5	248.2	15.9	1.4	5.0	0.0	270.5
1986	187.9	11.0	198.9	3.5	369.9	2.2	1.1	0.0	0.0	373.2
1987	352.1	30.0	382.1	6.4	298.5	29.7	34.3	0.0	55.0	417.5

The Agency's programme of technical co-operation with Colombia is quite extensive and has, during the past five years, responded to national requirements in the fields of agriculture, hydrology, dosimetry, nuclear instrumentation, research reactor conversion and uranium prospecting. Much of the Agency's support is channelled through the National Institute of Nuclear Affairs.

Several projects had achieved their objectives in 1987. One of these supported work requiring low-temperatures, and was primarily concerned with provision of a reliable supply of liquid nitrogen for the Institute of Nuclear Affairs for use by several experimental groups, in particular those working with carbon-14 dating and lithium-doped germanium detectors. One of these detectors was supplied as part of another completed project which has met its objective of enabling the group to double their throughput of neutron activation analyses of ore and other samples. The equipment is performing as planned after satisfactorily completing testing following installation. A footnote-a project that received continuing support was concerned with upgrading the electronic control system of the existing 30 kW swimming-pool-type research reactor, which has been operating since 1965, well beyond its estimated life, reflecting the care exercised both in maintenance and operation. This supports the work referred to above, since the reactor is used as the neutron source for activation analyses. Some 4000 samples are analysed for ten elemental constituents annually using this technique.

Another project recently completed related to the production of radiation-attenuated vaccines for use in controlling indigenous parasites found in cattle. In addition, some studies were carried out on artificial insemination of cattle ranging free on large grass pasture lands. The training provided to counterpart staff was of particular importance, and the principal achievement was the development of a triple vaccine against the three major parasites. This project was linked to three IAEA Research Contracts.

Two other projects were related and involved studies of nitrogen and phosphorus uptake from fertilizer, especially to improve fodder crop production. The first was started in 1983 and assisted the Institute of Nuclear Affairs to set up a laboratory to conduct research aimed at maximizing fertilizer uptake using nuclear techniques. Both field and greenhouse experiments were carried out, and the basis was broadened when the Colombian Agriculture and Livestock Breeding Institute became involved through a co-operation agreement. The second of these two projects, initiated in 1987, was concerned with fertilizer-use efficiency both for legumes and pasture land, and improving fertilizer practices on land where aluminium toxicity presents problems. In particular, Agency support has made it possible for the Institutes to become self-reliant in this area of research, in particular as regards transferring the necessary techniques to both nuclear laboratory staff and researchers working with fertilizers.

In the field of hydrology, substantial assistance from the Agency has made possible the establishment of a laboratory for stable-isotope determination. Valuable data are being obtained on groundwater resources in several areas of the country. Isotopic techniques are also being used to study the fate of sediments in the estuary of the Magdalena River, the country's most important river transport system. These studies are helping to define a policy for more efficient dredging and facilitating the selection of suitable sites for the dumping of dredged sediments.

In the area of nuclear raw materials exploration, a project was recently completed whose objectives were to prepare a revised prognostic map for uranium ores, to assess uranium favourability and thus to develop a long-term programme of work; the Institute of Nuclear Affairs was advised on the use of automatic data processing systems in support of uranium exploration.

There has been a delay in implementing two projects according to their original time-tables, one because the modifications to a gammma-facility took longer than planned, and the other, involving radiation-induced mutation breeding of rice varieties, because the principal counterpart was receiving project-related training in Brazil on an IAEA fellowship.

On the basis of discussions between the Agency and the Colombian authorities, it appears likely that a similar pattern of activities will continue to be followed in the future, perhaps with some additional stress on radiopharmaceuticals, analytical chemistry and physics, and, in particular, radiation protection. Uranium surveying will probably be given a lower priority following the recommendations made by the Agency to Colombia.

COSTA RICA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	3.8	0.0	0.0	0.0	0	2
1984	4.5	0.5	0.0	0.7	4	0
1985	5.2	0.0	0.0	0.0	3	29
1986	6.0	0.0	0.0	2.9	4	5
1987	6.8	0.0	0.0	0.0	1	2

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	32.4	0.0	32.4	0.9	36.5	0.0	10.7	0.0	6.2	53.4
1984	50.2	5.0	55.2	1.2	61.1	0.0	3.2	32.2	0.0	96.5
1985	81.4	27.0	108.4	2.1	129.8	0.0	0.1	299.5	0.0	429.4
1986	157.8	0.0	157.8	2.8	172.0	0.0	0.0	234.6	2.4	409.0
1987	103.2	15.0	118.2	2.0	183.3	13.4	0.0	34.7	0.0	231.4

Agency technical co-operation with Costa Rica has concentrated on the prospecting for nuclear materials and on nuclear physics.

The nuclear prospecting activities, supported also by UNFSSTD, led not only to the identification of several uranium anomalies, but have helped to define the presence of gold and possibly other valuable ore deposits, which has attracted interest from private investors.

In the nuclear physics field, a nuclear science laboratory has been installed at new facilities of the Department of Physics of the University of Costa Rica at San José. This laboratory is not only serving as a valuable tool for teaching and research in other branches of the University, but has also started to serve the community outside with element and trace-element analysis using X-ray fluorescence techniques. Nitrogen liquefying equipment has been installed to provide refrigeration for solid-state radiation detectors.

In addition to these major fields, projects have now also been approved relating to the application of isotopes in hydrology, specifically in prospecting for geothermal fields, and to the studies of hormone profiles in cattle to increase their reproductive efficiency.

It is expected that, with the approaching completion of the uranium prospecting projects, a more even distribution of assistance over various nuclear fields will follow.

CUBA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	20.9	20.9	0.0	0.0	0	0
1984	20.3	20.3	0.0	0.0	0	0
1985	23.4	23.4	0.0	0.0	0	0
1986	27.0	27.0	0.0	0.0	1	1
1987	30.6	30.6	0.0	0.0	2	1

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	155.8	30.0	185.8	5.0	151.2	103.3	6.9	169.4	9.0	439.8
1984	133.2	20.0	153.2	3.5	208.6	447.0	0.0	352.9	20.2	1028.7
1985	146.6	127.0	273.6	5.4	87.7	21.2	0.0	136.9	0.8	246.6
1986	304.9	100.0	404.9	7.2	302.8	85.1	0.0	139.2	0.0	527.1
1987	265.0	75.0	340.0	5.7	471.6	82.4	0.0	0.1	0.0	554.1

During the past five years technical co-operation activities in Cuba have focused primarily on nuclear manpower training, nuclear instrumentation and food irradiation as well as on applications in the fields of medicine and hydrology.

A major activity to develop a high-level training infrastructure has been in progress since 1983 and is based at the Advanced Institute of Sciences and Nuclear Technology. Adequate facilities have now been established for the teaching of nuclear subjects within the country. In addition, a considerable number of nationals have received training abroad in the form of fellowships, scientific visits and training courses.

A recurring problem, that of frequent breakdown of equipment, is receiving full attention. Equipment was provided for the establishment of a unit for the maintenance and servicing of equipment at the Cuban Academy of Sciences. The main objective of a new project in nuclear electronics is that of establishing full-scale services for the maintenance and repair of nuclear equipment.

Multi-year assistance in the field of food irradiation in which Agency-funded activities were closely co-ordinated with those carried out under a UNDP-financed nuclear technology project culminated in the inauguration of a food irradiation plant in March 1987. The plant is being used in the development of methods to increase the shelf-life of agricultural products such as potatoes and onions, and for trials with grain-desinfestation.

Progress is being made in the use of radioimmunoassay techniques in the study of heat stress on the endocrine control of reproductive processes in tropical cattle, leading to improvement in dairy cattle productivity. It is expected that the Alesandro Humboldt Institute will be initiating studies on soil/water/plant relationships aimed at improving fertilizer management practices for selected staple and export crops.

Facilities for nuclear medicine have been significantly improved at two institutions through the provision of two gamma cameras, ancillary equipment and expert services. A new large-scale UNDP-financed project was approved in October 1987. It is is aimed at improving medical research and diagnosis through a strengthening of the teaching infrastructure for providing the necessary specialized training.

Since 1979, assistance has been provided to the Department of Biology, University of Havana, in the introduction of radioisotopes in biological studies. Experts lectured on metabolics of carbohydrates, lipids, proteins, nucleic acids and lipoproteins. On the basis of these training activities, high-quality research in relation to, for example, artereosclerosis is currently being undertaken.

Large-scale activities in radiation protection were started in 1984, but problems were encountered in the provision of a whole-body counter, since quotations obtained by far exceeded the funds available. The Cuban authorities are investigating the possibility of obtaining the steel required for the shielding locally.

In 1982, an isotope hydrology laboratory was established at the Cuban Institute of Hydroeconomy and valuable data have been collected on the dynamic characteristics of aquifers. The laboratory has also the capability for undertaking studies in relation to geothermal prospecting. It is anticipated that the Institute will expand its activities to study sedimentation in reservoirs using isotope-aided techniques. This will contribute to the overall management of water resources.

DOMINICAN REPUBLIC

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	5.7	0.0	0.0	0.0	0	0
1984	6.8	0.0	0.0	0.8	3	0
1985	7.8	0.0	0.0	2.4	2	0
1986	9.0	0.0	0.0	0.0	2	0
1987	10.2	0.0	0.0	0.0	0	0

B. Assistance approved and provided

Year	Assistance approved from TACF CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Total assistance provided from all sources Extra-budgetary	UNDP	In kind	Total $
1983	184.4	0.0	184.4	5.0	185.8	1.3	0.0	0.0	3.6	190.7
1984	201.2	65.0	266.2	6.0	122.5	12.0	0.0	0.0	9.5	144.0
1985	0.0	15.0	15.0	0.3	119.1	61.9	0.0	0.0	0.1	181.1
1986	0.0	0.0	0.0	0.0	64.8	0.0	0.0	0.0	0.0	64.8
1987	184.4	0.0	184.4	2.8	189.5	1.9	0.0	0.0	11.4	202.8

The Technical Assistance Programme in the Dominican Republic has, during the last five years, dealt mainly with the physical sciences and the development of nuclear analytical techniques for element and trace-element analysis.

Although small, the nuclear programme of the Dominican Republic has developed satisfactorily. Work initiated at the universities is gradually being expanded to other institutions.

In 1986, work was initiated in isotopic hydrology and, within a short period of time, the project had obtained valuable data for the improved use of water resources for irrigation. It has contributed in particular to the study and diagnosis of problems affecting two irrigation dams (Malmaca and Chacuey) while studies are in progress at a hydroelectric reservoir (Sabaneta Dam).

Assistance to activities carried out since 1983 in the application of Moessbauer spectrometry to the study of surfaces and to analyses of local clay structures and corrosion was successfully completed in 1987. Senior students of the Pedro Henrique Urena University actively participated in this work leading to several graduate theses and scientific publications.

X-ray fluorescence techniques and related use of computers have now been well established and expert missions have contributed to the upgrading of existing services. Steps were also taken in 1987 to initiate expansion of new radiation protection activities.

While the absence of a government authority in charge of nuclear affairs makes it at times difficult to define priority projects, the enthusiasm and dedication shown by the project counterparts augurs well for the future of the nuclear programme in the country.

ECUADOR

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	3.8	3.8	0.0	6.2	7	0
1984	4.5	4.5	0.0	8.3	10	30
1985	5.2	5.2	0.0	10.2	4	44
1986	6.0	6.0	0.0	4.4	7	12
1987	10.2	0.0	0.0	4.1	6	14

B. Assistance approved and provided

Year	Assistance approved from TACF CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Total assistance provided from all sources Extra-budgetary	UNDP	In kind	Total $
1983	174.6	180.0	354.6	9.6	252.9	122.9	0.0	226.6	44.3	646.7
1984	226.0	0.0	226.0	5.1	225.1	340.5	5.3	169.8	29.7	770.4
1985	334.3	35.0	369.3	7.2	170.7	2.1	24.1	20.1	16.8	233.8
1986	339.6	105.0	444.6	7.9	241.3	170.9	30.1	0.5	6.3	449.1
1987	356.0	90.0	446.0	7.5	542.7	102.6	346.2	0.0	18.4	1009.9

Agency technical co-operation with Ecuador has, over the past five years, several important accomplishments to its credit. The IAEA-executed/UNDP-financed uranium exploration programme has located a large deposit of low-grade uranium; a dosimetry laboratory is operating and servicing oncological centres in the country; soil science studies have made it possible to detect and solve problems affecting oil palm trees in the northeastern part of Ecuador; four institutions are currently working in pesticide residue analysis using nuclear techniques; an efficient radiation protection and inspection directorate is offering dosimetry services to 680 radation workers; while the National Polytechnic School has provided the infrastructure for the installation during 1988 of a 6 MeV industrial linear accelerator that will be used for industrial applications of radiation.

There is a lively on-going programme in the field of agriculture and animal husbandry. A recently completed project carried out a survey in co-operation with the national Association of Cattle Growers on nutritional deficiencies, fertility and parasitic bronchitis in dairy cattle in the north Andean area of the country. Preliminary trials with radiation-attenuated vaccine were very successful and training of parasitologists was introduced. The National Research Institute for Agriculture initiated radiation induced mutation breeding activities and tissue culture experiments with assistance under a newly approved project aimed at developing new crop plant varieties resistant to environmental stress in highland areas.

Advanced medical physics training and assistance to the expansion of nuclear medicine continues. Equipment for nuclear medicine diagnostic studies, 60% of which was financed by funds-in-trust contributions by Ecuador itself, was installed at the Institute of Social Security.

A national course in isotope hydrology held in 1987 attracted great interest among major public and private sectors of importance to the country's economy.

In spite of the difficult economic situation in the country, the Government, with the co-ordinated efforts of various national institutions and universities, has continued to support its nuclear development programme and has provided funds for the necessary infrastructure, including construction, required in several projects. The efficient management of available resources by local authorities and the successes achieved by the projects has drawn attention of the priviate industrial sector to nuclear activities in Ecuador, and it is expected that their involvement in these activities will grow in the near future.

EL SALVADOR

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	1.9	0.0	0.0	0.0	0	0
1984	2.3	0.0	0.0	0.0	0	8
1985	2.6	0.0	0.0	0.0	1	0
1986	3.0	0.0	0.0	0.0	1	0
1987	3.4	0.0	0.0	0.0	1	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	35.0	0.0	35.0	0.9	39.3	0.0	0.0	0.0	14.3	53.6
1984	13.2	0.0	13.2	0.3	31.8	0.0	0.0	0.0	0.0	31.8
1985	82.7	0.0	82.7	1.6	24.5	0.0	0.0	0.0	0.0	24.5
1986	68.6	30.0	98.6	1.8	146.7	0.0	11.7	0.0	0.0	158.4
1987	49.1	40.0	89.1	1.5	118.4	36.2	28.8	0.0	0.0	183.4

The technical co-operation inputs delivered by the Agency to El Salvador were, during the past five years, mainly directed towards the application of isotopes in geothermal studies and towards radiation protection. The Agency provided laboratory and field equipment that has permitted the use of stable and radioactive tracer techniques to

study the geothermic dynamics of the Ahuachapan Geothermal Fields which generate 60% of the country's electricity. These activities are being executed by the Excecutive Hydroelectric Commission of the Rio Lempa (CEL).

Radiation protection services are now being offered for 200 radiation workers, but this activity will continue to require some support, both for upgrading and expansion.

Apart from these activities, assistance was provided in 1987 in the maintenance of nuclear medicine instruments and in support of nuclear medicine diagnostic services. The support to the Hospital Rosales was given through the Reserve Fund as a response to the damage sustained in an earthquake.

The National University, at which a nuclear techniques laboratory was established in 1985, received further support in 1987 through the installation of X-ray fluorescence equipment for a nuclear science laboratory.

Animal disease and reproduction studies are now receiving attention and a radioimmunoassay hormone determination laboratory at the Agricultural Research Centre of the Ministry of Agriculture was established for this purpose with Agency assistance. It is expected that, in future, work in nuclear applications in the field of agriculture, nuclear medicine diagnosis and geothermics will expand.

GUATEMALA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	3.8	3.5	0.0	1.6	1	0
1984	4.5	4.5	0.0	2.7	8	1
1985	5.2	5.0	0.0	2.5	3	0
1986	6.0	0.0	0.0	4.4	6	14
1987	6.8	6.8	0.0	0.0	6	16

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	91.0	30.0	121.0	3.3	75.2	18.6	0.0	0.0	1.4	95.2
1984	299.0	35.0	334.0	7.5	228.9	0.0	6.4	0.0	2.3	237.6
1985	255.8	5.0	260.8	5.1	182.0	24.6	50.4	0.0	13.8	270.8
1986	156.4	0.0	156.4	2.8	174.8	0.0	0.0	0.0	0.0	174.8
1987	173.1	20.0	193.1	3.3	264.3	20.3	0.3	0.0	0.0	284.9

The programme of technical assistance to Guatemala during the past five years has encompassed the use of isotopes in agriculture, X-ray fluorescence analysis, uranium prospecting, radiopharmaceuticals and, more recently, the use of isotopes in hydrology. Some projects, in particular the establishment of a secondary standards dosimetry laboratory, have been held up owing to a delay in constructing the laboratory block that is to have the necessary biological shielding for radioactive sources at the General Directorate of Nuclear Energy in Guatemala City. However, it is expected that the building will be completed at the latest by August 1988, and these projects will then continue to be implemented.

The project concerned with X-ray fluorescence analysis, initiated in 1983 and completed in 1987, aimed to provide facilities and national capability for using this technique to determine the elemental compositions of geological, archeological and environmental samples. In particular, training at undergraduate level was carried out. The project had useful results in other respects. For instance, it introduced correct control of voltage and environmental working conditions which considerably improved the data accuracy and data processing. The procedures it established are being adopted in other Latin American countries, where similar equipment is being used. Furthermore, the exper-

tise built up has permitted the Agency to seek its help in training fellows from other countries. A new activity connected with the original project is being proposed in 1988 to extend the scope of the work being undertaken.

A project to help Guatemala to prepare and undertake quality control of radiopharmaceuticals has also been completed. The substances produced cover the needs of the country's state hospitals and hence the need to import such products is eliminated. Useful local capability in this field has been built up, and there are plans to export products to ElSalvador, with expectations that such services might be extended to other countries also. Assistance to improve operations and control at the country's medfly rearing facility was concluded with a training course attended by 34 participants.

In addition to projects receiving continuing support under the regular programme, extrabudgetary support was received for the acquisition of a cobalt-60 unit specially designed for making calibrations related to the standardization of radiation doses delivered to tumors in patients undergoing radiotherapy.

Looking into the future, interest in receiving support for nuclear analytical techniques, the use of isotopes in hydrology, and dosimetry will continue, while radiological protection and the establishment of a nuclear medical centre for diagnostic procedures will grow in importance as the activities gain momentum. In addition, a need for a possibly national service to maintain and repair nuclear instruments and related equipment has been identified.

HAITI

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	1.9	0.0	0.0	0.0	0	0
1984	2.3	0.0	0.0	0.0	0	0
1985	2.6	0.0	0.0	0.0	0	0
1986	3.0	0.0	0.0	0.0	0	0
1987	3.4	0.0	0.0	0.0	0	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5
1986	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0
1987	60.8	10.0	70.8	1.2	1.9	0.0	0.0	0.4	0.0	2.3

The programme of technical co-operation with Haiti is of recent origin. It was initiated in 1985 when the Agency became associated with a UNDP-financed project in underground water research and exploration executed by the UN Department of Technical Co-operation for Development. This association still continues, with the IAEA carrying out water sampling for UNTCD.

It was only in the second half of 1987, after a review mission had taken place, that a project approved in 1987 from Agency funds was fully activated. This project is designed to assist in the establishment of an analytical laboratory for isotope hydrology and follows on from related activities initiated in 1986 with Reserve Fund financing aimed at improving the understanding of groundwater dynamics and facilitating the elaboration of a national water resource utilization scheme.

The review mission assessed the conditions of the network of laboratories in all hydrology-related fields to make possible a rational determination of the needs and possibilities for a water resource utilization system. As a follow-up to this mission, immediate action was taken to order the most essential equipment and staff training was recommended as a basis for establishing a hydrogeochemistry laboratory.

In the foreseeable future Agency activities in Haiti will continue to concentrate on the implementation of these on-going hydrology projects.

JAMAICA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	3.8	0.0	0.0	0.8	2	0
1984	4.5	0.0	0.0	1.2	7	0
1985	5.2	0.0	0.0	3.6	3	6
1986	6.0	6.0	0.0	1.5	3	23
1987	6.8	0.0	0.0	5.3	2	19

B. Assistance approved and provided

	Assistance approved from TACF				Total assistance provided from all sources					
Year	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	68.6	0.0	68.6	1.9	92.8	0.0	0.0	0.0	0.0	92.8
1984	78.2	15.0	93.2	2.1	104.5	0.0	0.0	0.0	0.0	104.5
1985	91.4	0.0	91.4	1.8	114.7	6.1	0.0	4.9	0.0	125.7
1986	91.4	0.0	91.4	1.6	66.5	10.2	13.0	0.0	0.0	89.7
1987	64.1	0.0	64.1	1.1	81.3	0.0	35.2	0.0	0.0	116.5

The Agency's programme in Jamaica is carried out at the University of the West Indies in Kingston. During the past few years the assistance was basically directed towards the University's Research Reactor Centre and this activity is still continuing. It is mainly concerned with the development and application of neutron activation analysis methods, the application of X-ray fluorescence analysis and the establishment of a radiation monitoring service. One of the earlier projects, in applied radiochemistry, which was completed in 1987, was instrumental in establishing the radiochemistry laboratory at the University using Agency expertise and equipment provided within the framework of the project. This laboratory has played an important role in introducing nuclear techniques to Jamaican scientists. As a result of the advice provided, various activities relating to the use of radioanalytical techniques in agriculture and geology were initiated at the Research Reactor Centre.

Another project completed in 1987 provided assistance to the Tropical Metabolism Unit of the University. The resulting research delivered pertinent data on the correlation between weight gain in children recovering from malnutrition and insulin binding.

The Research Reactor Centre continues to receive assistance in the form of equipment, training and expert missions. The University has excellent laboratories for carrying out research using the research reactor and associated equipment, and a field evaluation mission undertaken at the beginning of the year recommended that stronger links be developed between the Centre and other academic units of the University and that its services be promoted. It has been pointed out to the authorities involved that the Centre can also play a role in the development of radiation protection.

MEXICO

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	146.3	146.3	0.0	10.6	8	4
1984	198.0	198.0	0.0	15.8	15	42
1985	226.2	107.1	0.0	20.7	15	7
1986	261.0	0.0	0.0	9.5	12	46
1987	299.2	299.2	0.0	5.4	12	24

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	325.0	0.0	325.0	8.8	172.8	6.3	16.9	0.0	15.9	211.9
1984	322.4	8.0	330.4	7.5	361.8	19.6	124.0	0.0	191.9	697.3
1985	396.5	0.0	396.5	7.8	310.7	2.8	108.5	0.0	172.2	594.2
1986	418.6	0.0	418.6	7.5	528.9	0.0	136.9	0.0	57.7	723.5
1987	462.1	0.0	462.1	7.8	483.8	0.0	45.6	0.0	74.9	604.3

The Agency has a broad-based programme of technical co-operation with Mexico. Over the period since 1983, the main thrust has been related to the construction of the Laguna Verde Nuclear Power Plant and has involved aspects such as quality assurance, safety analyses, commissioning procedures and many others. An on-going programme receiving extrabudgetary support is focused on training in the use of fuel management system codes. This will enable the national power plant utility to become independent of external sources for reloads. The training also involves control of fuel inventory and all aspects of operational procedures. Another on-going training activity is aimed at the fabrication of fuel elements for the Laguna Verde power plant.

A project that was completed in 1987 was concerned with on-site storage of radioactive waste, essential for power plant operation. The sub-contractor completed a study entitled "Radwaste On-site Storage Facility" that is being used as the basis for the design and construction of such a unit.

Particular attention was focused on the setting up by the government of an independent regulatory body, the national Commission of Nuclear Safety and Safeguards, which is concerned with review of safety analyses and inspection of nuclear facilities in the country. The officials involved have been given extensive training, use has been made of fellowships to study and gain practical experience of matters relating to inspection and commissioning of BWR reactors, while experts have been assigned to provide initial support for tasks in specific areas of the Commission's work, for example radiation protection, probabilistic risk assessment. One related project that was completed involved compilation of the fuel safety report for the nuclear power plant.

Another area where the expertise being gained will prove of value to the country is in reliability analysis, a task in which the Commission, the Federal Electricity Commission, the Institute of Electrical Research and the National Institute for Nuclear Research (ININ) are collaborating. While initially, Agency support is for quality certification for nuclear equipment and components, the "know-how", for example relating to earthquake response of components and structures, will provide spin-off for other industrial ventures. Similar collaborative work is being undertaken in ecological modelling, where data on tides, currents and waves are being used to model the fate of hydrothermal and radioactive releases.

In the field of dosimetry, two projects were successfully completed during 1987. A personnel thermoluminescence dosimeter was developed for national manufacture that corresponds to international norms. It is now in use and has obviated the need to import such devices. A secondary standards dosimetry laboratory has been set up, following a delay while awaiting completion of the laboratory building. The calibration chamber with a cobalt-60 therapy-level source is already in operation, while the beta and neutron standardization equipment is being installed. Under a related project, radioactive standards are being produced for use in medical, environmental and industrial applications.

With a view to improving the country's knowledge of its groundwater systems, a carbon-14 laboratory is being set up as part of a new project. Application of isotope dating techniques will make it possible to develop models that will enable the national water authority to improve management of the country's water resources. This work complements related work on management of the water resources of Lake Chapala, being undertaken using isotope tracing techniques.

In the area of agriculture, radioisotopes and nuclear methods are being used in plant mutation breeding and in the studies of ruminant reproduction. In this connection, while the Agency is supplying radioimmunoassay kits, for example to the Autonomous National University of Mexico, it is hoped that work being done under a project concerned with radiopharmaceutical production will also lead to production of such kits locally. This would solve the difficulties experienced with assuring prompt delivery of kits, which have a limited useful life.

It is to be noted that problems were encountered in implementing some of the projects owing to delays in acquiring equipment or in completing the laboratory buildings to house the same. Delays in other areas relate to the revised date of start-up for the Laguna Verde Nuclear Power Plant.

The general pattern of activities is expected to continue in the near future, with some increasing involvement in production of isotopes for medical purposes. A new core configuration for the ININ research reactor is now being studied; this is expected to extend its life and improve its use in support of activities such as neutron activation analysis, nuclear chemistry and general industrial applications of radioisotopes. The main emphasis will, however, continue to be on safety analyses and safety measures relating to the start-up and operation of the nuclear power plant, and radiation protection in all fields in which ionizing radiations are used.

NICARAGUA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	1.9	0.0	0.0	0.0	0	12
1984	2.3	0.0	0.0	0.0	0	12
1985	2.6	0.0	0.0	0.0	0	0
1986	3.0	0.0	0.0	0.0	0	0
1987	3.4	0.0	0.0	0.0	0	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	34.8	40.0	74.8	1.7	13.2	0.0	0.0	0.0	0.0	13.2
1985	83.4	40.0	123.4	2.4	34.8	57.5	0.0	0.0	0.0	92.3
1986	56.4	0.0	56.4	1.0	50.4	0.0	0.0	0.0	0.0	50.4
1987	155.1	100.0	255.1	4.3	94.7	19.8	0.0	0.0	0.0	114.5

Technical co-operation activities in Nicaragua have focused primarily on the study of the water cycle and on nuclear medicine relating to oncology. The on-going programme in 1987 clearly reflected this emphasis.

Valuable data on hydrodynamics have been obtained through past activities which are contributing to a better knowledge and management of water resources and which form a basis for further activities in this field. During 1987, a model was developed for determining the water balance and the water demand of selected crops in different environments. The studies of the hydrodynamic characteristics of Asososca Lake yielded results which permit increased use of this resource of drinking water for the city of Managua, while better knowledge has been obtained of water resources in the Sebaco Valley. A new project on the use of isotopic hydrology in mining is to determine the origin of hot water flooding one of the country's most productive gold mines.

In the field of nuclear medicine a delay has occurred in the establishment of the infrastructure required to house an intracavitary irradiator. However, project-related fellowship training is proceeding.

A new three-year project in uranium exploration was approved in 1987 aimed at obtaining a mineral inventory of the country through its participation in a regional geochemical survey.

The creation of a central government authority in charge of nuclear affairs would in many ways facilitate the expansion of the use of nuclear techniques in the country and, hence, the IAEA's role in this development.

PANAMA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	3.8	3.8	0.0	0.0	0	0
1984	4.5	4.5	0.0	0.0	1	0
1985	5.2	5.2	0.0	0.0	1	0
1986	6.0	5.2	0.0	0.0	1	0
1987	6.8	0.0	0.0	1.2	1	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	340.2	56.0	396.2	10.7	136.7	43.7	0.0	0.0	0.0	180.4
1984	66.4	0.0	66.4	1.5	227.8	5.4	10.6	0.0	1.5	245.3
1985	103.5	0.0	103.5	2.0	74.9	0.0	78.1	0.0	0.0	153.0
1986	232.3	0.0	232.3	4.1	144.1	0.0	18.1	0.0	0.0	162.2
1987	266.9	0.0	266.9	4.5	356.4	0.0	26.9	0.0	0.0	383.3

In the period 1983-1987, the Agency's programme of technical co-operation with Panama was directed towards agriculture, nuclear medicine, quality control of radiopharmaceuticals and analytical techniques in radiochemistry. The major funding commitment was for nuclear medicine. Considerable inputs were also provided for studies relating to agriculture.

Co-operative activities in the medical field have been concentrated on helping to build up a nuclear medicine department at Santo Tomas Hospital, for which a gamma-camera was purchased. It has been housed in temporary accomodation until the room to be adapted with local funds is made ready.

The project dealing with quality control of radiopharmaceuticals was completed in 1987 and significant national capability in this area as well as in the production of such substances has been built up.

In the field of agriculture, assistance has been on-going since 1981, largely with extrabudgetary support, to assist in the development of improved varieties of bananas, plantains and sugar cane capable of resisting fungal attack. Some delays have occurred in the installation of certain items of equipment, which awaits completion of the required facilities. A new agricultural activity relating to basic human needs aims at increasing milk and meat production. Radioimmunoassay procedures are being applied in studies of reproduction efficiency of cattle.

Although modest in size, a new project, initiated in 1987, can have important results for the country. It provides expert services to advise the Panamanian authorities about setting up radiation protection regulations and about the establishment of a co-ordinated national programme in this area, in addition to assisting with the introduction of quality control for film dosimetry. This programme is expected to catalyse an expansion of radiological monitoring in the country, including the possible creation of a national body responsible for surveillance of occupationally exposed persons.

The trends for the future suggest a steady reduction in support for nuclear medicine as the department gains experience, a continuing emphasis on improvements in agriculture, and a growing effort in the area of national activities to assure radiation safety.

PARAGUAY

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	1.9	0.0	0.0	0.0	0	0
1984	2.3	0.0	0.0	0.0	1	0
1985	2.6	0.0	0.0	4.8	3	0
1986	3.0	0.0	0.0	0.0	4	10
1987	6.8	0.0	0.0	2.0	5	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	161.2	0.0	161.2	4.4	201.9	57.5	0.0	0.0	27.9	287.3
1984	154.6	20.0	174.6	3.9	174.7	0.0	0.0	0.0	0.0	174.7
1985	174.1	30.0	204.1	4.0	143.4	0.0	0.0	0.0	0.7	144.1
1986	212.2	10.0	222.2	4.0	179.1	25.9	0.0	0.0	6.8	211.8
1987	160.3	0.0	160.3	2.7	175.0	0.0	0.0	0.0	0.0	175.0

Nearly half of the disbursements made for technical assistance to Paraguay during the past five years were for activities related to nuclear physics, while a further 40% was expended for applications of isotopes and radiation in medicine.

As a result of the activities in nuclear physics, a fairly well equipped laboratory is now available. An intensive programme of training and fellowships is resulting in a steady increase in the standard of knowledge and experience of technical and professional staff. Nevertheless, a major disappointment has been that a used Van de Graaff accelerator for the reconditioning, transport and installation of which funds had been made available, turned out to be unobtainable. As Paraguay had made a major effort in the construction of the building to house the accelerator, it is hoped that donors will be found to finance the necessary equipment which is now included in the programme as a footnote-a/ project.

In the field of nuclear medicine, significant progress has been achieved in improving the level of technical and professional staff working in the Agency-equipped nuclear medicine laboratory. The Institute for Research and Health Sciences of the University of Asuncion was recently equipped with a computer system with accessories to make an existing gamma camera more efficient.

In the on-going programme, new emphasis has been placed on radiation protection, and a concerted effort is being made to establish efficient and safe use of radioisotope techniques and radiation sources, particularly in the medical field.

PERU

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	11.4	11.4	0.0	0.0	7	2
1984	15.8	0.0	0.0	4.4	26	41
1985	18.2	0.0	0.0	9.2	15	18
1986	21.0	0.0	0.0	6.8	19	14
1987	23.8	0.0	0.0	2.0	12	27

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	308.2	33.0	341.2	9.2	240.6	25.9	220.2	576.4	53.7	1116.8
1984	290.8	200.0	490.8	11.1	346.5	13.6	788.1	559.1	43.1	1750.4
1985	257.0	228.0	485.0	9.5	249.3	6.5	596.9	157.3	110.7	1120.7
1986	318.0	200.0	518.0	9.2	277.9	6.1	385.2	33.1	72.5	784.8
1987	328.9	45.0	373.9	6.3	290.9	19.8	141.7	75.5	27.7	555.6

The evaluation of technical co-operation activities in Peru which was undertaken in 1987 pointed to the major role played by the Agency in introducing nuclear applications to the country. As a result of the assistance provided by the Agency, the Peruvian Institute of Nuclear Energy and other counterpart institutions, particularly those involved in agriculture and mining, but also those dealing with nuclear medicine, have acquired major equipment items for a wide application of nuclear techniques.

While there were 31 projects under implementation in Peru during 1987, five major areas of activity characterize the on-going programme: general atomic energy development, agriculture, medicine, hydrology and exploration for nuclear raw materials.

In the field of general atomic energy development, several projects related to the large-scale UNDP-funded project in nuclear energy were completed during the year. The completed activities, which centered on courses in nuclear science and radiochemistry training given by outside experts, have ensured that sufficient well-qualified staff are now available at the Peruvian Institute of Nuclear Energy (IPEN) to serve as trainers and lecturers in future courses, as well as for operation of IPEN's research reactor. Extrabudgetary contributions assisted in the establishment of a centralized computational system.

Activities in the field of agriculture are directed to the strengthening of local capability in relevant applications of isotopes, in particular in mutation breeding. Problems were encountered in implementing the multidisciplinary project "Nuclear techniques in agriculture" which, at the request of the Peruvian authorities, was suspended for a time. Difficulties in reprogramming project inputs are being overcome.

On the other hand, a review of the medfly control project in April 1987 led to a resumption of activities in southern Peru, with UNDP financing. A Chief Technical Adviser arrived in July and has been instrumental in securing the support of the local authorities and farmers.

Applications of radioisotopes in industry and hydrology are geared to the problems affecting the country's economy. In hydrology, efforts are concentrated on the study of underground water resources in the Tacna Department which will serve as a pilot project for other regions of the country. The Agency is also participating in the establishment of a multi-purpose industrial irradiator to be used in food preservation and production of disposable medical products. Lastly, the Peruvian Nuclear Energy Institute was supplied with drilling equipment to be used in its programme of uranium exploration.

In medicine, a pilot nuclear medicine centre has been established at IPEN. Efforts are also being made to set up two additional centres at Arequipa and Trujillo

An important review of future Agency technical co-operation in connection with the commissioning and operation of the Peruvian National Research Centre was accomplished by a team mission in July. As a result, a national regulatory body was formed and specific needs of the Centre were identified.

Based on this review, and on the recommendations of the country evaluation, it is expected that co-operation in future will focus on the operation of the research reactor, the establishment of a licensing authority and on improving the utilization and management of the equipment that has already been provided.

URUGUAY

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	7.6	0.0	0.0	0.0	3	24
1984	9.0	0.0	0.0	1.5	11	19
1985	10.4	0.0	0.0	2.4	5	11
1986	12.0	0.0	0.0	8.2	8	8
1987	13.6	0.0	0.0	12.8	9	12

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	150.4	0.0	150.4	4.1	178.4	3.4	63.9	0.0	5.6	251.3
1984	297.6	0.0	297.6	6.7	274.0	0.0	88.4	16.5	9.2	388.1
1985	205.1	37.0	242.1	4.7	195.0	0.8	28.5	3.0	15.6	242.9
1986	193.0	0.0	193.0	3.4	207.8	4.5	68.9	0.0	11.0	292.2
1987	190.9	0.0	190.9	3.2	288.2	9.3	50.8	0.0	18.8	367.1

During the past five years, the Agency's technical co-operation activities in Uruguay have primarily been concerned with nuclear techniques in agriculture and nuclear medicine, and with some preparatory activities linked to the establishment of a national nuclear technology centre.

In agriculture, work is being done on nitrogen uptake and fertilizer use efficiency on a variety of crops. In the case of studies to improve winter wheat yields, the data collected indicated the need to concentrate on the nitrogen balance problem. Useful research results are being obtained with would merit publication. In the area of animal parasitology, progress has been satisfactory, and further work on the pathogenic significance of helminths is being recommended, with concentration on epidemiology and pathophysiology. In connection with this on-going series of projects, more emphasis is to be placed on animal nutrition, in particular using radioimmunoassay procedures to study progesterone levels. The new laboratories being built on a farm near Montivideo by the veterinary faculty are expected to improve the facilities available for making in-vivo studies, as well as for measurements in milk using radioiodine as label. A new project approved in 1987 seeks to determine the photosynthetic characteristics of various grapevines used in wine production, a topic on which little information is available.

In terms of implementation, an important advance was achieved in co-ordinating efforts with respect to soil and fertilizer studies and by identifying areas for collaboration between the Ministry of Agriculture and Livestock Breeding, the National University and the Labour University.

Work in nuclear medicine has concentrated on cardiovascular and brain studies using radionuclides, in particular technetium-99m, on diagnostics and on studies to improve shelf-life and quality control of radiopharmaceuticals. Some consideration has been given to using the well-equipped Nuclear Medicine Centre as an educational resource for Spanish-speaking physicians in Latin America; the teaching programme of the Centre has been supported as part of the Agency's technical co-operation with Uruguay.

During the period 1985-1987, the gamma source at the Gamma Irradiation Facility was replenished with Agency assistance. This facility operates 24 hours a day and provides support for a number of research studies, for example being used for sterilizing soil samples in connection with nitrogen fixation experiments, and for work in the fields of radiochemistry and food preservation.

While it is expected that the general pattern of activities will remain the same, the tendency to consolidate related programmes and to encourage co-operation between various bodies in the country will be continued. It is likely that additional emphasis will be given to radiation protection and to management of water resources. Work on mutation breeding directed towards improved wheat production will continue. The details of future technical co-operation are to be worked out in the course of a programming mission to Uruguay.

VENEZUELA

A. Contributions to and participation in technical co-operation activities

Year	TACF share	TACF pledged	Extra-budgetary funds	In-kind support	Experts from country	Persons trained in country
1983	96.9	0.0	0.0	1.6	7	0
1984	123.8	40.0	0.0	2.0	7	1
1985	140.4	40.0	0.0	6.6	4	45
1986	162.0	40.0	0.0	7.5	10	26
1987	200.6	0.0	0.0	1.7	11	0

B. Assistance approved and provided

Year	Assistance approved from TACF				Total assistance provided from all sources					
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	253.2	18.0	271.2	7.3	255.8	0.0	0.0	0.0	0.0	255.8
1984	250.0	10.0	260.0	5.9	232.5	21.8	0.0	0.0	0.0	254.3
1985	262.5	0.0	262.5	5.1	250.0	0.0	0.0	4.5	0.0	254.5
1986	376.4	0.0	376.4	6.7	334.2	2.5	0.0	0.0	0.0	336.7
1987	262.0	40.0	302.0	5.1	164.2	0.0	31.9	0.0	0.0	196.1

In recent years, a large part of the programme was dedicated to the field of agriculture, in particular soil science, plant breeding, animal production and food preservation. Excellent results were obtained at the scientific level in the area of plant mutation in sorghum and sesame crops. In 1984, the Government requested assistance for the establishment and development of a nuclear research centre in the field of agriculture. This project is being implemented in co-operation with several universities and national organizations to establish and co-ordinate a development programme aimed at promoting the use of isotope-aided methods to improve agricultural production. In 1985, a multi-disciplinary group of experts offered a national course on topics such as soil/water/plant relationships, animal health and reproduction, food preservation, the use of agrochemicals, and tissue culture as applied to plant mutation breeding. The experts assisted local staff in the elaboration of a long-term develoment plan, which also resulted in a draft document for a three-year project that was submitted to UNDP for support; it was approved in 1987 as a complement to the IAEA project. The counterpart of the project is an institution of the Ministry of Agriculture, which sets guidelines for the planning and development of this area in the entire country.

In addition to agriculture, assistance has been provided in a wide variety of fields, namely nuclear engineering and technology, nuclear physics and applications in industry and hydrology, as well as safety standards and radiation protection. Nationals were trained in all areas involved.

A secondary standards dosimetry laboratory has been established and is functioning. The equipment provided by the Agency has contributed to the improvement of the personnel monitoring system and a national register of radiation sources has been established by the Ministry of Energy and Mines.

Following the recommendations of a Radiation Protection Advisory Team mission in 1986, two projects were established, one dealing with radiation protection regulations and the other with research reactor safety.

Assistance was provided to improve an existing Moessbauer spectrometer, which can now be used to study corrosion processes relating to the country's oil pipelines. The results of these studies are being used by the oil industry, and research and training are continuing at the upgraded laboratory.

During 1987, the Goverment was provided with advisory services to help with a detailed analysis of the actual situation in the country in the nuclear field and the preparation of a work plan for the future development of nuclear energy in Venezuela. As in some other countries, delays were experienced in the construction of a laboratory building intended to house Agency-supplied equipment as well as in customs clearance of equipment.

REGIONAL ACTIVITIES IN LATIN AMERICA

Assistance approved and provided

Year	Assistance approved from TACF						Total assistance provided from all sources			
	CC $	NCC $	Total $	Region %	TACF CC	TACF NCC	Extra-budgetary	UNDP	In kind	Total $
1983	288.2	0.0	288.2	7.8	164.8	0.0	0.0	0.0	16.3	181.1
1984	488.0	0.0	488.0	11.0	338.4	0.0	0.0	91.1	69.4	498.9
1985	551.0	0.0	551.0	10.8	698.8	0.0	0.0	302.3	628.7	1629.8
1986	735.0	0.0	735.0	13.1	853.1	0.0	39.9	662.5	193.8	1749.3
1987	837.8	0.0	837.8	14.1	960.7	0.1	337.0	367.1	222.8	1887.7

Regional Co-operative Arrangements for the Development of Nuclear Science and Technology In Latin America (ARCAL)

The first definitive action towards the development of a regional programme in Latin America was initiated by five countries of the Andean sub-region. In 1983, they requested the IAEA to assist them in co-ordinating their efforts to promote nuclear techniques in a number of fields, and the parent project, RLA/0/006, was approved in the same year. Following various contacts between these countries and others in the Latin America region, the first technical planning meeting was held in September 1984, and the programme for ARCAL was defined taking into account regional priorities. Thereafter the various activities initiated under the parent project led to a series of separately identified ARCAL sub-projects.

They comprise: nuclear information; radiation protection, nuclear instrumentation maintenance, repair and use; improving the reproductive efficiency of livestock using radioimmunoassay techniques; improving cereal yields and environmental adaptability through mutation breeding; food preservation by irradiation; and increasing the reliability of radioimmunoassay techniques in connection with thyroid-related hormones. There were also projects dealing with research reactor utilization and improving nuclear analytical technique reliability. Annual planning and co-ordination meetings have been held since formulation of the overall programme, with the fifth to be held in May 1988. As at the end of 1987, thirteen Member States were participating in ARCAL.

One project that members of ARCAL consider should be part of this co-ordinated programme, that dealing with the use of isotope-aided techniques to determine soil/plant/water/fertilizer relationships, is still awaiting donors.

Since inception of the programme, there have been 1236 regional activities, including 51 training courses at which nationals from the participating countries were given specialized training in their fields of work. Furthermore, 72 fellowships or scientific visits were awarded.

A particular feature of many of these projects is that they are closely allied with the IAEA research contract programme. Indeed, a co-ordinated research programme on the application of isotope and geochemical techniques in geothermal resource exploration for the Latin America region is considered as part of the ARCAL programme without its being formally a technical co-operation project.

Funding for these projects comes from IAEA's regular technical co-operation budget and from Member States, both within and outside the region, who provide targeted extra-budgetary funds and donations-in-kind.

As part of the co-operative activities, the Agency issues an ARCAL information bulletin which is disseminated to collaborating and interested parties. The national co-ordinators and project co-ordinators are being encouraged to supply information for inclusion in the bulletin, in particular feedback about progamme achievements. In this context, it has been noted that national involvement in these projects is catalysing technical co-operation between various institutions within individual ARCAL member countries as well as between institutions in different countries. Furthermore, countries having national activities that bear some relation to those of ARCAL have encouraged non-local participation by passing the requisite information to ARCAL co-ordinators in other countries.

Seen overall, an important feature of the programme is ensuring that maximum use is made of existing national and regional facilities, equipment and experts, especially for training at the technician level in the language of the region. For example, working at different technical levels, the programme has had a strong influence in promoting the upgrading of laboratories undertaking maintenance and repair of equipment, including support for local design and construction of nuclear instruments. Furthermore, through studying common problems in the Region, a cadre of local experts has been gradually established who are now replacing outside experts.

Through improvement in programme management in order to be able to provide the best administrative, scientific and technical guidance and support to countries participating in the ARCAL programme, and by encouraging inter-country activities, the Agency is developing a model approach to furthering effective technical co-operation among developing countries.

Non-Destructive Testing in Latin America

Non-destructive testing, while initially a particular concern of the nuclear industry, using nuclear as well as other methods for making tests, has now important applications in many branches of engineering. However, major problems are uniform interpretation of results and harmonization of national codes of practice and specifications at an international level, since safety considerations are an important aspect of and reason for such work. Clearly, in countries where such testing is just entering into use, there is a great need for training programmes to ensure appropriate competency and knowledge.

Following successful completion of a UNDP financed UNIDO/IAEA executed national project in Argentina many countries in the Latin America region were showing interest in developing national capability in non-destructive testing. It appeared meaningful to tackle the training aspects at a regional level.

A major regional project was approved in 1982, which became an excellent example of close co-operation with international organizations and bilateral donors. IAEA resources were provided from the TACF. In 1984, a related project concerned with setting up a network of non-destructive testing institutions, the application of testing procedures, standards and techniques, training and the issue of licences and certificates of competency was approved, this being funded by UNFSSTD. Extrabudgetary contributions and in-kind assistance was received from Canada, the Federal Republic of Germany and Italy.

Two long-term experts, the Project Manager and his Deputy, are responsible for the planning, co-ordination and implementation of activities in the region in close co-operation with National Co-ordinators of the 17 participating countries, supported by co-ordination meetings held at suitable intervals. The Argentine Government, through the National Atomic Energy Commission, generously provides infrastructural support for the Project Co-ordination Office. Local administrative staff are paid out of the expert component of the project.

With a view to harmonization, the standards for training and certification of personnel follow the International Organization for Standardization's draft document ISO-9712. There is close co-operation between the project and ISO, and the Project Manager as representative of IAEA, and his Deputy as Chairman, participated in the meeting of the ISO Technical Committee (TC135/SC7) in December 1987.

The Project Co-ordination Office has benefited, through UNIDO, from the services of three Associate Experts, specialists in computer systems. The project's management system is continuously being up-dated and, because of its

adaptability to the UN system, has attracted interest from a number of UN bodies. As a means of facilitating communications within the project and to anticipate the growing need for access to data banks, a pilot project of computer communication was developed and successfully tested between several project countries and the Project Co-ordination Office.

Under the auspices of these two projects, there have been some 220 training courses since 1983. Most of the needs for expertise, mainly in the form of lecturers for the regional and national level, are covered with experts from the region, though some of the regional courses at the advanced level have used international experts as lecturers. Some training was also provided by means of fellowships and scientific visits. The activities provide both a practical demonstration of technical co-operation among developing countries and international co-operation using extrabudgetary and in-kind donations.

A principle adopted when the projects were first planned was to commence training at the lowest level, and courses have now been conducted at Levels I to III. Most of the participating countries have, in general, reached self-sufficiency in training up to Level II in the five basic techniques, although four countries still need assistance from the Region at this level. This does not preclude the provision of assistance at any level in specific methods where local experience may be weak. This development has been most satisfactory and demonstrates that the decision to train from the bottom upwards has brought the desired results. Courses intended for training the trainers were commenced in 1986.

In 1987, a total of 25 national courses and 8 national seminars were conducted in 16 countries using experts supplied by the project, with twenty-nine of the 33 experts coming from within the Region. An estimated 495 persons attended. Further, five regional events (3 courses, 2 seminars) were held during the year. They were sponsored by two European countries with experts drawn from these countries. A total of 85 persons participated in these activities. Overall, almost 2200 persons can be accounted for as having particpated in project-related events during 1987, which means that more than 16 000 persons have benefited from project activities since April 1983.

The period since the last meeting of National Co-ordinators in Sao Paulo in September 1986 has been one of consolidation, as foreseen by that meeting.

In 1986, the IAEA commissioned an evaluation of the project from its inception. The findings were extremely positive, and provided an independent assessment of the project's achievements. This has confirmed that the decisions taken by the National Coordinators and the Project Managers at their various meetings have guided the evolution of the project through its various stages of development to a point where all concerned can share a profound satisfaction with what has been accomplished. Continuing progress through 1990 seems assured, since recently a considerable measure of the necessary funding has been secured through an extrabudgetary contribution.

Other regional projects

Of the regional projects not included in ARCAL and the non-destructive testing series of projects discussed above, the greater part comprised regional training courses in specialized fields in which several Member States had indicated training needs.

One long-term project that was first approved in 1980 and for which funding has continued through 1987 fulfils a rather specialized but important service, namely quality control of in-vivo procedures used in nuclear medicine. This project has been implemented in collaboration with WHO and ALASBIMN (Asociacion Latinoamericana de Sociedas de Biologia y Medicina Nuclear) and has assisted countries in setting up national quality control programmes with a view to standardizing and upgrading medical diagnostic procedures that make use of ionizing radiations. As a linked effort, the project has involved a series of seven Agency co-operative research contracts. Eleven countries were involved in the project as a whole, of which nine held national workshops that were developed from the regional seminar held in 1981 and the technical document produced by the Agency that serves as the basic training and operational manual. The principal stress has been placed on ensuring that instrumentation used in nuclear medicine is operated under proper environmental conditions, so that the data obtained are reliable, reproducible and conform to internationally acceptable norms. To this end test sources and phantoms were supplied through the Agency to help users implement routine procedures to test and validate nuclear instruments. Three countries have now set up national courses on this topic and it is very satisfactory to note that the courses are similar to the extent of

interchangeability. The funding for the project itself has come from the Agency's Technical Assistance and Co-operation Fund and is modest in comparision to the impetus it has given to standardizing nuclear diagnostic procedures in Latin America.

IV. Explanatory Notes to Statistical Figures, Tables and Annexes

Figure 1A. Resources available for Agency technical co-operation programmes: 1981-1987

This figure shows all resources made available to the Agency for technical co-operation activities from all funds for the programme years 1981-87. Amounts given for UNDP resources correspond to total claims against UNDP resources for projects implemented during each calendar year. These amounts are also used in the Agency's Accounts, reflecting UNDP's requirement to report expenditures as the sum of cash disbursements plus unliquidated obligations. UNDP funds for 1981-87 include resources made available by the UNDP-administered United Nations Financing System for Science and Technology for Development and, starting in 1984, those for projects for which the IAEA acts as associated agency. Amounts shown as extrabudgetary funds refer to resources made available for activities planned for execution in the year shown. Adjustments to prior-year amounts can therefore take place in this category when planned activities are cancelled. It should be noted that the amounts shown in Figure 1A do not include resources made available for future years.

Figure 1B. Disbursements by field of activity: 1987

This figure shows, by component and by major field of activity, the distribution of all assistance provided in 1987, irrespective of the source of funds.

Figure 1C. Disbursements by programme component: 1978-1987

The total assistance provided during the period 1978-1987 is broken down by year and type of input (training, experts and equipment), irrespective of the source of funds.

Figure 2A. Technical co-operation personnel services by field if activity: 1987

This figure shows the number of assignments carried out by training course lecturers, experts and other project personnel in each of the Agency's ten major fields of activity.

Figure 2B. Technical co-operation personnel services by region: 1987

A graphic presentation is given of (i) the origin of technical co-operation field personnel (ii) their destination and (iii) the time spent in the field, grouped by geographic region.

Figure 3A. Distribution of equipment disbursements by field of activity: 1987

This figure shows the total amount of equipment provided in the ten major fields of activity.

Figure 3B. Distribution of equipment disbursements by region: 1987

Total disbursements for equipment, grouped by origin and recipient regions, are shown in this figure; individual recipient countries are shown in Table 7. The list at the bottom of the page excludes countries in which the total purchase volume was less than $30,000.

Figure 4A. Distribution of trainees by field of activity: 1987

The number of training course participants and fellowship holders are shown in this figure, together with the total man-months of training provided in each of the Agency's major fields of activity.

Figure 4B. Summary data on training programmes: 1987

This graphic presentation shows where trainees studied, where they came from and how much training was received by their home regions. Information on the training provided to nationals of individual recipient countries is given in Table 6B.

Figure 5A. Distribution of disbursements by type and field of activity

In this figure, percentages (obtained by averaging over the past five years) are shown for equipment, expert services and training in the ten major fields of activity.

Figure 5B. Technical Assistance and Co-operation Fund disbursements by type of currency and region: 1987

This figure, which refers only to the Technical Assistance and Co-operation Fund, gives total disbursements for 1987 broken down by region and for convertible and non-convertible currencies.

Figure 5C. Distribution of technical co-operation disbursements by field and region: 1987

The pie charts indicate the relative shares of each field per region, while the table below the figure gives actual amounts.

Figure 5D. Distribution of technical co-operation disbursements by source and region: 1987

In this graphic presentation, disbursements from the Technical Assistance and Co-operation Fund, extrabudgetary funds, assistance in kind and from UNDP funds are shown for each region, as are total disbursements from all funds by region. Miscellaneous costs have been included in the interregional amounts in this figure.

Figure 6. Utilization of the Technical Assistance and Co-operation Fund

The bar chart shows, over a ten-year period, the total resources available to the Technical Assistance and Co-operation Fund year by year - each year including the unobligated and unused balance of prior years - as well as the disbursements and obligations incurred against these resources as at 31December of each year. Obligations incurred against future years for approved multi-year projects are shown separately, reflecting the status at the end of 1987. The graph below it shows, in per cent, the unobligated balance, unliquidated obligations and disbursements for the same ten-year period.

Table 1. Available resources: 1978-1987

This table is directly related to Figure 1A, but shows resources over a ten-year period. The Technical Assistance and Co-operation Fund is broken down by its various components; other resources (extrabudgetary funds, assistance in kind and UNDP) are shown separately, together with their sub-totals.

Table 2. Technical Assistance and Co-operation Fund: 1978-1987

The ten-year development of the target, of the amounts pledged and of the funds actually made available are shown (see Annex IV for contributions made by Member States to the Technical Assistance and Co-operation Fund for 1987). It should be noted that, in this table, voluntary contributions are shown not by the year in which they became available but for the programme year for which they are pledged. The graphic presentation below it shows, for a ten-year period, the percentages of the target actually pledged. It also shows total income as a percentage of the target. Total income comprises the pledges, the assessed programme costs received, interest income and gains/losses on exchange.

Table 3A. Project personnel by place of origin: 1987

This table shows the number of individuals, both international and national, who undertook technical co-operation assignments during 1987. Information on the number of assignments is also provided. It should be noted that IAEA staff, as well as staff of other international organizations, are grouped at the end under their respective headings and are not listed by nationality.

Table 3B. Trainees in the field by place of study: 1987

A breakdown is given for trainees (fellows, training course participants and visiting scientists) based on the place of study.

Table 4. Distribution of technical co-operation disbursements by type: 1983-1987

This financial table shows technical assistance disbursements from all funds during the last five years, broken down by programme component. It is the only table that shows (in column 10) the balance for assistance in kind. This balance represents the estimated value of man-months of training beyond the end of 1987 for fellows who had already started their studies in 1987. "Miscellaneous" refers to disbursements in all components for telex charges, health insurance, copying fees and for other minor items or services.

Table 5. Extrabudgetary funds for technical co-operation activities by donor as at 31 December 1987

This table shows the status of all extrabudgetary funds, including the monies received, their utilization and the balance remaining for further implementation for each donor fund.

Table 6A. Technical co-operation personnel services: 1987

A list is given of recipient countries showing the number of assignments undertaken and man-months provided to each country. Persons not serving on country projects are shown under intercountry projects and training courses.

Table 6B. Recipients of training abroad: 1987

The list shows, by recipient country, the number of trainees and the total man-months of training received in 1987.

Table 7. Financial summary: 1987

This major table shows, by type of assistance and by source, the total technical assistance furnished to each recipient country as well as to intercountry projects and training courses.

Table 8. Financial summary: 1958-1987

A summary is given of all assistance provided since the beginning of the Agency's technical co-operation activities, in 1958.

Table 9. Women's participation in Technical Co-operation activities

This table shows the involvement of women in the Agency's technical co-operation programme by human resource category. Numbers and percentages are given for 1981, 1986 and 1987.

Annex I. Disbursement of extrabudgetary and in-kind contributions

Related to Table 5, this Annex shows, by donor and by type, the technical assistance disbursements made during 1987 utilizing extrabudgetary resources and, separately, contributions in kind. In many cases, the Agency must depend on donor countries for information about the value of in-kind inputs that have been provided.

Annex II. Training courses: 1987

All courses organized by the Agency in 1987 are listed together with the numbers of participants and the amounts obligated. This is the only table in which local participants and participants not financed from training course resources are shown. Purely national courses are not included in this summary.

Annex III. Published reports: 1987

Technical co-operation project reports published in 1987 are listed by country, with an indication of their distribution status.

Annex IV. Voluntary contributions pledged and paid to the Technical Assistance and Co-operation Fund for 1987

Data on voluntary contributions by Member States to the Technical Assistance and Co-operation Fund are given in this table. Figures reflect the status as at 31 December 1987.

Annex V. Cost-free fellowships offered and awarded: 1987

Information is made available in this table on the number of cost-free fellowships offered by Member States and the number of awards.

Annex VI. Approved and on-going UNDP projects

This table includes two projects being implemented for the United Nations Financing System for Science and Technology for Development. Those projects for which IAEA acts only as an associated agency are shown separately.

Annex VII. Projects completed or cancelled during 1987

Part A shows projects completed during the year, together with the years of approval and the assistance provided. Part B shows cancelled projects.

Annex VII. Footenote-a/ projects made operational or extended during 1987

These projects are shown with the source of the funds that made upgrading to operational status or extension possible.

Annex IX. Approvals against the Reserve Fund in 1987

Information is provided on Reserve Fund approvals for new and existing projects.

Annex X. Net programme changes by recipient

The Secretariat is obliged to furnish information on changes to approved projects under the provisions of the Revised Guiding Principles. As over five hundred projects were involved, the list only shows the net changes that took place in each country. The amounts given in the existing approval column refer to those projects which were affected by programme changes. Detailed data by project are available on request.

Annex XI. Projects rephased during 1987

As a result of dynamic programming, which was approved as part of the Board's 1983 policy review, it is possible for the Secretariat to reallocate to future years project funds originally intended for use in the current year. This mechanism, known as "rephasing", may be invoked in cases where project requirements differ from those originally foreseen, so as to keep project plans realistic. The funds released as a result of rephasing are used to reduce overprogramming, as additional inputs to other projects and for the upgrading or as an extension of footnote-a/ projects. The Annex shows only net changes per country to projects rephased in 1987.

IMPLEMENTATION SUMMARY I

ALL FUNDS *

Description	Adjusted programme ($)	Net expenditure ($)	Implementation rate (%)	Earmarkings ($)
		A. CURRENT YEAR		
PROJECT FUNDS BY AREA				
Africa	9,364,651	5,530,192	59.1	3,834,459
Asia & Pacific	14,279,397	8,320,078	58.3	5,959,319
Latin America	11,599,399	6,114,159	52.7	5,485,240
Middle East & Europe	9,988,500	5,652,758	56.6	4,335,742
Interregional	5,383,886	3,541,441	65.8	1,842,445
Global	5,487,014	5,207,337	94.9	279,677
Total	**56,102,847**	**34,365,965**	**61.3**	**21,736,882**
TOTAL FUNDS BY COMPONENT				
Experts	14,363,060	7,983,739	55.6	6,379,321
Equipment	28,230,075	16,232,729	57.5	11,997,346
Fellowships	7,816,838	6,499,385	83.1	1,317,453
Training courses	4,472,962	2,926,849	65.4	1,546,113
Sub-contracts	904,315	549,535	60.8	354,780
Direct costs	42,645	384	0.9	42,261
Miscellaneous	272,952	173,344	63.5	99,608
Total	**56,102,847**	**34,365,965**	**61.3**	**21,736,882**
TOTAL FUNDS BY FUND TYPE				
TACF	40,436,825	27,078,352	67.0	13,358,473
UNDP	3,307,300	2,568,677	77.7	738,623
Extrabudgetary	11,901,496	4,467,566	37.5	7,433,930
Funds in trust	457,226	251,370	55.0	205,856
Total	**56,102,847**	**34,365,965**	**61.3**	**21,736,882**
		B. CURRENT AND FUTURE YEARS		
Current	56,102,847	34,365,965	61.3	21,736,882
Future	20,240,847	-910,654	-	21,151,501
Total	**76,343,694**	**33,455,311**	**-**	**42,888,383**

* As at 31 December 1987.

IMPLEMENTATION SUMMARY II

TECHNICAL ASSISTANCE AND CO-OPERATION FUND *

Description	Adjusted programme ($)	Net expenditure ($)	Implementation rate (%)	Earmarkings ($)
		A. CURRENT YEAR		
TACF PROJECTS BY AREA				
Africa	7,072,959	4,767,125	67.4	2,305,834
Asia & Pacific	8,886,890	5,356,672	60.3	3,530,218
Latin America	7,366,903	4,370,720	59.3	2,996,183
Middle East & Europe	6,944,683	4,229,925	60.9	2,714,758
Interregional	4,825,780	3,272,939	67.8	1,552,841
Global	5,339,610	5,080,971	95.2	258,639
Total	**40,436,825**	**27,078,352**	**67.0**	**13,358,473**
TOTAL TACF BY COMPONENT				
Experts	10,154,948	6,257,573	61.6	3,897,375
Equipment	19,255,049	12,211,931	63.4	7,043,118
Fellowships	6,595,086	5,792,674	87.8	802,412
Training courses	3,783,363	2,391,734	63.2	1,391,629
Sub-contracts	407,768	253,824	62.2	153,944
Miscellaneous	240,611	170,616	70.9	69,995
Total	**40,436,825**	**27,078,352**	**67.0**	**13,358,473**
TOTAL TACF BY CURRENCY TYPE				
Convertible	34,146,450	24,413,575	71.5	9,732,875
Non-convertible	6,290,375	2,664,777	42.4	3,625,598
Total	**40,436,825**	**27,078,352**	**67.0**	**13,358,473**
		B. CURRENT AND FUTURE YEARS		
Current	40,436,825	27,078,352	67.0	13,358,473
Future	20,240,847	-910,654	-	21,151,501
Total	**60,677,672**	**26,167,698**	**-**	**34,509,974**

* As at 31 December 1987.

IMPLEMENTATION SUMMARY III

ALL FUNDS BY DEPARTMENT AND DIVISION*

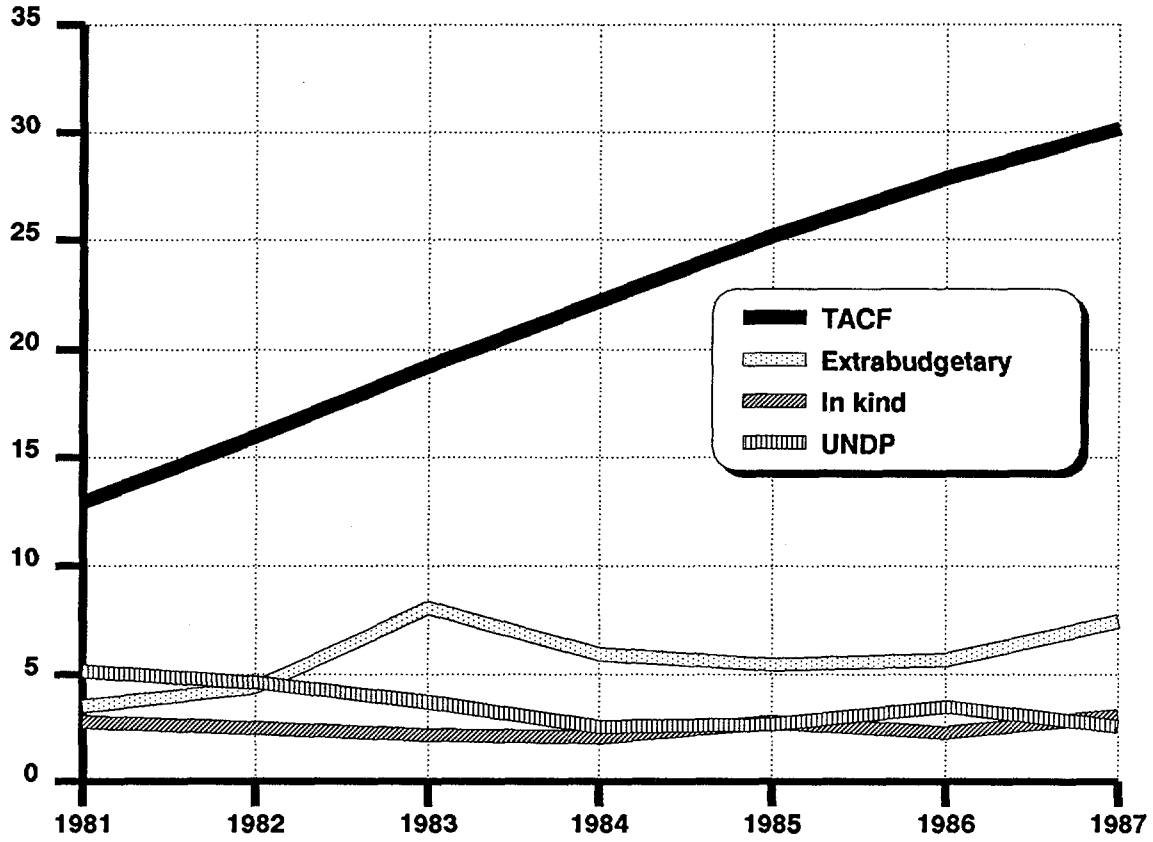
Description	Adjusted programme ($)	Net expenditure ($)	Implementaion rate (%)	Ear-markings ($)
	CURRENT-YEAR PROGRAMME			
Department of Research and Isotopes				
Joint FAO/IAEA Division	11,045,340	5,955,513	53.9	5,089,827
Division of Life Sciences	5,535,403	2,552,433	46.1	2,982,970
Division of Physical & Chemical Sciences	16,756,068	10,124,080	60.4	6,631,988
The Agency's Laboratories	2,481,046	1,761,537	71.0	719,509
Sub-total	**35,817,857**	**20,393,563**	**56.9**	**15,424,294**
Department of Nuclear Energy and Safety				
Division of Nuclear Safety	7,742,213	4,067,461	52.5	3,674,752
Division of Nuclear Power	2,345,140	1,645,529	70.2	699,611
Division of Scientific & Technical Information	320,971	182,555	56.9	138,416
Division of Nuclear Fuel Cycle	3,120,206	1,968,621	63.1	1,151,585
Sub-total	**13,528,530**	**7,864,166**	**58.1**	**5,664,364**
Department of Administration				
Legal Division	22,890	11,767	51.4	11,123
Sub-total	**22,890**	**11,767**	**51.4**	**11,123**
Department of Safeguards				
Division of Information Treatment	235	0	0.0	235
Division of Standardization, Training & Admin. Support	89,890	47,986	53.4	41,904
Sub-total	**90,125**	**47,986**	**53.2**	**42,139**
Department of Technical Co-operation				
Division of Technical Assistance & Co-operation	1,156,433	841,146	72.7	315,287
Sub-total	**1,156,433**	**841,146**	**72.7**	**315,287**
TOTAL	**50,615,835**	**29,158,628**	**57.6**	**21,457,207**
Global				
Not distributed by Department	5,487,012	5,207,337	94.9	279,675
Sub-total	**5,487,012**	**5,207,337**	**94.9**	**279,675**
GRAND TOTAL	**56,102,847**	**34,365,965**	**61.3**	**21,736,882**

* as at 31 December 1987.

FIGURE 1A

RESOURCES AVAILABLE FOR AGENCY TECHNICAL CO-OPERATION PROGRAMMES

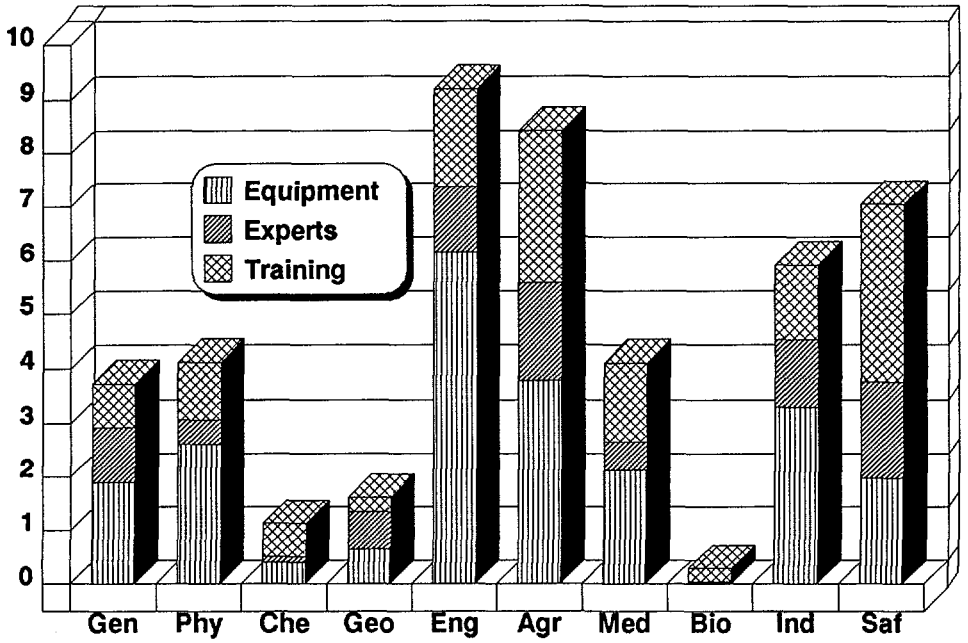
(in millions of dollars)



TACF	12.956	16.003	19.241	22.232	25.197	27.860	30.153
Extra-budgetary funds	3.519	4.413	8.101	5.964	5.484	5.702	5.700
Assistance in kind	2.788	2.493	2.172	2.066	2.765	2.282	3.066
UNDP	5.186	4.631	3.706	2.541	2.654	3.480	2.568
TOTAL	24.449	27.540	33.220	32.803	36.100	39.324	41.487

FIGURE 1B

DISBURSEMENTS BY FIELD OF ACTIVITY: 1987
(in millions of dollars)



Gen	=	General atomic energy development
Phy	=	Nuclear physics
Che	=	Nuclear chemistry
Geo	=	Prospecting, mining and processing of nuclear materials
Eng	=	Nuclear engineering and technology
Agr	=	Application of isotopes and radiation in agriculture
Med	=	Application of isotopes and radiation in medicine
Bio	=	Application of isotopes and radiation in biology
Ind	=	Application of isotopes and radiation in industry and hydrology
Saf	=	Safety in nuclear energy

FIGURE 1C

DISBURSEMENTS BY COMPONENT: 1978-1987

(in millions of dollars)

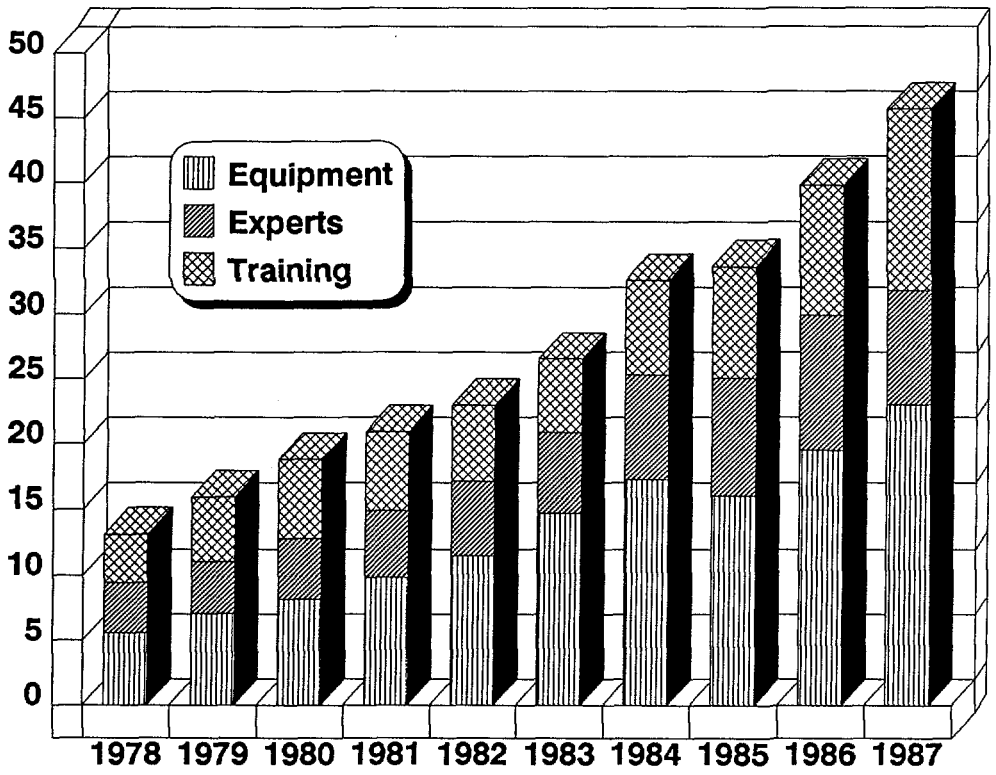
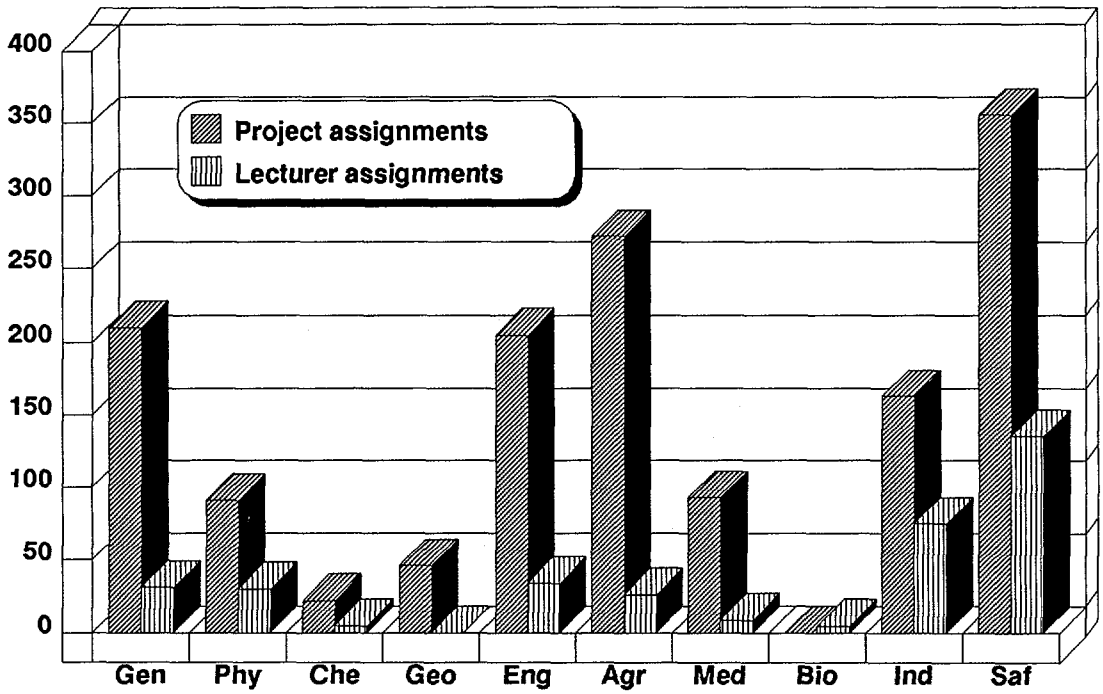


FIGURE 2A

TECHNICAL CO-OPERATION

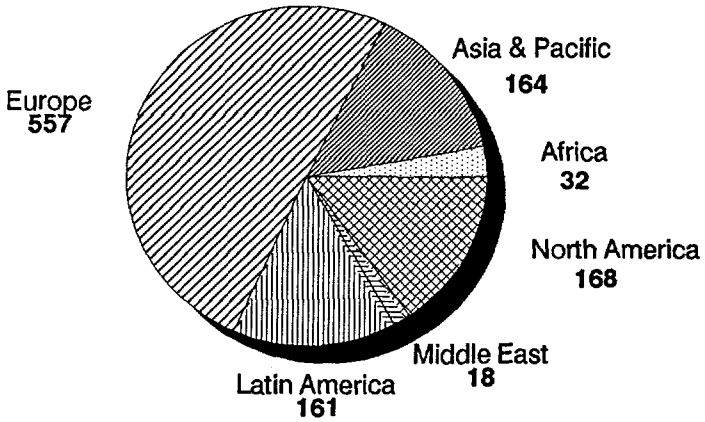
PERSONNEL SERVICES BY FIELD OF ACTIVITY: 1987



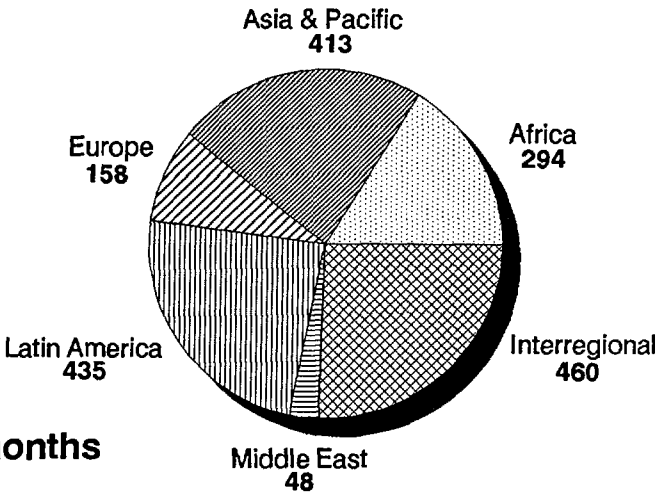
Gen	=	General atomic energy development
Phy	=	Nuclear physics
Che	=	Nuclear chemistry
Geo	=	Prospecting, mining and processing of nuclear materials
Eng	=	Nuclear engineering and technology
Agr	=	Application of isotopes and radiation in agriculture
Med	=	Application of isotopes and radiation in medicine
Bio	=	Application of isotopes and radiation in biology
Ind	=	Application of isotopes and radiation in industry and hydrology
Saf	=	Safety in nuclear energy

FIGURE 2B
TECHNICAL CO-OPERATION
PERSONNEL SERVICES BY REGION: 1987

Where they came from: 1100



Where they went: 1808 assignments



For how long: 1356 man-months

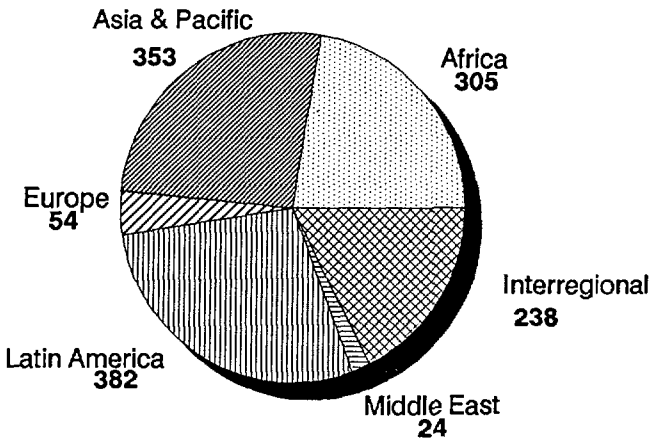
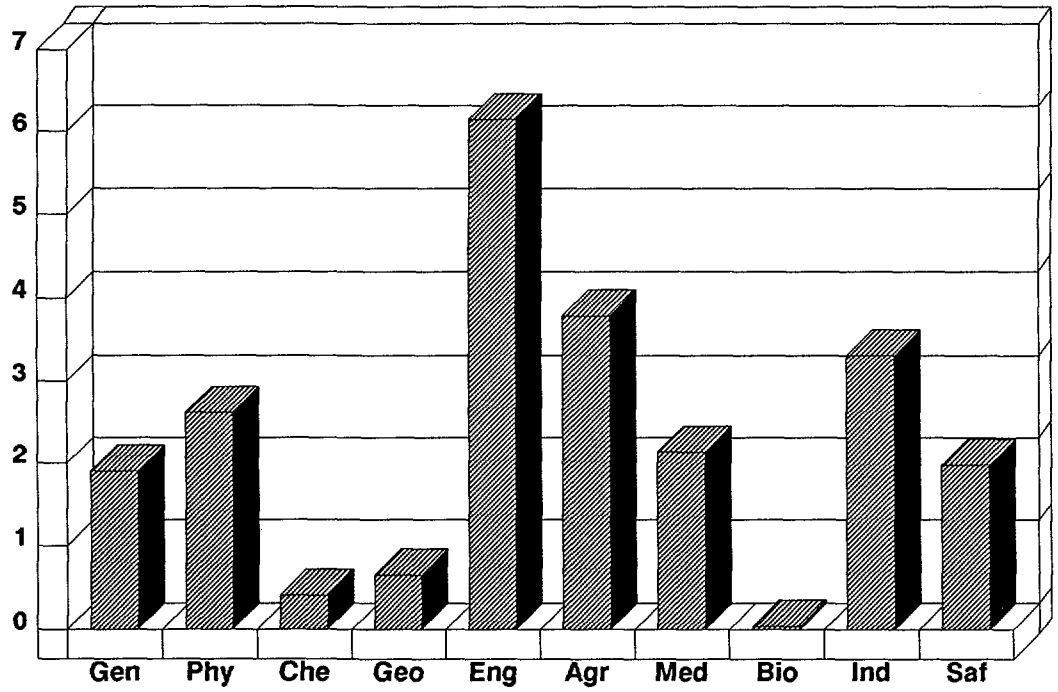


FIGURE 3A

DISTRIBUTION OF EQUIPMENT DISBURSEMENTS BY FIELD OF ACTIVITY: 1987

(in millions of dollars)



Gen	=	General atomic energy development
Phy	=	Nuclear physics
Che	=	Nuclear chemistry
Geo	=	Prospecting, mining and processing of nuclear materials
Eng	=	Nuclear engineering and technology
Agr	=	Application of isotopes and radiation in agriculture
Med	=	Application of isotopes and radiation in medicine
Bio	=	Application of isotopes and radiation in biology
Ind	=	Application of isotopes and radiation in industry and hydrology
Saf	=	Safety in nuclear energy

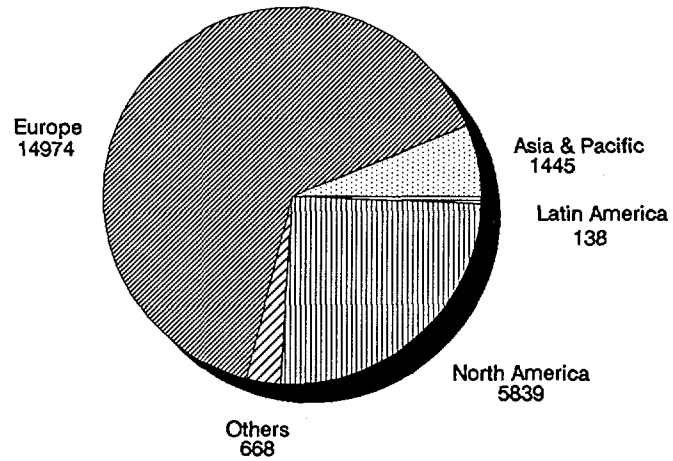
FIGURE 3B

DISTRIBUTION OF EQUIPMENT DISBURSEMENTS

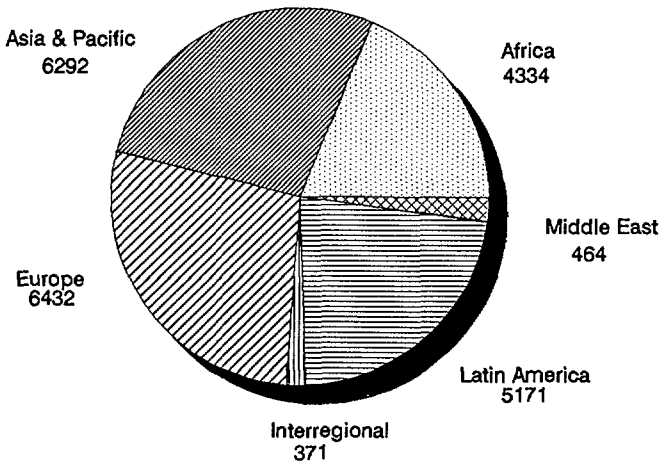
BY REGION: 1987

(in thousands of dollars)

Where it came from: $23,064 purchased



Where it went: $23,064 delivered



Where equipment was purchased:

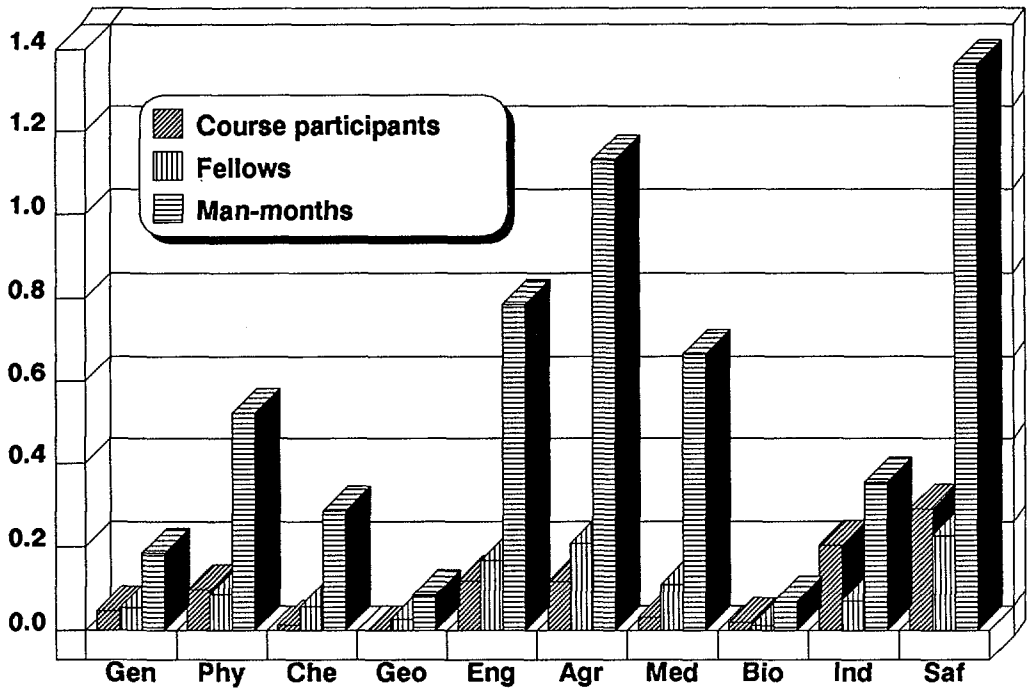
Austria	1,128	Hungary	509	Poland	118
Bulgaria	53	IAEA	134	Sweden	46
Canada	618	India	32	Switzerland	491
China	299	Italy	353	Thailand	167
Czechoslovakia	875	Japan	649	Taiwan, China	189
Denmark	120	Luxembourg	120	USSR	5,145
France	813	Netherlands	114	UK	2,257
German D.R.	563	Norway	220	UK (Hong Kong)	70
Germany, F.R.	2,775	Peru	49	USA	5,221

FIGURE 4A

DISTRIBUTION OF TRAINEES

BY FIELD OF ACTIVITY: 1987

(in thousands)



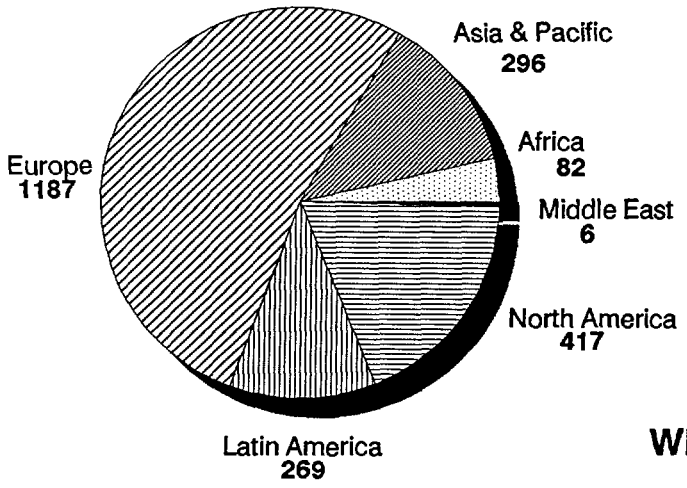
Gen	=	General atomic energy development
Phy	=	Nuclear physics
Che	=	Nuclear chemistry
Geo	=	Prospecting, mining and processing of nuclear materials
Eng	=	Nuclear engineering and technology
Agr	=	Application of isotopes and radiation in agriculture
Med	=	Application of isotopes and radiation in medicine
Bio	=	Application of isotopes and radiation in biology
Ind	=	Application of isotopes and radiation in industry and hydrology
Saf	=	Safety in nuclear energy

FIGURE 4B

SUMMARY DATA ON TRAINING PROGRAMMES: 1987

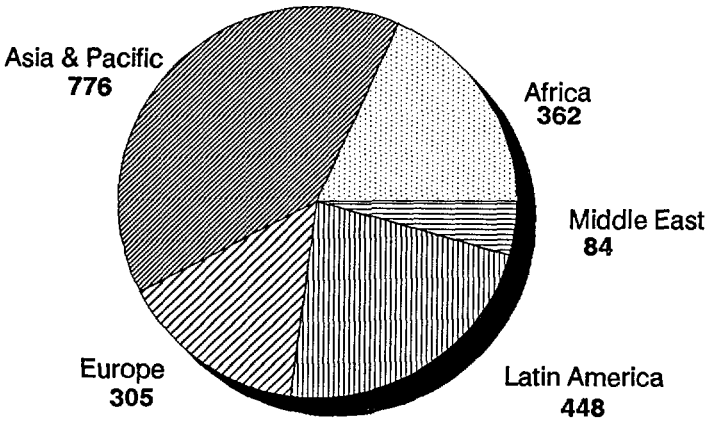
Where training was given:

2257 places of study



Where trainees came from:

1975 persons



Amount of training received:

5453 man-months

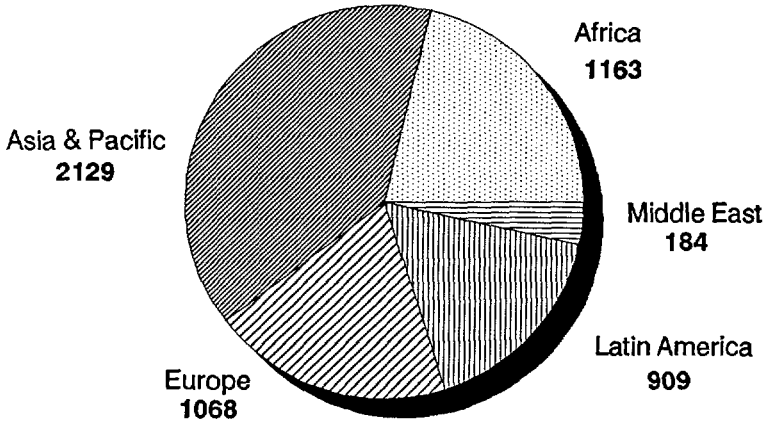
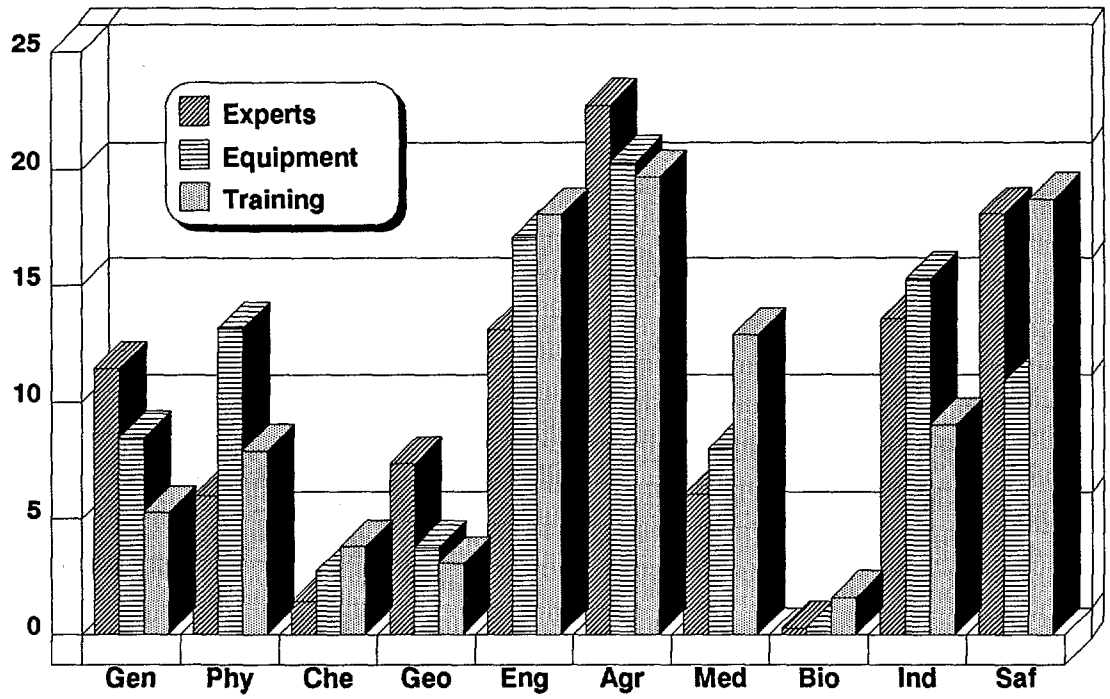


FIGURE 5A

DISTRIBUTION OF DISBURSEMENTS

BY TYPE AND FIELD OF ACTIVITY

(in per cent, averaged over the period 1983-1987)



Gen	=	General atomic energy development
Phy	=	Nuclear physics
Che	=	Nuclear chemistry
Geo	=	Prospecting, mining and processing of nuclear materials
Eng	=	Nuclear engineering and technology
Agr	=	Application of isotopes and radiation in agriculture
Med	=	Application of isotopes and radiation in medicine
Bio	=	Application of isotopes and radiation in biology
Ind	=	Application of isotopes and radiation in industry and hydrology
Saf	=	Safety in nuclear energy

FIGURE 5B

TECHNICAL ASSISTANCE AND CO-OPERATION FUND DISBURSEMENTS BY TYPE OF CURRENCY AND REGION: 1987

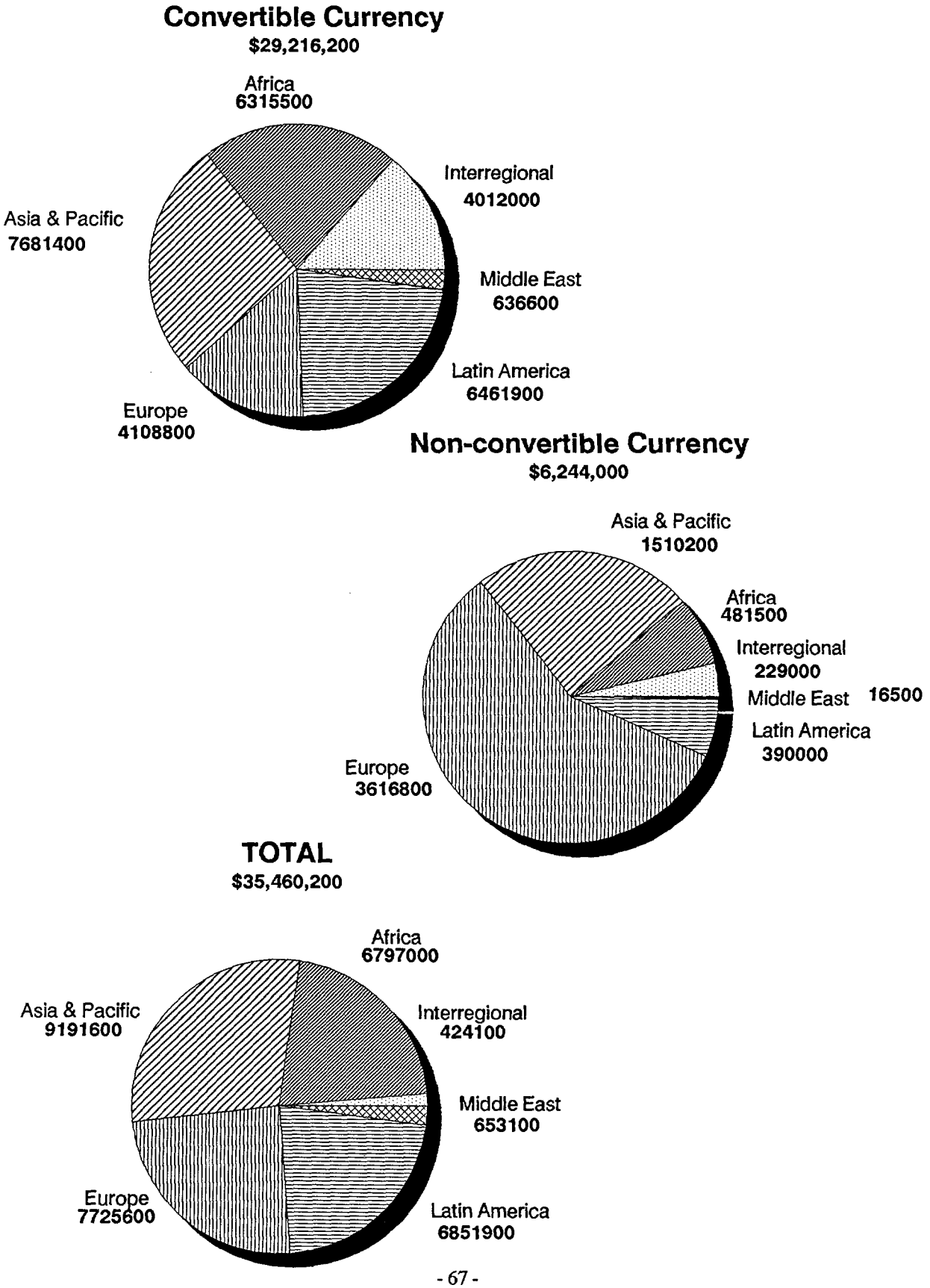
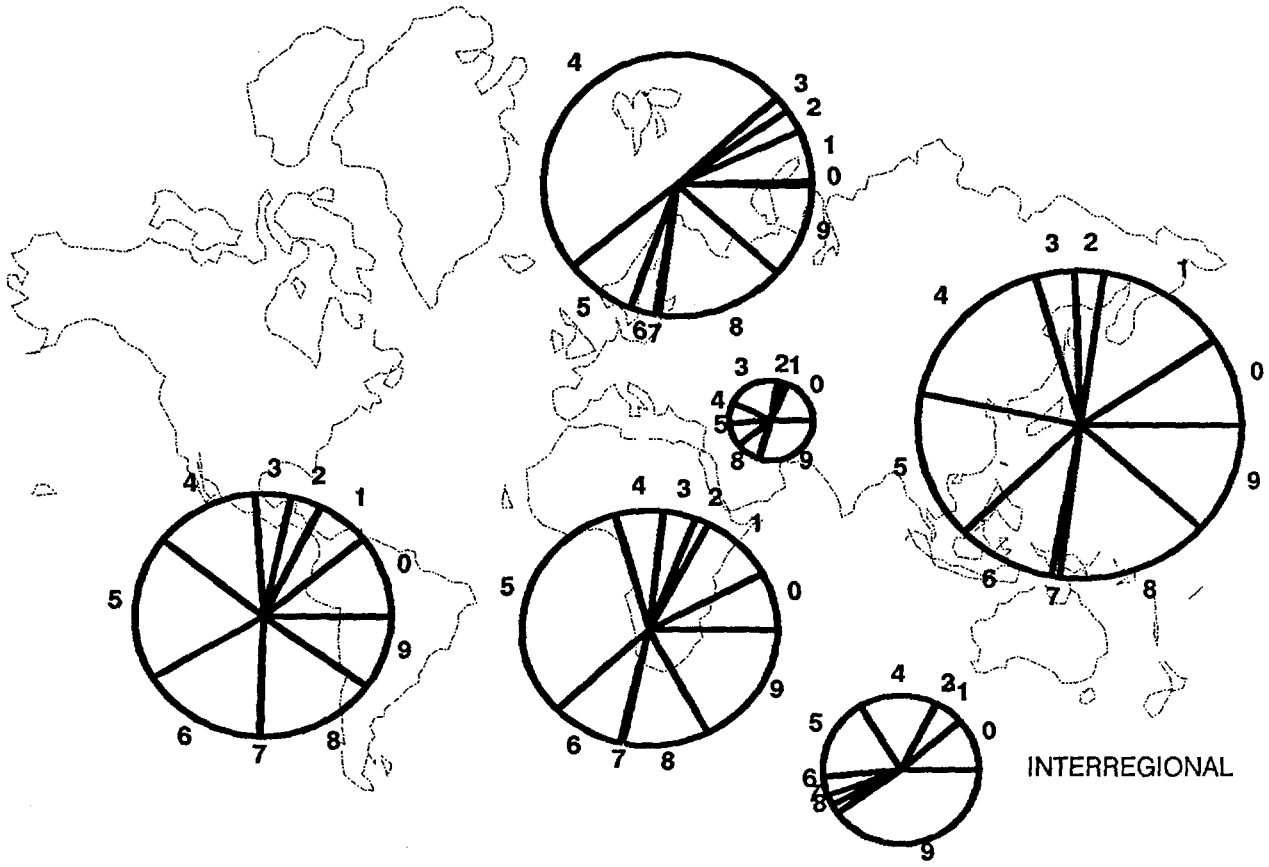


FIGURE 5C

DISTRIBUTION OF TECHNICAL CO-OPERATION DISBURSEMENTS BY FIELD AND REGION: 1987



Summary in thousands of dollars

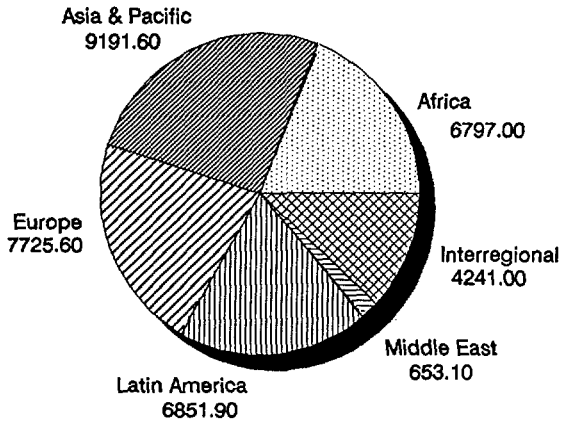
Field of activity	Africa $	Asia & Pacific $	Europe $	Latin America $	Middle East $	Inter-regional $	All regions $
0 - General atomic energy development	661.2	1,314.0	51.0	1,016.6	182.5	517.6	3,742.9
1 - Nuclear physics	820.6	1,836.1	551.0	639.5	13.2	278.7	4,139.1
2 - Nuclear chemistry	152.3	408.9	248.2	365.0	23.9	0.0	1,198.3
3 - Prospecting, mining and processing of nuclear materials	352.0	545.8	178.3	435.4	204.7	0.6	1,716.8
4 - Nuclear engineering and technology	523.0	2,409.8	4,283.3	1,245.5	83.2	752.1	9,296.9
Application of isotopes and radiation in							
5 - Agriculture	2,816.6	2,178.3	753.4	1,804.5	94.2	818.4	8,465.4
6 - Medicine	784.8	1,361.4	270.3	1,507.4	0.0	188.5	4,112.4
7 - Biology	30.0	117.6	36.4	11.8	0.0	100.5	296.3
8 - Industry and hydrology	928.1	2,127.7	1,366.4	1,452.3	91.2	95.0	6,060.7
9 - Safety in nuclear energy	1,482.6	1,623.8	1,004.1	914.3	292.1	1,829.2	7,146.1
Sub-total	8,551.2	13,923.4	8,742.4	9,392.3	985.0	4,580.6	46,174.9
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	170.1
GRAND TOTAL	8,551.2	13,923.4	8,742.4	9,392.3	985.0	4,580.6	46,345.0

FIGURE 5D

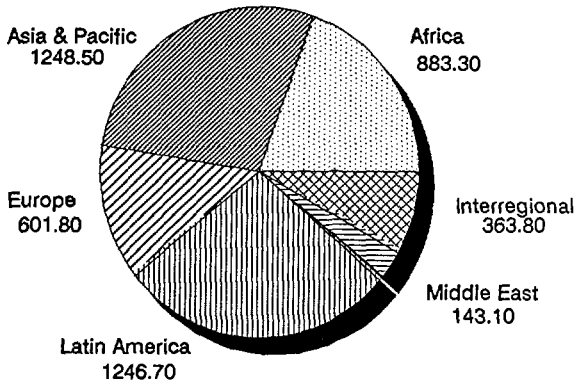
DISTRIBUTION OF TECHNICAL CO-OPERATION DISBURSEMENTS BY SOURCE AND REGION: 1987

(in thousands of dollars)

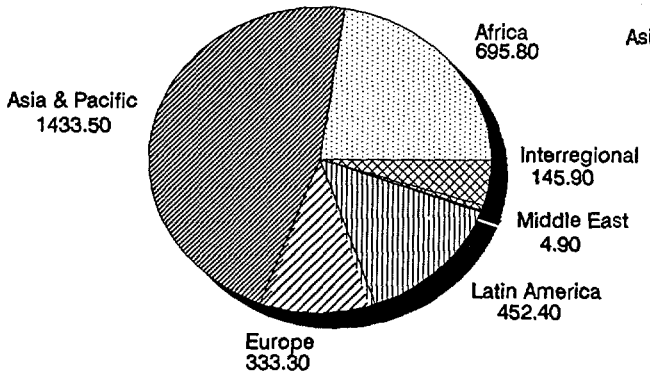
TACF



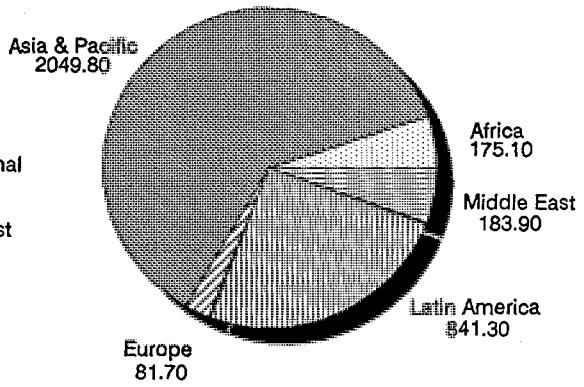
Extrabudgetary funds



Assistance in kind



UNDP funds



TOTAL 1987

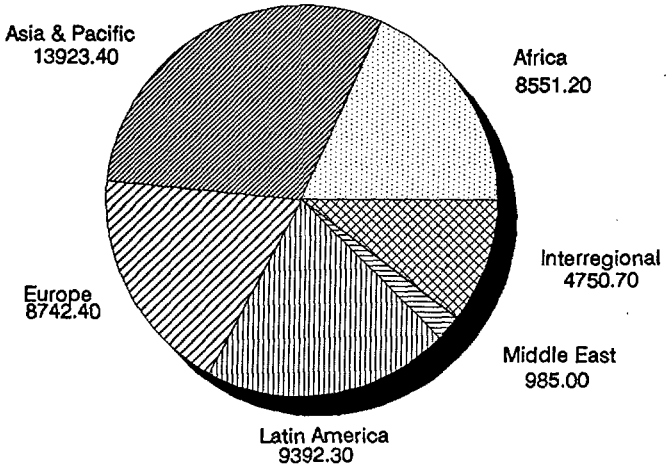
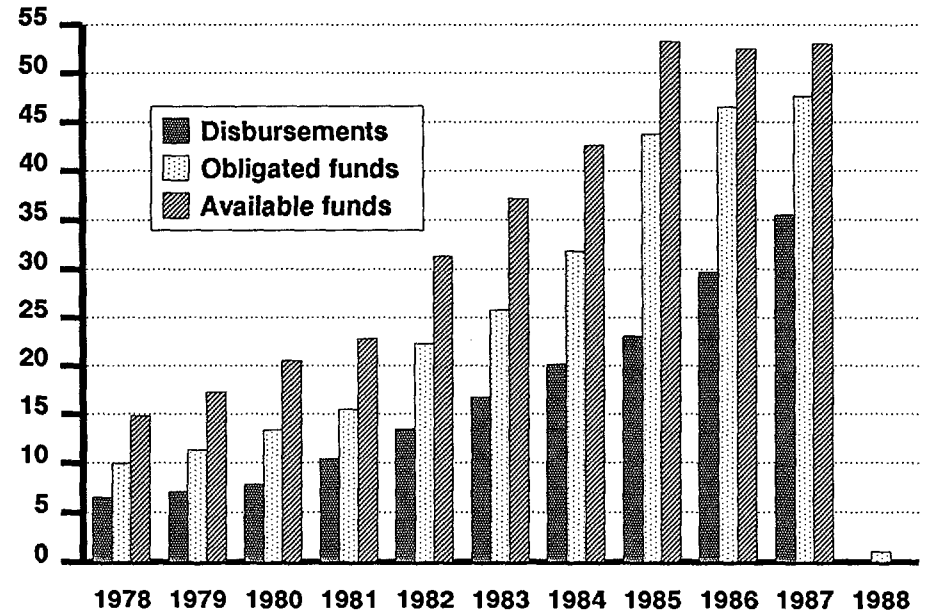
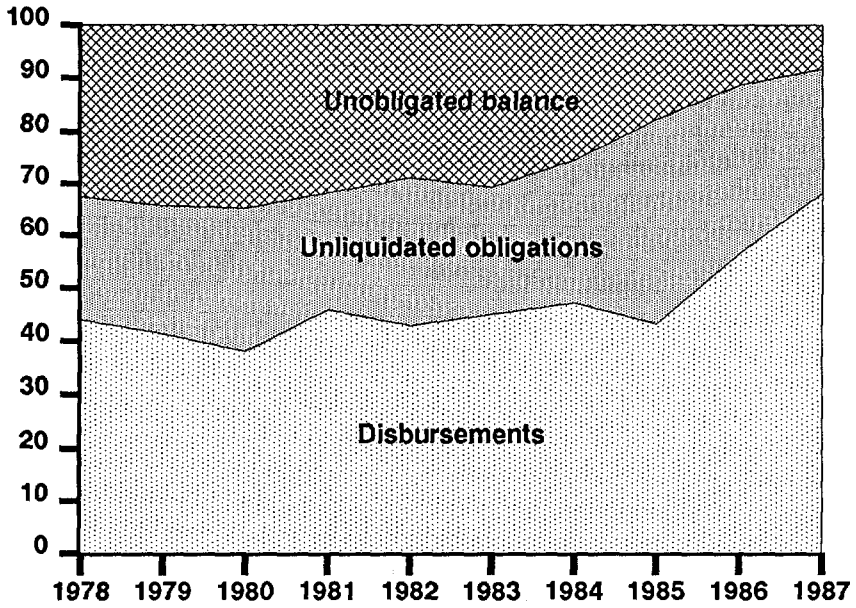


FIGURE 6

UTILIZATION OF THE TECHNICAL ASSISTANCE AND CO-OPERATION FUND

(status at year-end)





Values in upper figure expressed in millions of dollars.
Values in lower figure expressed in per cent.

TABLE 1

AVAILABLE RESOURCES: 1978-1987

(in thousands of dollars)

Year	Technical Assistance and Co-operation Fund				Other resources				Grand total (1+5)
	Voluntary contributions		Miscellaneous income	Sub-total	Extrabudgetary funds	Assistance in kind	UNDP	Sub-total	
	Convertible currency (1a)	Non-convertible currency (1b)	(1c)	(1)	(2)	(3)	(4)	(5)	(6)
1978	5,090	1,362	670	7,122	2,851	1,987	3,205	8,043	15,165
1979	6,448	1,614	740	8,802	2,635	2,015	6,066	10,716	19,518
1980	7,977	2,083	572	10,632	2,669	2,628	5,018	10,315	20,947
1981	9,873	2,181	902	12,956	3,519	2,788	5,186	11,493	24,449
1982	12,112	2,789	1,102	16,003	4,413	2,493	4,631	11,537	27,540
1983	14,169	3,447	1,625	19,241	8,101	2,172	3,706	13,979	33,220
1984	17,213	3,524	1,495	22,232	5,964	2,066	2,541	10,571	32,803
1985	19,282	3,976	1,939	25,197	5,484	2,765	2,654	10,903	36,100
1986	21,348	5,431	1,081	27,860	5,702	2,282	3,480	11,464	39,324
1987	24,571	5,178	404	30,153	5,700	3,066	2,568	11,334	41,487
1978-1987	**138,083**	**31,585**	**10,530**	**180,198**	**47,038**	**24,262**	**39,055**	**110,355**	**290,553**

TABLE 2

TECHNICAL ASSISTANCE AND CO-OPERATION FUND: 1978-1987

Programme year	Target for voluntary contributions to the Technical Assistance and Co-operation Fund	Amount pledged	Per cent of target pledged	Income available for for technical co-operation by programme year	Income as per cent of target
1978	7,000,000	6,451,332	92.2	7,121,508	101.7
1979	8,500,000	8,062,513	94.9	8,802,221	103.6
1980	10,500,000	10,059,733	95.8	10,632,033	101.3
1981	13,000,000	12,054,910	92.7	12,956,894	99.7
1982	16,000,000	14,901,346	93.1	16,003,198	100.0
1983	19,000,000	17,621,272	92.7	19,246,803	101.3
1984	22,500,000	20,735,931	92.2	22,231,347	98.8
1985	26,000,000	23,311,501	89.7	25,250,382	97.1
1986	30,000,000	26,732,785	89.1	27,813,735	92.7
1987	34,000,000	29,736,469	87.5	30,140,138	88.6

PLEDGES AND INCOME TO THE TACF: 1978 -1987

(in per cent)

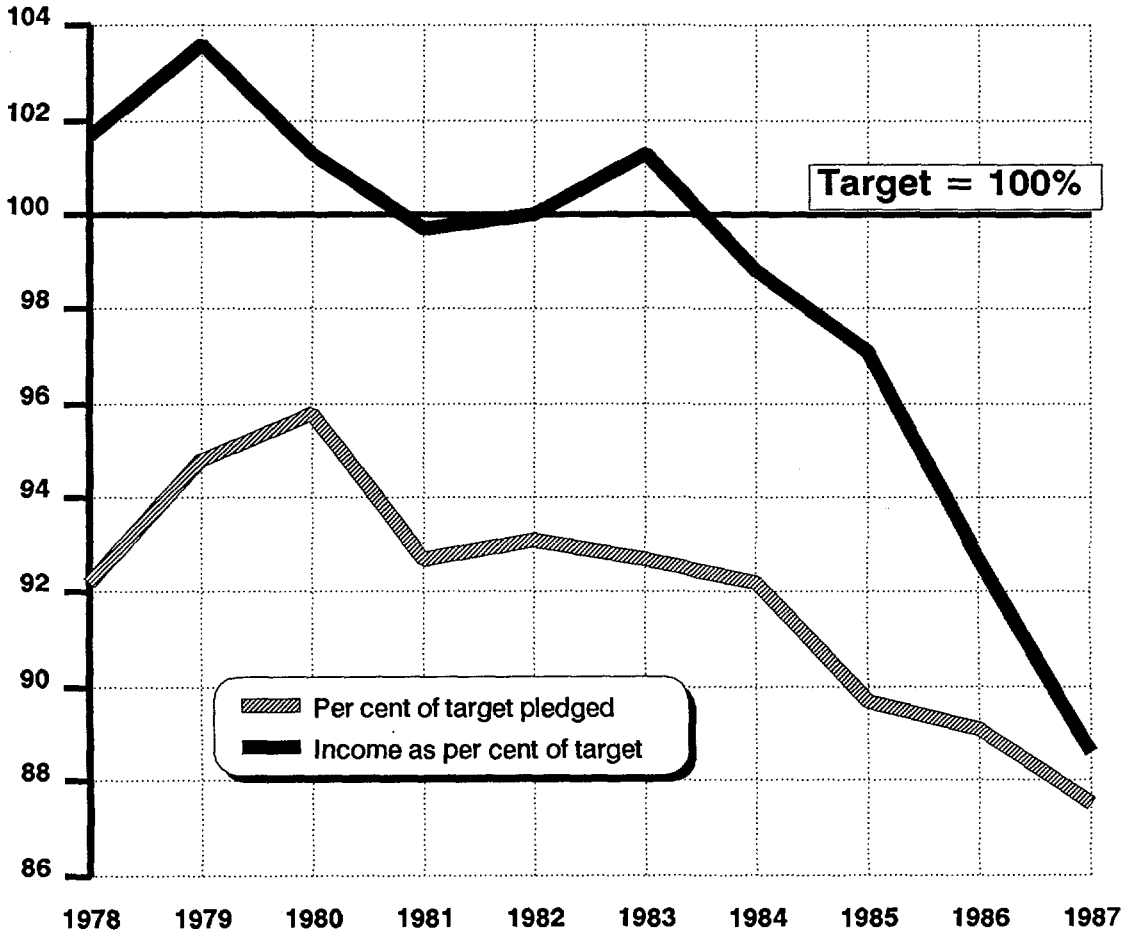


TABLE 3A

PROJECT PERSONNEL BY PLACE OF ORIGIN: 1987

Place of origin	Total individuals	Assignments				
		International experts	National experts	Lecturers	Other project personnel	Total
Argentina	37	29	-	14	3	46
Australia	21	22	-	3	-	25
Austria	32	30	-	9	16	55
Bangladesh	4	3	-	2	-	5
Belgium	13	13	-	3	-	16
Bolivia	1	1	-	-	-	1
Brazil	24	13	-	13	2	28
Bulgaria	9	3	15	1	-	19
Canada	37	48	-	8	-	56
Cameroon	2	2	-	-	-	2
Chile	9	9	-	4	-	13
China	8	7	-	2	-	9
Colombia	8	7	-	1	-	8
Costa Rica	1	1	-	-	-	1
Cote d'Ivoire	1	1	-	-	-	1
Cuba	2	2	-	-	-	2
Czechoslovakia	16	7	2	9	-	18
Denmark	8	20	-	-	-	20
Ecuador	6	5	-	4	-	9
Egypt	10	4	5	2	-	11
El Salvador	1	1	-	-	-	1
Ethiopia	1	1	-	-	-	1
Finland	7	5	-	2	-	7
France	48	54	-	10	-	64
German D.R.	7	10	-	1	-	11
Germany, F.R.	75	79	-	21	1	101
Greece	5	8	-	-	-	8
Guatemala	6	8	-	-	-	8
Hungary	41	45	22	7	-	74
India	29	43	-	4	1	48
Indonesia	6	5	-	-	1	6
Iran, Islamic Rep.	2	3	-	-	-	3
Iraq	2	2	-	-	-	2
Ireland	1	-	-	1	-	1
Israel	3	3	-	-	-	3
Italy	18	25	-	2	-	27
Jamaica	2	-	-	2	-	2
Japan	30	25	-	8	-	33
Jordan	3	2	-	1	-	3
Kenya	1	-	1	-	-	1

Place of origin	Total individuals	Assignments				
		International experts	National experts	Lecturers	Other project personnel	Total
Korea, Rep.	7	5	1	1	-	7
Malaysia	11	10	3	-	-	13
Mexico	12	13	-	6	-	19
Morocco	3	2	-	1	-	3
Netherlands	10	14	-	2	-	16
New Zealand	2	2	-	-	-	2
Niger	1	-	1	-	-	1
Nigeria	5	3	3	-	-	6
Norway	2	16	-	1	-	17
Pakistan	6	6	-	1	-	7
Panama	1	2	-	-	-	2
Paraguay	5	4	-	1	-	5
Peru	12	7	2	1	5	15
Philippines	4	4	-	-	-	4
Poland	28	28	15	4	1	48
Portugal	4	3	-	1	-	4
Spain	25	27	-	2	-	29
Sri Lanka	6	28	-	2	-	30
Sudan	2	2	-	-	-	2
Sweden	10	8	-	4	-	12
Switzerland	7	12	-	2	-	14
Syrian Arab Rep.	8	4	4	1	-	9
Thailand	9	6	-	1	2	9
Tunisia	1	1	-	-	-	1
Turkey	13	40	5	4	-	49
USSR	14	2	-	12	-	14
UK	63	91	-	15	-	106
USA	111	95	-	31	-	126
Uruguay	9	9	-	1	-	10
Venezuela	11	5	5	1	-	11
Viet Nam	2	3	-	-	-	3
Yugoslavia	24	40	3	8	-	51
IAEA	128	301	-	106	-	407
Other international organizations	7	-	-	7	-	7
TOTAL	**1100**	**1339**	**87**	**350**	**32**	**1808**

TABLE 3B

TRAINEES IN THE FIELD BY PLACE OF STUDY: 1987

Place of study	Fellows	Training course participants	Visiting scientists	TOTAL
Argentina	11	62	2	75
Australia	20	9	-	29
Austria	21	-	11	32
Bangladesh	-	-	2	2
Belgium	22	-	2	24
Bolivia	-	16	-	16
Brazil	22	12	3	37
Bulgaria	1	-	-	1
Canada	35	27	11	73
Chile	3	21	-	24
China	-	14	2	16
Colombia	-	-	1	1
Costa Rica	2	-	-	2
Cote d'Ivoire	1	-	-	1
Cuba	1	-	-	1
Czechoslovakia	3	37	-	40
Denmark	3	-	2	5
Ecuador	2	12	-	14
Egypt	1	12	-	13
Finland	3	19	8	30
France	48	47	18	113
German D.R.	7	34	4	45
Germany, F.R.	73	58	29	160
Ghana	-	22	-	22
Greece	4	-	1	5
Guatemala	-	15	1	16
Hungary	35	-	11	46
India	14	39	3	56
Indonesia	4	24	2	30
Israel	1	-	-	1
Italy	16	-	9	25
Jamaica	1	17	1	19
Japan	10	64	-	74
Kenya	1	16	-	17
Korea, Republic of	-	23	3	26
Malaysia	2	27	2	31
Mali	1	-	4	5
Mexico	7	14	3	24
Morocco	1	23	-	24
Netherlands	21	-	9	30
New Zealand	2	-	-	2
Norway	3	-	-	3
Pakistan	1	-	2	3
Peru	-	27	-	27
Philippines	1	-	-	1
Poland	28	19	5	52
Portugal	1	17	-	18
Puerto Rico	1	-	-	1
Romania	-	-	1	1
Singapore	2	-	-	2
Spain	38	13	11	62
Sweden	5	-	15	20
Switzerland	3	-	3	6
Syrian Arab Republic	-	5	-	5
Thailand	1	20	3	24
Turkey	1	-	-	1
Ukrainian SSR	-	-	13	13
UK	95	22	16	133
USA	191	124	29	344
USSR	6	62	4	72
Uruguay	3	9	-	12
Yugoslavia	24	19	14	57
IAEA	100	58	35	193
TOTAL	903	1,059	295	2,257

a) The difference between the number of trainees (1,975) and the number of places of study (2,257) is due to the fact that a number of fellows, training course participants and visiting scientists went to more than one country/place.

TABLE 4

DISTRIBUTION OF TECHNICAL CO-OPERATION DISBURSEMENTS BY TYPE: 1983-1987

Year and source	Experts (1)		Equipment (2)		Fellowships (3)		Scientific visits (4)		Training courses (5)		Sub-contracts (6)		Miscellaneous (7)		Total (8)		Assistance outstanding as at 31 December '87 Unliquidated obligations (9)	In-kind balance (10)	Total (8+9+10) (11)
	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	$	$
1983																			
UNDP funds	882.3	20.6	1,785.4	41.7	217.2	5.1	0.0	0.0	136.8	3.2	1,167.2	27.2	95.3	2.2	4,284.2	100.0	0.0	0.0	4,284.2
Agency funds	3,186.9	19.0	9,438.4	56.4	2,139.7	12.8	149.9	0.9	1,693.5	10.1	62.7	0.4	65.0	0.4	16,736.1	100.0	0.0	0.0	16,736.1
Extrabudgetary funds	1,232.9	36.0	1,710.9	50.0	263.3	7.7	2.3	0.1	207.9	6.1	5.3	0.1	0.0	0.0	3,422.6	100.0	0.0	0.0	3,422.6
Assistance in kind	227.3	10.5	239.5	11.0	1,520.5	70.0	0.0	0.0	185.2	8.5	0.0	0.0	0.0	0.0	2,172.5	100.0	0.0	0.0	2,172.5
TOTAL	5,529.4	20.8	13,174.2	49.5	4,140.7	15.6	152.2	0.6	2,223.4	8.3	1,235.2	4.6	160.3	0.6	26,615.4	100.0	0.0	0.0	26,615.4
1984																			
UNDP funds	935.4	24.0	2,145.2	55.0	197.8	5.1	0.0	0.0	263.5	6.7	291.5	7.5	65.3	1.7	3,898.7	100.0	0.0	0.0	3,898.7
Agency funds	4,118.2	20.5	10,010.1	49.7	2,739.6	13.6	364.6	1.8	2,530.9	12.6	241.8	1.2	118.8	0.6	20,124.0	100.0	0.0	0.0	20,124.0
Extrabudgetary funds	1,538.3	23.7	3,802.5	58.6	243.4	3.7	6.0	0.1	209.9	3.2	692.6	10.7	0.0	0.0	6,492.7	100.0	0.0	0.0	6,492.7
Assistance in kind	285.4	13.8	53.0	2.6	1,491.1	72.2	0.0	0.0	236.6	11.4	0.0	0.0	0.0	0.0	2,068.1	100.0	0.0	0.0	2,068.1
TOTAL	6,877.3	21.1	16,010.8	49.1	4,671.9	14.3	370.6	1.1	3,240.9	10.0	1,225.9	3.8	184.1	0.6	32,581.5	100.0	0.0	0.0	32,581.5
1985																			
UNDP funds	877.2	34.2	1,101.9	43.0	141.2	5.5	91.1	3.6	218.3	8.5	99.9	3.9	32.9	1.3	2,562.5	100.0	0.0	0.0	2,562.5
Agency funds	5,032.7	21.8	10,448.2	45.3	3,153.9	13.7	448.1	1.9	3,447.2	15.0	370.8	1.6	161.4	0.7	23,062.3	100.0	0.0	0.0	23,062.3
Extrabudgetary funds	1,581.2	29.7	2,887.5	54.2	125.6	2.3	2.4	0.1	158.1	3.0	570.9	10.7	0.0	0.0	5,325.7	100.0	0.0	0.0	5,325.7
Assistance in kind	501.9	18.1	0.0	0.0	1,484.7	53.7	2.7	0.1	776.1	28.1	0.0	0.0	0.0	0.0	2,765.4	100.0	0.0	0.0	2,765.4
TOTAL	7,993.0	23.7	14,437.6	42.8	4,905.4	14.5	544.3	1.6	4,599.7	13.6	1,041.6	3.1	194.3	0.6	33,715.9	100.0	0.0	0.0	33,715.9
1986																			
UNDP funds	940.7	31.4	1,285.1	43.0	160.7	5.4	49.0	1.6	426.4	14.3	71.1	2.4	57.6	1.9	2,990.6	100.0	0.0	0.0	2,990.6
Agency funds	6,437.0	21.7	14,068.9	47.4	4,060.1	13.7	728.0	2.4	3,831.9	12.9	410.7	1.4	146.0	0.5	29,682.6	100.0	0.0	0.0	29,682.6
Extrabudgetary funds	1,459.4	29.1	2,759.1	54.9	131.8	2.6	1.4	0.0	338.4	6.7	335.1	6.7	0.0	0.0	5,025.2	100.0	0.0	0.0	5,025.2
Assistance in kind	427.3	18.7	0.0	0.0	1,504.5	65.9	0.0	0.0	350.1	15.4	0.0	0.0	0.0	0.0	2,281.9	100.0	0.0	0.0	2,281.9
TOTAL	9,264.4	23.2	18,113.1	45.3	5,857.1	14.7	778.4	1.9	4,946.8	12.4	816.9	2.0	203.6	0.5	39,980.3	100.0	0.0	0.0	39,980.3
1987																			
UNDP funds	983.8	29.5	1,423.7	42.7	319.4	9.6	127.1	3.8	292.3	8.8	182.0	5.5	3.5	0.1	3,331.8	100.0	955.5	0.0	4,287.3
Agency funds	6,746.7	19.0	18,518.5	52.2	5,904.3	16.7	369.6	1.0	3,539.0	10.0	212.0	0.6	170.1	0.5	35,460.2	100.0	13,206.6	0.0	48,666.8
Extrabudgetary funds	954.8	21.3	3,043.4	67.8	89.9	2.0	8.5	0.2	288.7	6.4	101.9	2.3	0.0	0.0	4,487.2	100.0	3,168.0	0.0	7,655.2
Assistance in kind	171.5	5.6	0.0	0.0	2,514.7	82.0	0.0	0.0	376.8	12.3	2.8	0.1	0.0	0.0	3,065.8	100.0	0.0	476.9	3,542.7
TOTAL	8,856.8	19.1	22,985.6	49.6	8,828.3	19.0	505.2	1.1	4,496.8	9.7	498.7	1.1	173.6	0.4	46,345.0	100.0	17,330.1	476.9	64,152.0
1983-1987																			
UNDP funds	4,619.4	27.1	7,741.3	45.4	1,036.3	6.1	267.2	1.6	1,337.3	7.8	1,811.7	10.6	254.6	1.5	17,067.8	100.0	955.5	0.0	18,023.3
Agency funds	25,521.5	20.4	62,484.1	50.0	17,997.6	14.4	2,060.2	1.6	15,042.5	12.0	1,298.0	1.0	661.3	0.5	125,065.2	100.0	13,206.6	0.0	138,271.8
Extrabudgetary funds	6,766.6	27.3	14,203.4	57.4	854.0	3.5	20.6	0.1	1,203.0	4.9	1,705.8	6.9	0.0	0.0	24,753.4	100.0	3,168.0	0.0	27,921.4
Assistance in kind	1,613.4	13.1	292.5	2.4	8,515.5	68.9	2.7	0.0	1,924.8	15.6	2.8	.0	0.0	0.0	12,351.7	100.0	0.0	1,460.0	13,811.7
TOTAL	38,520.9	21.5	84,721.3	47.3	28,403.4	15.8	2,350.7	1.3	19,507.6	10.9	4,818.3	2.7	915.9	0.5	179,238.1	100.0	17,330.1	1,460.0	198,028.2

TABLE 5
EXTRABUDGETARY FUNDS FOR TECHNICAL CO-OPERATION ACTIVITIES BY DONOR
(as at 31 December 1987)

Donor	Funds available 1 January 1987	New funds in 1987	Total funds available	Disbursements in 1987	Unliquidated obligations at year-end	Unobligated balance
A. Funds for activities where donor is not recipient						
Austria	158,338	-98,125[a]	60,213	60,213	0	0
Belgium	88,952	6,435	95,387	20,914	7,159	67,314
Canada	2,131	50,542	52,673	49,984	0	2,689
Chile	766	0	766	0	0	766
CEC	0	138,328	138,328	30,947	0	107,381
Finland	52,267	0	52,267	47,042	4,814	411
France	5,668	0	5,668	5,668	0	0
Germany, F.R.	1,771,997	901,664	2,673,661	564,863	933,802	1,174,996
Italy	2,408,579	-614,000[a]	1,794,579	549,956	271,783	972,840
Japan	143,275	355,833	499,108	196,485	10,000	292,623
Kuwait	0	350,000	350,000	122,219	102,037	125,744
Norway	15,984	0	15,984	721	10,650	4,613
Saudi Arabia	4,229	0	4,229	0	0	4,229
Sweden	162,481[b]	217,391	379,872	82,608	71,465	225,799
USSR	1,563,663	1,070,893	2,634,556	207,007	700,565	1,726,984
UK	633,172	786,050[c]	1,419,222	247,410	138,317	1,033,495
USA	3,445,357[d]	1,500,000	4,945,357	1,617,680	816,749	2,510,928
Sub-total	**10,456,859**	**4,665,011**	**15,121,870**	**3,803,717**	**3,067,341**	**8,250,812**
B. Funds for activities where donor is recipient						
Chile	0	3,000	3,000	0	2,650	350
Colombia	37,634	0	37,634	34,350	3,111	173
Ecuador	200,132	0	200,132	195,121	4,879	132
Iran, Islamic Rep.	249,681	4,515	254,196	245,034	5,279	3,883
Libyan Arab J.	-333	0	-333	0	0	-333
Malaysia	0	20,480	20,480	0	14,102	6,378
Nigeria	9,012	0	9,012	4,282	0	4,730
Pakistan	0	54,000	54,000	0	54,000	0
Panama	0	2,480	2,480	0	0	2,480
Poland	0	15,000	15,000	0	3,746	11,254
Syrian Arab Rep.	36,741	100,000	136,741	20,926	8,739	107,076
Thailand	1,983	0	1,983	0	0	1,983
Yugoslavia	254,806	0	254,806	183,780	4,106	66,920
Sub-total	**789,656**	**199,475**	**989,131**	**683,493**	**100,612**	**205,026**
TOTAL	**11,246,515**	**4,864,486**	**16,111,001**	**4,487,210**	**3,167,953**	**8,455,838**

[a] Fund reduction owing to suspension of Egyptian Misr-Med project. [b] Adjusted by deducting overhead cost of $1,385.
[c] Adusted for loss against receivable from 1986 of $13,950 and includes receivable of $326,011.
[d] Includes two receivables, one for $78,618 from 1985 and one for $96,724 from 1986.

TABLE 6A

TECHNICAL CO-OPERATION PERSONNEL SERVICES: 1987

Recipient	Number of assignments	Number of man-months	Recipient	Number of assignments	Number of man-months
Albania	3	2.0	Mongolia	6	10.0
Algeria	19	10.0	Morocco	19	13.0
Argentina	11	20.0	Nicaragua	4	1.5
Bangladesh	19	15.0	Niger	7	3.0
Bolivia	15	6.0	Nigeria	29	38.5
Brazil	37	43.0	Pakistan	8	6.0
Bulgaria	5	1.5	Panama	12	6.0
Burma	2	1.5	Paraguay	2	2.0
Cameroon	4	1.0	Peru	39	68.0
Chile	12	7.0	Philippines	8	8.5
China	58	42.0	Poland	7	2.5
Colombia	13	10.0	Portugal	6	4.0
Costa Rica	8	7.0	Romania	10	4.0
Cote d'Ivoire	8	12.0	Senegal	6	4.0
Cuba	10	8.5	Sierra Leone	1	1.0
Cyprus	1	0.5	Singapore	7	5.0
Czechoslovakia	1	0.5	Sri Lanka	13	14.0
Dem. P.R. Korea	7	5.5	Sudan	12	10.0
Dominican Republic	5	5.5	Syrian Arab Rep.	21	10.0
Ecuador	19	14.0	Thailand	26	45.0
Egypt	52	77.0	Tunisia	12	5.5
El Salvador	5	4.5	Turkey	24	14.0
Ethiopia	5	2.0	Uganda	7	4.0
Gabon	3	1.5	U. Rep. Tanzania	5	3.5
Ghana	17	14.0	Uruguay	12	12.0
Greece	4	1.0	Venezuela	15	8.5
Guatemala	6	5.0	Viet Nam	12	8.5
Haiti	1	0.5	Yugoslavia	15	6.0
Hungary	2	0.5	Zaire	5	1.5
Indonesia	29	38.0	Zambia	15	14.5
Iran, Islamic Rep.	8	4.0			
Iraq	17	9.5	*Sub-total*	*900*	*852.0*
Jamaica	3	3.0			
Jordan	9	4.5	Intercountry projects	558	407.0
Kenya	9	21.5	Training courses	350	96.5
Korea, Rep.	35	34.0			
Libyan Arab J.	2	1.0	*Sub-total*	*908*	*503.5*
Madagascar	4	2.0			
Malaysia	22	25.0			
Mali	11	21.5	*GRAND TOTAL*	*1808*	*1355.5*
Mauritius	2	1.5			
Mexico	32	34.0			

TABLE 6B

RECIPIENTS OF TRAINING ABROAD: 1987

Recipient	Fellows		Visiting scientists		Training course participants		TOTAL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Afghanistan	1	6.0	-	-	1	1.5	2	7.5
Albania	6	18.0	-	-	1	1.5	7	19.5
Algeria	11	24.0	2	1.0	11	19.0	24	44.0
Argentina	2	3.5	2	1.5	31	26.5	35	31.5
Bangladesh	26	183.0	1	0.5	26	19.0	53	202.5
Barbados	-	-	-	-	3	0.5	3	0.5
Bolivia	5	23.5	2	1.0	17	29.0	24	53.5
Brazil	13	53.0	4	4.0	51	58.0	68	115.0
Bulgaria	28	204.5	9	6.0	18	22.0	55	232.5
Burma	3	10.0	-	-	1	1.0	4	11.0
Cameroon	-	-	-	-	2	2.5	2	2.5
Chile	11	45.5	3	1.0	24	25.0	38	71.5
China	58	201.0	21	16.0	48	42.0	127	259.0
Colombia	16	89.0	1	1.0	19	21.0	36	111.0
Costa Rica	2	14.5	-	-	6	4.0	8	18.5
Cote d'Ivoire	6	31.5	-	-	2	2.0	8	33.5
Cuba	4	12.5	5	4.0	10	26.5	19	43.0
Cyprus	1	3.5	-	-	-	-	1	3.5
Czechoslovakia	7	50.0	2	1.5	20	22.5	29	74.0
Dem. P.R. Korea	2	10.0	3	2.0	8	9.5	13	21.5
Dominican Republic	5	22.5	1	0.5	10	7.5	16	30.5
Ecuador	12	74.5	-	-	16	20.0	28	94.5
Egypt	40	236.0	4	3.0	18	16.0	62	255.0
El Salvador	1	11.0	-	-	3	4.0	4	15.0
Ethiopia	2	6.5	-	-	4	4.0	6	10.5
Gabon	3	14.0	-	-	2	2.5	5	16.5
Ghana	9	52.5	2	1.5	10	11.0	21	65.0
Greece	6	35.0	1	1.0	4	5.5	11	41.5
Guatemala	5	21.0	1	0.5	14	18.5	20	40.0
Guyana	1	2.0	-	-	1	0.5	2	2.5
Haiti	-	-	-	-	1	1.0	1	1.0
Hungary	11	71.0	6	3.5	10	11.5	27	86.0
Iceland	2	2.0	-	-	-	-	2	2.0
India	1	6.0	1	1.0	41	31.0	43	38.0
Indonesia	31	152.0	11	7.0	37	27.5	79	186.5

Recipient	Fellows		Visiting scientists		Training course participants		TOTAL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Iran, Islamic Rep.	22	107.5	2	1.5	5	6.0	29	115.0
Iraq	15	37.0	6	2.0	12	13.0	33	52.0
Ireland	1	2.0	-	-	1	1.0	2	3.0
Jamaica	-	-	-	-	6	1.5	6	1.5
Jordan	2	4.0	4	2.0	9	8.0	15	14.0
Kenya	8	50.0	1	1.0	3	3.5	12	54.5
Korea, Republic of	33	188.0	10	6.0	28	22.0	71	216.0
Kuwait	-	-	-	-	1	0.5	1	0.5
Lebanon	1	6.0	-	-	-	-	1	6.0
Liberia	-	-	-	-	2	3.0	2	3.0
Libyan Arab J.	24	123.5	-	-	6	5.5	30	129.0
Madagascar	-	-	2	1.0	6	9.0	8	10.0
Malaysia	12	35.5	3	2.5	28	20.0	43	58.0
Mali	-	-	1	1.0	2	2.5	3	3.5
Mauritius	-	-	-	-	1	1.5	1	1.5
Mexico	14	57.5	1	0.5	30	29.0	45	87.0
Mongolia	1	3.5	-	-	1	1.0	2	4.5
Morocco	9	33.0	1	1.0	7	6.5	17	40.5
Nicaragua	4	22.5	-	-	-	-	4	22.5
Niger	2	9.5	2	1.0	2	1.5	6	12.0
Nigeria	13	60.0	1	0.5	12	10.5	26	71.0
Pakistan	30	168.5	8	6.5	30	20.5	68	195.5
Panama	2	12.0	1	1.0	1	1.0	4	14.0
Paraguay	2	21.0	-	-	14	9.5	16	30.5
Peru	14	49.5	1	1.0	14	8.0	29	58.5
Philippines	18	102.5	4	1.0	21	14.5	43	118.0
Poland	43	265.0	2	1.0	15	20.5	60	286.5
Portugal	4	17.5	-	-	7	8.0	11	25.5
Romania	4	12.0	7	3.0	7	7.5	18	22.5
Saudi Arabia	-	-	-	-	5	4.0	5	4.0
Senegal	2	9.5	2	1.0	6	5.5	10	16.0
Sierra Leone	3	11.5	-	-	-	-	3	11.5
Singapore	1	1.0	-	-	10	3.5	11	4.5
Somalia	-	-	-	-	1	1.5	1	1.5
Spain	-	-	-	-	3	2.5	3	2.5

Recipient	Fellows		Visiting scientists		Training course participants		TOTAL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Sri Lanka	15	90.5	3	1.0	16	14.0	34	105.5
Sudan	24	105.5	1	0.5	10	11.5	35	117.5
Syrian Arab Rep.	20	102.0	3	0.5	4	4.0	27	106.5
Thailand	62	320.0	4	3.0	40	27.0	106	350.0
Togo	-	-	-	-	1	1.5	1	1.5
Trinidad	-	-	-	-	5	1.5	5	1.5
Tunisia	4	8.0	-	-	10	9.0	14	17.0
Turkey	19	108.5	1	0.5	16	19.0	36	128.0
Uganda	7	50.5	-	-	2	2.5	9	53.0
U. Arab Emirates	-	-	2	0.5	-	-	2	0.5
U.R. Tanzania	9	60.0	-	-	9	9.5	18	69.5
Uruguay	6	26.0	1	0.5	11	6.5	18	33.0
Venezuela	2	5.0	1	1.0	16	25.0	19	31.0
Viet Nam	36	224.0	2	1.5	10	9.0	48	234.5
Yugoslavia	27	127.0	1	0.5	15	16.0	43	143.5
Zaire	11	54.0	-	-	7	6.5	18	60.5
Zambia	10	50.0	-	-	5	4.0	15	54.0
Zimbabwe	3	7.0	-	-	2	3.0	5	10.0
TOTAL	*870*	*4436.5*	*160*	*101.5*	*945*	*915.0*	*1975*	*5453.0*

(1) Number of trainees. (2) Number of man-months of training received.

TABLE 7

FINANCIAL SUMMARY: 1987
(in thousands of dollars)

Recipient	Assistance provided, by type						Assistance provided, by source							
	Experts	Equip-ment	Fellow-ships	Training courses	Sub-contracts	Total	UNDP	TACF CC	TACF NCC	Extra-bud.	In kind support	Total	Unliquid. oblig.	Total (12+13)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
AFGHANISTAN	0.0	0.0	13.3	0.0	0.0	13.3	0.0	4.1	9.2	0.0	0.0	13.3	8.1	21.4
ALBANIA	13.4	290.8	27.2	0.0	0.0	331.4	0.0	299.1	32.1	0.0	0.2	331.4	85.6	417.0
ALGERIA	102.4	252.7	48.8	0.0	0.0	403.9	0.0	376.5	25.7	0.0	1.7	403.9	150.2	554.1
ARGENTINA	91.8	242.1	24.3	0.0	0.0	358.2	358.2	0.0	0.0	0.0	0.0	358.2	116.7	474.9
BANGLADESH	100.8	574.9	355.2	0.0	0.0	1,030.9	0.0	753.2	89.2	67.9	120.6	1,030.9	567.6	1,598.5
BOLIVIA	59.2	214.9	32.9	5.3	0.0	312.3	0.0	236.6	32.9	42.8	0.0	312.3	31.1	343.4
BRAZIL	372.5	436.2	167.8	0.0	0.0	976.5	0.0	822.2	21.6	125.2	7.5	976.5	373.4	1,349.9
BULGARIA	12.0	536.2	368.1	0.0	0.0	916.3	0.0	545.8	342.7	0.0	27.8	916.3	1,275.6	2,191.9
BURMA	11.8	77.5	17.1	0.0	0.0	106.4	0.0	106.4	0.0	0.0	0.0	106.4	64.6	171.0
CAMEROON	12.6	76.3	0.0	0.0	0.0	88.9	0.0	52.7	36.2	0.0	0.0	88.9	12.1	101
CAPE VERDE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
CHILE	65.5	280.7	112.7	0.0	0.0	458.9	5.3	437.7	0.0	0.0	15.9	458.9	32.3	491.2
CHINA	454.4	176.0	478.5	0.0	0.0	1,108.9	357.9	700.8	2.4	6.9	40.9	1,108.9	808.2	1,917.1
COLOMBIA	92.7	152.9	171.9	0.0	0.0	417.5	0.0	298.5	29.7	34.3	55.0	417.5	222.6	640.1
COSTA RICA	71.4	138.0	22.0	0.0	0.0	231.4	34.7	183.3	13.4	0.0	0.0	231.4	86.9	318.3
COTE D'IVOIRE	83.5	94.4	48.1	0.0	0.0	226.0	0.0	219.4	2.8	3.8	0.0	226.0	62.8	288.8
CUBA	53.4	482.0	18.7	0.0	0.0	554.1	0.1	471.6	82.4	0.0	0.0	554.1	121.5	675.6
CYPRUS	1.6	59.3	8.4	0.0	0.0	69.3	0.0	69.3	0.0	0.0	0.0	69.3	7.0	76.3
CZECHOSLOVAKIA	0.5	0.0	72.3	0.0	0.0	72.8	0.0	70.9	1.9	0.0	0.0	72.8	1.6	74.4
D.P.R. KOREA	29.9	936.3	33.3	0.0	0.0	999.5	0.0	185.0	801.8	12.7	0.0	999.5	487.2	1,486.7
DOMINICAN REP.	25.2	129.9	47.7	0.0	0.0	202.8	0.0	189.5	1.9	0.0	11.4	202.8	30.5	233.3
ECUADOR	86.2	823.4	100.3	0.0	0.0	1,009.9	0.0	542.7	102.6	346.2	18.4	1,009.9	328.5	1,338.4
EGYPT	290.3	911.7	571.6	0.0	1.8	1,775.4	127.9	716.1	162.8	413.7	354.9	1,775.4	1,162.3	2,937.7
EL SALVADOR	27.5	145.6	10.3	0.0	0.0	183.4	0.0	118.4	36.2	28.8	0.0	183.4	27.7	211.1
ETHIOPIA	15.1	84.6	10.0	0.0	0.0	109.7	0.0	97.3	12.4	0.0	0.0	109.7	66.6	176.3
GABON	14.9	0.5	25.4	0.0	0.0	40.8	0.0	28.2	0.0	0.0	12.6	40.8	20.3	61.1
GHANA	68.0	392.3	86.6	0.0	0.0	546.9	45.6	420.4	40.2	11.1	29.6	546.9	325.3	872.2
GREECE	4.5	116.7	64.0	0.0	0.0	185.2	0.0	154.4	0.0	0.0	30.8	185.2	104.8	290.0
GUATEMALA	50.9	204.8	29.2	0.0	0.0	284.9	0.0	264.3	20.3	0.3	0.0	284.9	49.2	334.1
HAITI	1.9	0.0	0.0	0.0	0.4	2.3	0.4	1.9	0.0	0.0	0.0	2.3	4.2	6.5
HUNGARY	1.4	3,333.0	116.2	0.0	0.0	3,452.6	3.7	360.4	2,944.8	143.7	0.0	3,452.6	846.3	4,298.9
ICELAND	0.0	39.8	7.4	0.0	0.0	47.2	0.0	45.4	0.0	0.0	1.8	47.2	1.3	48.5
INDIA	0.0	0.0	10.7	0.0	0.0	10.7	0.0	0.0	0.0	10.7	0.0	10.7	0.0	10.7
INDONESIA	268.6	686.3	357.6	0.0	0.0	1,312.5	175.6	668.9	216.9	164.7	86.4	1,312.5	348.2	1,660.7
IRAN, ISLAMIC R.	50.7	545.5	224.0	0.0	0.0	820.2	263.7	283.3	8.8	245.0	19.4	820.2	229.1	1,049.3
IRAQ	95.7	71.8	87.8	0.0	0.0	255.3	0.0	249.0	3.7	0.0	2.6	255.3	76.7	332.0
IRELAND	0.0	0.0	4.5	0.0	0.0	4.5	0.0	4.5	0.0	0.0	0.0	4.5	0.0	4.5
JAMAICA	11.9	99.1	5.5	0.0	0.0	116.5	0.0	81.3	0.0	35.2	0.0	116.5	16.6	133.1
JORDAN	37.5	52.8	20.3	0.0	0.0	110.6	0.0	108.3	0.0	0.0	2.3	110.6	71.9	182.5

Recipient	Assistance provided, by type: Experts (1)	Equipment (2)	Fellowships (3)	Training courses (4)	Sub-contracts (5)	Total (6)	Assistance provided, by source: UNDP (7)	TACF CC (8)	TACF NCC (9)	Extra-bud. (10)	In kind support (11)	Total (12)	Unliquid. oblig. (13)	Total (12+13) (14)
KENYA	104.7	235.5	105.7	0.0	0.0	445.9	0.0	242.6	8.0	136.0	59.3	445.9	88.8	534.7
KOREA, R.	325.7	282.8	530.4	0.0	0.0	1,138.9	132.8	628.1	0.0	169.6	208.4	1,138.9	160.3	1,299.2
LEBANON	0.0	0.0	12.0	0.0	0.0	12.0	0.0	12.0	0.0	0.0	0.0	12.0	0.0	12.0
LIBYAN A.J.	8.8	94.5	146.6	0.0	0.0	249.9	0.0	160.9	85.2	3.8	0.0	249.9	141.7	391.6
MADAGASCAR	25.1	99.0	18.6	0.0	0.0	142.7	0.0	129.4	13.3	0.0	0.0	142.7	24.3	167.0
MALAYSIA	193.7	406.3	108.5	0.0	0.0	708.5	0.0	576.1	10.3	105.9	16.2	708.5	502.7	1,211.2
MALI	164.5	96.0	11.0	0.0	0.0	271.5	0.0	270.8	0.0	0.7	0.0	271.5	201.6	473.1
MAURITIUS	8.2	45.8	0.0	0.0	0.0	54.0	0.0	54.0	0.0	0.0	0.0	54.0	0.0	54.0
MEXICO	249.4	123.1	144.7	0.0	87.1	604.3	0.0	483.8	0.0	45.6	74.9	604.3	216.4	820.7
MONGOLIA	63.4	90.9	4.0	0.0	0.0	158.3	0.0	156.2	2.1	0.0	0.0	158.3	40.6	198.9
MOROCCO	112.5	131.4	59.9	0.0	0.0	303.8	0.0	264.1	2.7	20.3	16.7	303.8	90.6	394.4
NICARAGUA	12.8	74.2	27.5	0.0	0.0	114.5	0.0	94.7	19.8	0.0	0.0	114.5	53.3	167.8
NIGER	23.1	76.9	12.7	0.0	0.0	112.7	0.0	112.7	0.0	0.0	0.0	112.7	80.9	193.6
NIGERIA	144.7	209.3	114.5	0.0	0.0	468.5	0.0	268.8	10.2	141.7	47.8	468.5	94.8	563.3
PAKISTAN	59.5	426.8	363.5	0.0	5.2	855.0	0.0	787.9	3.7	0.0	63.4	855.0	328.2	1,183.2
PANAMA	59.8	305.8	17.7	0.0	0.0	383.3	0.0	356.4	0.0	26.9	0.0	383.3	48.8	432.1
PARAGUAY	12.1	133.5	29.4	0.0	0.0	175.0	0.0	175.0	0.0	0.0	0.0	175.0	128.4	303.4
PERU	219.0	257.7	76.2	2.7	0.0	555.6	75.5	290.9	19.8	141.7	27.7	555.6	1,066.7	1,622.3
PHILIPPINES	60.2	324.6	274.6	0.0	25.5	684.9	14.2	423.9	0.0	54.0	192.8	684.9	199.1	884.0
POLAND	15.0	347.8	497.5	0.0	0.0	860.1	0.0	797.0	19.1	22.1	21.9	860.1	112.0	972.1
PORTUGAL	38.7	381.9	25.6	0.0	0.0	446.2	0.0	346.0	0.7	99.5	0.0	446.2	174.6	620.8
ROMANIA	45.6	206.8	62.6	0.0	0.0	315.0	57.1	231.5	10.0	0.0	16.4	315.0	453.5	768.5
SENEGAL	27.5	50.1	14.4	0.0	0.0	92.0	0.0	90.7	1.3	0.0	0.0	92.0	46.1	138.1
SIERRA LEONE	12.2	17.4	24.7	0.0	0.0	54.3	0.0	38.2	0.0	0.0	16.1	54.3	7.5	61.8
SINGAPORE	50.5	97.0	4.0	0.0	0.0	151.5	0.0	151.5	0.0	0.0	0.0	151.5	4.6	156.1
SRI LANKA	84.9	330.0	186.1	0.0	0.0	601.0	0.0	516.0	0.0	8.6	76.4	601.0	274.7	875.7
SUDAN	96.9	262.1	236.6	0.0	10.7	606.3	0.0	522.8	21.5	18.6	43.4	606.3	84.2	690.5
SYRIAN A.R.	102.4	308.2	62.0	0.0	87.2	559.8	173.6	230.3	12.8	143.1	0.0	559.8	253.6	813.4
THAILAND	271.6	690.6	780.2	0.0	0.0	1,742.4	467.7	703.5	22.4	181.3	367.5	1,742.4	385.6	2,128.0
TUNISIA	43.5	97.5	16.1	0.0	0.0	157.1	0.0	142.3	0.0	6.3	8.5	157.1	137.3	294.4
TURKEY	127.2	221.6	260.8	0.0	0.0	609.6	6.8	451.3	2.5	5.3	143.7	609.6	163.9	773.5
UGANDA	42.0	36.5	106.7	0.0	0.0	185.2	0.0	155.1	17.4	0.0	12.7	185.2	38.8	224.0
U.A. EMIRATES	3.6	31.4	2.0	0.0	0.0	37.0	0.0	37.0	0.0	0.0	0.0	37.0	4.5	41.5
UK (HONG KONG)	0.0	2.7	0.0	0.0	0.0	2.7	0.0	2.7	0.0	0.0	0.0	2.7	2.2	4.9
U.R. TANZANIA	42.6	113.2	147.5	0.0	0.0	303.3	0.0	238.6	0.0	47.1	17.6	303.3	49.6	352.9
URUGUAY	76.6	230.4	60.1	0.0	0.0	367.1	0.0	288.2	9.3	50.8	18.8	367.1	61.3	428.4
VENEZUELA	84.4	83.9	27.8	0.0	0.0	196.1	0.0	164.2	0.0	31.9	0.0	196.1	33.2	229.3
VIET NAM	54.4	393.2	381.6	0.0	0.0	829.2	0.0	358.4	301.5	24.7	144.6	829.2	943.6	1,772.8
YUGOSLAVIA	74.7	890.8	257.4	0.0	0.3	1,223.2	14.1	535.0	252.4	331.2	90.5	1,223.2	154.2	1,377.4
ZAIRE	20.5	79.3	121.5	0.0	0.0	221.3	1.6	131.6	5.2	16.5	66.4	221.3	145.1	366.4
ZAMBIA	140.1	606.4	88.4	0.0	0.0	834.9	0.0	783.9	36.6	11.6	2.8	834.9	344.2	1,179.1
ZIMBABWE	0.0	0.0	17.8	0.0	0.0	17.8	0.0	17.8	0.0	0.0	0.0	17.8	0.0	17.8
SUB-TOTAL	5,981.8	21,551.7	9,240.6	8.0	218.2	37,000.3	2,316.5	22,589.3	5,962.4	3,537.8	2,594.3	37,000.3	15,566.5	52,566.8

Recipient	Assistance provided, by type						Assistance provided, by source							
	Experts	Equip-ment	Fellow-ships	Training courses	Sub-contracts	Total	UNDP	TACF CC	TACF NCC	Extra-bud.	In kind support	Total	Unliquid. oblig.	Total (12+13)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Intercountry Projects and Training Courses														
INTERREGIONAL	1,358.3	296.5	13.2	2,881.0	33.6	4,580.6	0.0	3,841.9	229.0	363.8	145.9	4,580.6	805.4	5,386.0
REGIONAL AFRICA	304.7	270.2	6.5	237.0	20.0	838.4	0.0	780.6	0.0	52.1	5.7	838.4	224.7	1,063.1
REGIONAL ARAB STATES	3.3	0.0	0.0	7.0	0.0	10.3	10.3	0.0	0.0	0.0	0.0	10.3	11.9	22.2
REGIONAL ASIA & PACIFIC	596.6	250.6	49.9	751.5	0.0	1,648.6	637.9	675.4	41.9	196.5	96.9	1,648.6	213.9	1,862.5
REGIONAL EUROPE	92.2	7.0	6.8	9.1	91.9	209.0	0.0	198.2	10.6	0.0	0.2	209.0	24.7	233.7
REGIONAL LATIN AMERICA	521.9	613.1	14.4	603.2	135.1	1,887.7	367.1	960.7	0.1	337.0	222.8	1,887.7	482.5	2,370.2
SUB-TOTAL	2,875.0	1,437.4	92.8	4,488.8	280.8	9,174.6	1,015.3	6,456.8	281.6	949.4	471.5	9,174.6	1,763.1	10,937.7
MISCELLANEOUS	39.0	74.5	36.1	19.5	1.0	170.1	0.0	170.1	0.0	0.0	0.0	170.1	0.5	170.6
GRAND TOTAL	8,895.8	23,063.6	9,369.5	4,516.3	499.8	46,345.0	3,331.8	29,216.2	6,244.0	4,487.2	3,065.8	46,345.0	17,330.1	63,675.1

TABLE 8

FINANCIAL SUMMARY: 1958-1987

(in thousands of dollars)

Recipient	Assistance provided, by type						Assistance provided, by source				
	Experts	Equip-ment	Fellow-ships	Group training	Sub-contracts	Total	UNDP	Agency funds	Extra-budgetary funds [a]	In kind	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Afghanistan	378.6	441.5	133.8	0.0	0.0	953.9	92.9	779.2	0.0	81.8	953.9
Albania	105.4	1,483.2	138.2	0.0	0.0	1,726.8	119.2	1,578.3	0.0	29.3	1,726.8
Algeria	373.9	1,130.3	230.8	0.0	0.0	1,735.0	21.7	1,658.2	0.0	55.1	1,735.0
Argentina	3,319.2	2,289.5	1,219.8	0.0	0.0	6,828.5	4,620.5	1,652.4	17.5	538.1	6,828.5
Bangladesh	974.7	3,879.6	2,412.3	0.0	0.0	7,266.6	63.8	4,640.0	1,155.8	1,407.0	7,266.6
Bolivia	544.6	1,526.1	393.7	5.3	0.0	2,469.7	159.5	1,815.9	330.6	163.7	2,469.7
Brazil	5,148.4	5,246.8	2,252.4	0.0	0.0	12,647.6	5,660.4	5,356.7	908.7	721.8	12,647.6
Bulgaria	141.5	2,496.5	2,192.0	0.0	0.0	4,830.0	543.8	3,658.7	0.0	627.4	4,830.0
Burma	790.7	1,437.4	227.9	0.0	0.0	2,456.0	537.0	1,815.4	0.0	103.6	2,456.0
Cameroon	382.4	239.1	44.2	0.0	0.0	665.7	297.3	339.2	22.4	6.8	665.7
Cape Verde	3.1	0.1	0.0	0.0	0.0	3.2	3.2	0.0	0.0	0.0	3.2
Chad	116.3	30.6	0.0	0.0	0.0	146.9	146.9	0.0	0.0	0.0	146.9
Chile	2,649.2	2,612.2	1,457.2	0.0	0.0	6,718.6	3,615.1	2,643.7	0.0	459.8	6,718.6
China	690.6	317.6	754.4	0.0	0.0	1,762.6	446.5	1,219.0	6.9	90.2	1,762.6
Colombia	1,319.6	2,478.8	925.8	0.0	0.0	4,724.2	1,693.6	2,154.2	223.6	652.8	4,724.2
Costa Rica	885.0	1,089.2	265.1	0.0	7.0	2,246.3	601.0	1,226.3	234.3	184.7	2,246.3
Cote d'Ivoire	384.9	701.4	110.6	0.0	0.0	1,196.9	73.4	1,063.7	33.0	26.8	1,196.9
Cuba	483.0	4,845.1	313.4	0.0	0.0	5,641.5	1,648.9	3,812.5	39.2	140.9	5,641.5
Cyprus	121.6	622.0	202.3	0.0	0.0	945.9	24.1	721.5	34.6	165.7	945.9
Czechoslovakia	0.5	104.8	1,023.0	0.0	0.0	1,128.3	6.2	737.6	12.9	371.6	1,128.3
D.P.R. Korea	99.6	2,629.5	600.8	0.0	0.0	3,329.9	0.0	2,810.4	53.7	465.8	3,329.9
Dominican Rep.	139.2	555.1	144.2	0.0	0.0	838.5	0.0	807.2	3.9	27.4	838.5
Ecuador	1,252.7	2,924.8	487.3	0.0	0.0	4,664.8	547.5	3,177.7	597.1	342.5	4,664.8
Egypt	3,318.3	9,446.1	3,497.9	0.0	975.3	17,237.6	1,626.1	6,557.3	6,758.1	2,296.1	17,237.6
El Salvador	159.1	431.0	176.2	0.0	0.0	766.3	14.1	516.7	60.9	174.6	766.3
Ethiopia	475.8	639.9	317.9	0.0	0.0	1,433.6	437.5	945.3	0.0	50.8	1,433.6
Gabon	56.2	58.0	25.4	0.0	0.0	139.6	0.0	127.0	0.0	12.6	139.6
Ghana	855.2	1,806.6	2,170.8	0.0	0.0	4,832.6	354.4	2,587.6	352.9	1,337.7	4,632.6
Greece	1,907.8	1,417.5	1,213.4	0.0	0.0	4,538.7	1,561.9	1,986.8	345.3	644.7	4,538.7
Guatemala	277.5	1,012.1	178.3	0.0	0.0	1,467.9	56.2	1,194.9	108.3	108.5	1,467.9
Haiti	4.6	0.2	0.0	0.0	0.9	5.7	0.9	4.8	0.0	0.0	5.7
Honduras	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.7	0.0	0.0	0.7
Hungary	106.9	7,060.4	1,756.0	0.0	0.0	8,923.3	692.9	7,658.5	267.2	304.7	8,923.3
Iceland	66.9	640.6	152.3	0.0	0.0	859.8	0.0	732.7	0.0	127.1	859.8
India	1,015.8	3,801.6	2,677.7	0.0	0.0	7,495.1	2,920.3	1,280.7	2,131.9	1,162.2	7,495.1
Indonesia	2,598.7	3,166.9	1,854.4	0.0	0.0	7,620.0	2,010.2	3,979.8	764.4	865.6	7,620.0
Iran, Islamic Rep.	855.7	1,866.3	1,023.5	0.0	131.5	3,877.0	1,993.3	1,227.4	346.0	310.3	3,877.0
Iraq	579.0	1,139.5	865.0	0.0	0.0	2,583.5	242.5	1,896.3	25.0	419.7	2,583.5
Ireland	0.0	0.0	9.7	0.0	0.0	9.7	0.0	9.7	0.0	0.0	9.7
Israel	257.8	819.8	438.7	0.0	0.0	1,516.3	170.9	900.6	18.0	426.8	1,516.3
Jamaica	211.4	604.8	61.4	0.0	0.0	877.6	15.3	743.3	48.2	70.8	877.6
Jordan	394.7	680.5	216.4	0.0	0.0	1,291.6	89.3	997.1	100.6	104.6	1,291.6
Kenya	796.0	1,227.4	817.0	0.0	0.0	2,840.4	33.2	1,774.1	633.3	399.8	2,840.4
Korea, Rep.	2,804.3	1,927.7	3,105.0	0.0	0.0	7,837.0	740.4	4,015.0	1,138.0	1,943.6	7,837.0
Kuwait	12.0	0.0	3.9	0.0	0.0	15.9	0.0	15.9	0.0	0.0	15.9
Lebanon	248.5	298.4	129.7	0.0	0.0	676.6	139.3	482.7	31.4	23.2	676.6
Liberia	117.3	29.0	0.0	0.0	0.0	146.3	60.2	29.8	0.0	56.3	146.3
Libyan Arab J.	300.0	407.9	521.9	0.0	0.0	1,229.8	7.3	1,155.5	13.2	53.8	1,229.8
Madagascar	1,290.7	1,454.3	181.4	0.0	0.0	2,926.4	1,436.6	1,201.9	244.2	43.7	2,926.4
Malawi	5.1	0.0	0.0	0.0	0.0	5.1	5.1	0.0	0.0	0.0	5.1
Malaysia	1,300.5	2,269.0	984.6	0.0	0.0	4,554.1	1.6	3,290.2	758.6	503.7	4,554.1
Mali	694.0	888.7	261.5	0.0	0.0	1,844.2	13.4	1,633.0	128.7	69.1	1,844.2
Mauritius	86.3	197.5	26.4	0.0	0.0	310.2	0.0	306.4	3.8	0.0	310.2
Mexico	2,494.8	1,142.7	1,253.9	0.0	369.5	5,260.9	419.3	3,358.9	751.4	731.3	5,260.9
Mongolia	296.3	1,043.1	28.4	0.0	0.0	1,367.8	0.0	1,343.6	10.6	13.6	1,367.8
Morocco	1,687.5	1,301.2	392.4	0.0	18.0	3,399.1	909.6	2,043.4	203.4	242.7	3,399.1
Nicaragua	62.5	205.6	56.5	0.0	0.0	324.6	0.0	324.6	0.0	0.0	324.6
Niger	294.4	479.2	63.5	0.0	0.0	837.1	0.0	803.8	0.0	33.3	837.1
Nigeria	2,850.4	2,306.7	956.0	0.0	30.4	6,143.5	980.9	1,524.1	2,965.7	672.8	6,143.5
Niue	7.8	6.9	0.0	0.0	0.0	14.7	14.7	0.0	0.0	0.0	14.7
Pakistan	1,765.2	3,134.6	3,416.1	0.0	5.2	8,321.1	1,842.0	5,040.8	90.6	1,347.7	8,321.1
Panama	350.8	877.3	225.9	0.0	0.0	1,454.0	4.1	1,190.9	144.7	114.3	1,454.0
Paraguay	217.1	862.3	257.9	0.0	0.0	1,337.3	0.0	1,138.5	94.1	104.7	1,337.3

Recipient	Assistance provided, by type						Assistance provided, by source				
	Experts	Equipment	Fellowships	Group training	Subcontracts	Total	UNDP	Agency funds	Extra-budgetary funds [a]	In kind	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Peru	3,331.9	5,371.6	1,329.1	2.7	0.0	10,035.3	3,789.6	2,803.9	2,629.3	812.5	10,035.3
Philippines	2,312.7	3,179.7	3,456.6	0.0	83.2	9,032.2	1,964.4	3,763.8	1,190.0	2,114.0	9,032.2
Poland	114.9	2,788.8	2,560.6	0.0	0.0	5,464.3	202.9	4,483.3	236.5	541.6	5,464.3
Portugal	277.4	2,278.2	372.5	0.0	0.0	2,928.1	0.0	2,128.5	631.1	168.5	2,928.1
Romania	761.9	4,161.6	903.5	0.0	134.5	5,961.5	2,756.7	2,906.3	52.2	246.3	5,961.5
St. Christopher	0.0	0.0	8.5	0.0	0.0	8.5	0.0	0.0	8.5	0.0	8.5
Saudi Arabia	66.8	11.9	12.8	0.0	0.0	91.5	0.0	84.5	0.0	7.0	91.5
Senegal	418.4	1,047.5	211.9	0.0	0.0	1,677.8	345.8	1,111.8	154.7	65.5	1,677.8
Sierra Leone	420.7	259.3	152.3	0.0	0.0	832.3	174.5	529.1	12.4	116.3	832.3
Singapore	390.4	1,004.9	120.0	0.0	0.0	1,515.3	0.0	1,345.5	103.3	66.5	1,515.3
Spain	382.3	0.0	98.4	0.0	0.0	480.7	0.0	401.6	56.0	23.1	480.7
Sri Lanka	969.2	2,335.8	1,551.5	0.0	0.0	4,856.5	307.9	3,416.7	544.9	587.0	4,856.5
Sudan	775.3	1,959.7	1,681.7	0.0	10.7	4,427.4	296.7	3,054.8	509.0	566.9	4,427.4
Syrian Arab Rep.	559.2	1,394.0	522.3	0.0	150.5	2,626.0	403.2	1,889.1	247.8	85.9	2,626.0
Thailand	2,028.3	4,016.1	4,232.9	0.0	3.8	10,281.1	1,157.0	5,131.9	1,595.8	2,396.4	10,281.1
Tunisia	676.5	932.2	336.8	0.0	0.0	1,945.5	141.2	1,407.9	262.6	133.8	1,945.5
Turkey	1,996.1	2,335.7	3,036.5	0.0	22.2	7,390.5	1,635.5	3,863.7	130.8	1,760.5	7,390.5
Uganda	307.1	278.0	376.4	0.0	0.0	961.5	131.0	775.3	0.0	55.2	961.5
U.A. Emirates	36.2	41.9	5.3	0.0	0.0	83.4	0.0	83.4	0.0	0.0	83.4
UK (Hong Kong)	68.7	114.0	26.1	0.0	0.0	208.8	0.0	199.6	0.0	9.0	208.8
U.R. Tanzania	452.0	1,187.6	628.3	0.0	0.0	2,267.9	9.6	2,087.8	54.2	116.3	2,267.9
Uruguay	724.2	2,118.8	434.1	0.0	0.0	3,277.1	193.1	2,076.2	691.0	316.8	3,277.1
Venezuela	1,094.3	899.6	347.2	0.0	0.0	2,341.1	135.2	1,925.7	97.8	182.4	2,341.1
Viet Nam	359.2	3,101.7	1,279.3	0.0	0.0	4,740.2	31.4	4,005.6	159.3	543.9	4,740.2
Yugoslavia	1,285.0	5,025.1	2,414.8	0.0	37.3	8,762.2	3,061.7	3,842.3	1,111.0	747.2	8,762.2
Zaire	608.0	1,475.7	720.4	0.0	0.0	2,804.1	578.8	1,668.2	192.2	364.9	2,804.1
Zambia	1,096.1	1,980.0	671.3	0.0	0.0	3,747.4	152.5	3,152.8	172.4	269.7	3,747.4
Zimbabwe	0.0	0.0	17.8	0.0	0.0	17.8	0.0	17.8	0.0	0.0	17.8
Other countries [b]	457.7	228.7	1,455.9	0.0	0.0	2,142.3	403.9	888.5	0.0	851.9	2,142.3
Sub-total	72,898.1	143,260.6	73,811.7	8.0	1,980.0	291,958.4	57,588.7	166,731.9	33,055.5	34,582.3	291,958.4
	Intercountry projects and training courses										
Africa	933.6	922.7	277.5	237.0	20.0	2,390.8	332.8	1,937.3	59.4	61.3	2,390.8
Arab States	22.9	0.0	33.8	7.0	0.0	63.7	63.7	0.0	0.0	0.0	63.7
Asia & Pacific	4,230.4	3,489.1	2,283.8	751.5	81.1	10,835.9	5,735.6	2,804.9	1,352.4	943.0	10,835.9
Europe	287.6	42.8	26.1	9.1	787.8	1,153.4	59.5	1,092.3	0.0	1.6	1,153.4
Latin America	3,705.9	2,961.4	1,300.0	603.2	352.7	8,923.2	2,881.2	4,098.2	652.2	1,291.6	8,923.2
Middle East	5.8	1.2	5.3	0.0	0.0	12.3	12.3	0.0	0.0	0.0	12.3
Interregional	10,074.2	4,633.9	16,983.9	2,881.0	361.8	34,934.8	1,790.5	27,377.0	3,239.8	2,527.5	34,934.8
Sub-total	19,260.4	12,051.1	20,910.4	4,488.8	1,603.2	58,313.9	10,875.8	37,309.7	5,303.8	4,825.0	58,313.9
Miscellaneous	353.3	441.5	181.7	19.5	7.8	1,003.8	23.2	980.6	0.0	0.0	1,003.8
TOTAL	92,511.8	155,753.2	94,903.8	4,516.3	3,591.0	351,276.1	68,487.5	205,022.2	38,359.1	39,407.3	351,276.1

a) The assistance provided from extrabudgetary funds prior to 1977 is included under assistance "in kind".

b) Includes the following countries which have not received technical assistance during the last ten or more years: Austria, Democratic Kampuchea, Denmark, Finland, France, the Federal Republic of Germany, Italy, Japan, Monaco, the Netherlands, New Zealand, Norway, Somalia, South Africa, Sweden, Switzerland, the United States of America and Zimbabwe.

TABLE 9

WOMEN'S PARTICIPATION IN TECHNICAL CO-OPERATION

	1981			1986			1987		
	Total	of which women	% of women	Total	of which women	% of women	Total	of which women	% of women
Fellows	570	97	17.0	734	159	21.7	870	173	19.9
Visiting scientists	65	7	10.8	203	28	13.8	160	12	7.5
Training course participants	519	64	12.3	970	157	16.2	945	151	16.0
Project counterparts	511	46	9.0	963	89	9.2	1,152	126	10.9
International experts	319	7	2.2	870	37	4.3	793	42	5.3
National experts	12	0	0.0	40	6	15.0	51	4	7.8
Lecturers	119	2	1.7	228	14	6.1	233	20	8.6
Other project personnel	11	9	81.8	30	20	66.7	23	17	73.9
TCAC Professional staff*	34	5	14.7	41	10	24.4	49	13	26.5
TCAC General Services staff*	54	48	88.8	76	71	93.4	77	72	93.5

* Including the staff of the Office of the DDG and, as from 1983, the staff of the Evaluation Section.

ANNEX I

DISBURSEMENT OF EXTRABUDGETARY AND IN-KIND CONTRIBUTIONS

A. Assistance for activities where donor is not recipient

(in thousands of dollars)

	Extrabudgetary						In kind						
Donor	Experts	Equip-ment	Fellow-ships	Group training	Sub-contracts	Sub-total	Experts	Equip-ment	Fellow-ships	Group training	Sub-contracts	Sub-total	TOTAL
Argentina	-	-	-	-	-	-	8.3	-	-	36.4	-	44.7	44.7
Australia	-	-	-	-	-	-	2.9	-	-	6.7	-	9.6	9.6
Austria	59.3	0.9	-	-	-	60.2	0.8	-	27.3	6.1	-	34.2	94.4
Bangladesh	-	-	-	-	-	-	-	-	-	2.0	-	2.0	2.0
Belgium	16.4	4.5	-	-	-	20.9	-	-	85.9	-	-	85.9	106.8
Brazil	-	-	-	-	-	-	19.2	-	19.6	34.6	-	73.4	73.4
Canada	17.4	-	32.5	-	-	49.9	29.1	-	-	5.5	-	34.6	84.5
Chile	-	-	-	-	-	-	2.6	-	-	1.4	-	4.0	4.0
China	-	-	-	-	-	-	2.7	-	-	2.0	-	4.7	4.7
Colombia	-	-	-	-	-	-	-	-	-	2.0	-	2.0	2.0
Czechoslovakia	-	-	-	-	-	-	-	-	23.3	3.2	-	26.5	26.5
Denmark	-	-	-	-	-	-	-	-	1.9	-	-	1.9	1.9
Ecuador	-	-	-	-	-	-	-	-	-	4.1	-	4.1	4.1
Egypt	-	-	-	-	-	-	-	-	-	2.0	-	2.0	2.0
Finland	-	47.0	-	-	-	47.0	0.8	-	-	1.1	-	1.9	48.9
France	5.7	-	-	-	-	5.7	35.7	-	52.8	6.5	-	95.0	100.7
Germany, F.R.	136.7	301.9	-	83.9	42.4	564.9	2.2	-	226.3	67.3	-	295.8	860.7
Hungary	-	-	-	-	-	-	3.6	-	70.7	2.2	-	76.5	76.5
India	-	-	-	-	-	-	1.4	-	45.2	37.1	-	83.7	83.7
Israel	-	-	-	-	-	-	-	-	2.9	-	-	2.9	2.9
Italy	321.0	223.2	-	-	5.7	549.9	3.4	-	99.7	0.9	-	104.0	653.9
Jamaica	-	-	-	-	-	-	-	-	-	5.3	-	5.3	5.3
Japan	115.1	-	2.4	79.1	-	196.6	13.9	-	-	3.9	-	17.8	214.4
Korea, Rep.	-	-	-	-	-	-	1.7	-	-	23.1	-	24.8	24.8
Kuwait	-	122.2	-	-	-	122.2	-	-	-	-	-	-	122.2
Mexico	-	-	-	-	-	-	-	-	-	5.4	-	5.4	5.4
Netherlands	-	-	-	-	-	-	-	-	47.8	-	-	47.8	47.8
Norway	-	0.7	-	-	-	0.7	-	-	-	-	-	-	0.7
Pakistan	-	-	-	-	-	-	-	-	-	3.2	-	3.2	3.2
Panama	-	-	-	-	-	-	1.2	-	-	-	-	1.2	1.2
Paraguay	-	-	-	-	-	-	-	-	-	2.0	-	2.0	2.0
Peru	-	-	-	-	-	-	-	-	-	2.0	-	2.0	2.0
Poland	-	-	-	-	-	-	1.0	-	29.3	2.6	-	32.9	32.9
Spain	-	-	-	-	-	-	12.6	-	33.5	0.6	1.2	47.9	47.9
Sweden	33.0	38.9	10.7	-	-	82.6	0.8	-	-	5.8	-	6.6	89.2

Donor	Extrabudgetary						In kind						TOTAL
	Experts	Equip-ment	Fellow-ships	Group training	Sub-contracts	Sub-total	Experts	Equip-ment	Fellow-ships	Group training	Sub-contracts	Sub-total	
Countries (continued)													
Switzerland	-	-	-	-	-	-	-	-	-	0.2	-	0.2	0.2
Turkey	-	-	-	-	-	-	-	-	-	2.2	0.8	3.0	3.0
UK	75.1	163.8	8.5	-	-	247.4	6.0	-	116.9	7.1	-	130.0	377.4
USSR	-	162.7	44.3	-	-	207.0	-	-	-	14.8	-	14.8	221.8
USA	159.3	1,278.9	-	125.7	53.8	1,617.7	19.6	-	1,631.6	25.3	-	1,676.5	3,294.2
Uruguay	-	-	-	-	-	-	2.0	-	-	10.8	-	12.8	12.8
Venezuela	-	-	-	-	-	-	-	-	-	1.7	-	1.7	1.7
Yugoslavia	-	-	-	-	-	-	-	-	-	5.7	0.8	6.5	6.5
Sub-total	939.0	2,344.7	98.4	288.7	101.9	3,772.7	171.5	-	2,514.7	342.8	2.8	3,031.8	6,804.5
Organizations													
CEC	15.8	15.2	-	-	-	31.0	-	-	-	0.2	-	0.2	31.2
IANEC	-	-	-	-	-	-	-	-	-	21.0	-	21.0	21.0
IBRD	-	-	-	-	-	-	-	-	-	2.9	-	2.9	2.9
IFFIT	-	-	-	-	-	-	-	-	-	4.0	-	4.0	4.0
OECD	-	-	-	-	-	-	-	-	-	0.3	-	0.3	0.3
WHO	-	-	-	-	-	-	-	-	-	5.6	-	5.6	5.6
Sub-total	15.8	15.2	-	-	-	31.0	-	-		34.0	-	34.0	65.0
GRAND TOTAL	954.8	2,359.9	98.4	288.7	101.9	3,803.7	171.5	-	2,514.7	376.8	2.8	3,065.8	6,869.5

B. Assistance for activities where donor is recipient

(in thousands of dollars)

Donor	Project title and code	Equip-ment	Country total
Colombia	Isotopes in hydrology, COL/8/010	34.4	34.4
Ecuador	Nuclear medicine services, ECU/6/009	195.1	195.1
Iran, Islamic Rep.	Procurement assistance, IRA/0/005	245.0	245.0
Nigeria	Nuclear physics, NIR/1/003	4.3	4.3
Syrian Arab Rep.	Procurement assistance, SYR/0/005	20.9	20.9
Yugoslavia	Nuclear power plant in-service inspection, YUG/4/024	166.0	166.0
	Failed fuel detection, YUG/9/021	17.8	17.8
TOTAL		683.5	683.5

ANNEX II

TRAINING COURSES: 1987

Project title and code	Place(s) and dates	Source of funds	Participation [a] (1)	(2)	(3)	Amount(s) expended [b] ($)
INTERREGIONAL TRAINING COURSE ON INTERFACING IN NUCLEAR EXPERIMENTS,INT/0/043/001	LISBON,PORTUGAL 5 OCTOBER - 20 NOVEMBER	AGENCY GERMANY, F.R.	17	0	0	85,049 (CC) 16,921 (CC)
INTERREGIONAL TRAINING COURSE ON ENERGY PLANNING IN DEVELOPING COUNTRIES WITH SPECIAL ATTENTION TO NUCLEAR ENERGY,INT/0/044/001	RABAT,MOROCCO GIF-SUR-YVETTE,FRANCE 2 FEBRUARY - 6 MARCH	AGENCY	23	0	8	125,445 (CC)
REGIONAL WORKSHOPS ON CALIBRATION PROCEDURES IN DOSIMETRY (SSDL),INT/1/014/001	KUALA LUMPUR,MALAYSIA 6 JULY - 25 JULY	AGENCY	12	0	4	3,228 (CC)
INTERREGIONAL TRAINING COURSE ON NEUTRON PHYSICS AND NUCLEAR DATA MEASUREMENTS IN RESEARCH REACTORS,INT/1/038/001	MOSCOW,USSR 18 MAY - 9 JUNE	AGENCY	30	0	0	56,729 (CC)
INTERREGIONAL TRAINING COURSE ON NUCLEAR POWER PLANT CONTROL AND INSTRUMENTATION,INT/4/091/001	KARLSRUHE,GERMANY, F.R. 12 OCTOBER - 17 NOVEMBER	AGENCY	30	1	0	114,141 (CC)
INTERREGIONAL TRAINING COURSE ON THE APPLICATION OF SMALL COMPUTERS TO RESEARCH REACTOR OPERATIONS,INT/4/092/001	LJUBLJANA,YUGOSLAVIA 1 JUNE - 26 JUNE	AGENCY	20	0	0	99,591 (CC) 48 (NCC)
INTERREGIONAL TRAINING COURSE ON ADVANCED NUCLEAR ELECTRONICS,INT/4/093/001	KINGSTON,JAMAICA 29 JUNE - 18 SEPTEMBER	AGENCY	18	0	1	122,637 (CC)
INTERREGIONAL TRAINING COURSE ON THE USE OF ISOTOPE-AIDED TECHNIQUES IN RUMINANT NUTRITION,INT/5/106/001	SEIBERSDORF,AUSTRIA 7 APRIL - 8 MAY	AGENCY	21	0	0	127,327 (CC)
INTERREGIONAL TRAINING COURSE ON THE USE OF ISOTOPE AND RADIATION TECHNIQUES IN SOIL/PLANT RELATIONSHIPS,INT/5/107/001	SEIBERSDORF,AUSTRIA 12 MAY - 3 JULY	AGENCY	16	4	0	117,625 (CC)
INTERREGIONAL TRAINING COURSE ON THE INDUCTION AND USE OF MUTATIONS IN PLANT BREEDING,INT/5/108/001	SEIBERSDORF,AUSTRIA OLOMOUC,CZECHOSLOVAKIA 22 SEPTEMBER - 5 NOVEMBER	AGENCY	18	2	0	113,206 (CC) 920 (NCC)

Project title and code	Place(s) and dates	Source of funds	Participation [a] (1)	(2)	(3)	Amount(s) expended [b] ($)
INTERREGIONAL TRAINING COURSE ON THE USE OF NITROGEN-15 IN SOIL AND PLANT NUTRITION,INT/5/110/001	LEIPZIG,GERMAN D.R. 12 MAY - 12 JUNE	AGENCY	14	0	1	89,519 (CC)
INTERREGIONAL TRAINING COURSE ON NUCLEAR AND RELATED TECHNIQUES IN PESTICIDE RESEARCH,INT/5/111/001	COLLEGE STATION, TX,USA 14 SEPTEMBER - 16 OCTOBER	AGENCY	21	0	0	107,461 (CC)
INTERREGIONAL TRAINING COURSE ON NUCLEAR MEDICINE,INT/6/035/001	MOSCOW,USSR 3 SEPTEMBER - 16 OCTOBER	AGENCY	32	0	0	66,824 (CC) 6,473 (NCC)
INTERREGIONAL TRAINING COURSE ON RADIATION CYTOGENETICS IN BIOMEDICAL AND ENVIRONMENTAL HEALTH AND RADIATION PROTECTION PROBLEMS,INT/7/009/001	TOKYO,JAPAN 26 OCTOBER - 6 NOVEMBER	AGENCY	20	0	0	93,862 (CC)
INTERREGIONAL TRAINING COURSE ON NON-DESTRUCTIVE TESTING, RADIOGRAPHY AND ULTRASONICS TECHNIQUES,INT/8/025/001	NAIROBI,KENYA 31 AUGUST - 25 SEPTEMBER	AGENCY	16	0	5	81,886 (CC)
INTERREGIONAL TRAINING COURSE ON PHYSICAL PROTECTION OF NUCLEAR FACILITIES AND MATERIALS,INT/9/071/001	ALBUQUERQUE, NM,USA 21 APRIL - 15 MAY	USA	22	4	0	126,916 (CC)
INTERREGIONAL TRAINING COURSE ON PLANNING, PREPAREDNESS AND RESPONSE TO NUCLEAR ACCIDENTS OR RADIOLOGICAL EMERGENCIES,INT/9/072/001	ARGONNE, IL,USA 9 FEBRUARY - 6 MARCH	AGENCY	31	4	0	79,872 (CC)
INTERREGIONAL TRAINING COURSE ON SAFETY IN NUCLEAR POWER PLANT OPERATION,INT/9/073/001	ARGONNE, IL,USA MISSISSAUGA, ONTARIO,CANADA 16 MARCH - 24 APRIL	AGENCY	27	0	2	84,836 (CC)
INTERREGIONAL TRAINING COURSE ON RADIATION PROTECTION,INT/9/074/001	GIF-SUR-YVETTE,FRANCE 21 SEPTEMBER - 6 NOVEMBER	AGENCY	24	0	0	35,915 (CC)
INTERREGIONAL TRAINING COURSE ON SAFE TRANSPORT OF RADIOACTIVE MATERIALS,INT/9/075/001	BRISTOL,UK 6 OCTOBER - 23 OCTOBER	AGENCY	23	0	0	40,352 (CC)
INTERREGIONAL TRAINING COURSE ON PROBABILISTIC SAFETY ASSESSMENT FOR NUCLEAR POWER PLANT OPERATION,INT/9/076/001	MADRID,SPAIN 5 OCTOBER - 6 NOVEMBER	AGENCY	13	1	0	84,038 (CC)

Project title and code	Place(s) and dates	Source of funds	Participation [a] (1)	(2)	(3)	Amount(s) expended [b] ($)
INTERREGIONAL TRAINING COURSE FOR RADIATION PROTECTION OFFICERS IN REGULATORY BODIES,INT/9/077/001	BERLIN,GERMAN D.R. 1 SEPTEMBER - 29 SEPTEMBER	AGENCY	20	0	0	77,214 (CC)
INTERREGIONAL TRAINING COURSE ON SAFE OPERATION OF NUCLEAR POWER PLANTS,INT/9/078/001	WEJHEROWO,POLAND LOVIISA,FINLAND JASLOVSKE BOHUNICE,CZECHOSL 11 MAY - 17 JUNE	AGENCY	19	0	11	46,122 (CC) 7,334 (NCC)
INTERREGIONAL TRAINING COURSE ON MANAGEMENT OF RADIOACTIVE WASTE,INT/9/079/001	KARLSRUHE,GERMANY, FEDERAL 7 SEPTEMBER - 2 OCTOBER	AGENCY	28	0	0	97,386 (CC)
INTERREGIONAL TRAINING COURSE ON IMPLICATIONS OF RADIATION-INDUCED EMBRITTLEMENT FOR THE INTEGRITY OF PRESSURE VESSELS,INT/9/080/001	BUENOS AIRES,ARGENTINA 26 OCTOBER - 13 NOVEMBER	AGENCY	19	0	0	91,534 (CC)
INTERREGIONAL TRAINING COURSE ON RADIOLOGICAL PROTECTION AND NUCLEAR SAFETY,INT/9/082/001	BUENOS AIRES,ARGENTINA 1 APRIL - 27 NOVEMBER	AGENCY	14	0	11	63,582 (CC)
INTERREGIONAL TRAINING COURSE ON PLANNING, PREPAREDNESS AND RESPONSE TO NUCLEAR ACCIDENTS OR RADIOLOGICAL EMERGENCIES,INT/9/083/001	ARGONNE, IL,USA 21 SEPTEMBER - 16 OCTOBER	AGENCY	23	0	0	59,794 (CC)
REGIONAL TRAINING COURSE ON ADVANCED X-RAY FLUORESCENCE ANALYSIS,RAF/1/003/001	LEGON-ACCRA,GHANA 30 MARCH - 24 APRIL	AGENCY	11	0	4	112,852 (CC)
REGIONAL WORKSHOP ON BIOLOGICAL NITROGEN FIXATION,RAF/5/010/001	LEGON-ACCRA,GHANA 6 JULY - 10 JULY	AGENCY	11	0	5	14,215 (CC)
REGIONAL TRAINING COURSE ON RADIATION PROTECTION,RAF/9/003/001	CAIRO,EGYPT 29 MARCH - 24 APRIL	AGENCY	12	0	13	46,760 (CC)
REGIONAL TRAINING COURSE ON NUCLEAR ANALYTICAL TECHNIQUES AND THEIR APPLICATIONS,RAS/1/008/001	TOKYO,JAPAN 18 NOVEMBER - 18 DECEMBER	AGENCY	16	0	0	47,993 (CC)
REGIONAL TRAINING COURSE ON REACTOR AND CYCLOTRON PRODUCTION OF RADIOISOTOPES,RAS/2/002/001	BEIJING,CHINA 4 MAY - 30 MAY	AGENCY	14	0	4	97,233 (CC)
REGIONAL TRAIN-THE-TRAINERS COURSE ON DATAPROCESSING IN RADIOIMMUNOASSAY,RAS/6/010/001	JAKARTA,INDONESIA 2 MARCH - 20 MARCH	AGENCY	14	0	0	45,831 (CC)

Project title and code	Place(s) and dates	Source of funds	Participation [a] (1)	(2)	(3)	Amount(s) expended [b] ($)
REGIONAL WORKSHOP ON QUALIFICATION AND CERTIFICATION OF NDT PERSONNEL,RAS/8/061/003	BANGI, SELANGOR,MALAYSIA 12 OCTOBER - 16 OCTOBER	UNDP	15	0	2	20,167 (CC)
REGIONAL TRAINING COURSE ON NON-DESTRUCTIVE TESTING OF RADIOGRAPHY (LEVEL II),RAS/8/061/005	BOMBAY,INDIA 10 AUGUST - 28 AUGUST	UNDP	9	0	3	23,960 (CC)
REGIONAL WORKSHOP ON NON-DESTRUCTIVE TESTING OF NON-METALLIC MATERIALS,RAS/8/061/006	TOKYO,JAPAN 31 AUGUST - 4 SEPTEMBER	JAPAN	12	0	0	11,800 (CC)
REGIONAL TRAINING COURSE ON NON-DESTRUCTIVE TESTING OF ULTRASONICS (LEVEL II), RAS/8/061/008	TAEJEON, CHUNG-NAM,KOREA, R. 7 SEPTEMBER - 25 SEPTEMBER	UNDP	10	0	2	30,716 (CC)
EXECUTIVE MANAGEMENT SEMINAR ON NUCLEONIC CONTROL SYSTEMS IN STEEL INDUSTRY,RAS/8/061/009	TOKYO,JAPAN 26 OCTOBER - 30 OCTOBER	UNDP JAPAN	6	0	0	486 (CC) 28,653 (CC)
REGIONAL TRAINING COURSE ON NON-DESTRUCTIVE TESTING OF SURFACE METHODS (LEVEL II),RAS/8/061/010	BANDUNG,INDONESIA 5 OCTOBER - 23 OCTOBER	UNDP	10	0	2	33,918 (CC)
REGIONAL TRAINING COURSE ON INDUSTRIAL RADIATION STERILIZATION - QUALITY CONTROL AND STERILITY ASSURANCE,RAS/8/061/011	BANGKOK,THAILAND 5 OCTOBER - 16 OCTOBER	UNDP	12	0	4	45,153 (CC)
REGIONAL TRAINING COURSE ON RADIATION ENGINEERING - ELECTRON BEAM FACILITIES,RAS/8/061/012	TAKASAKI, GUNMA,JAPAN 19 OCTOBER - 30 OCTOBER	UNDP JAPAN	10	0	0	2,825 (CC) 38,563 (CC)
REGIONAL TRAINING COURSE ON INDUSTRIAL RADIATION STERILIZATION - QUALITY CONTROL AND COMPATIBILITY OF MATERIALS,RAS/8/061/014	BOMBAY,INDIA 30 NOVEMBER - 11 DECEMBER	UNDP	8	2	2	23,424 (CC)

Project title and code	Place(s) and dates	Source of funds	Participation [a]			Amount(s) expended [b]
			(1)	(2)	(3)	($)
REGIONAL TRAINING COURSE ON NUCLEONIC CONTROL SYSTEMS IN THE PAPER INDUSTRY,RAS/8/061/016	BANGKOK,THAILAND 9 NOVEMBER - 20 NOVEMBER	UNDP	8	0	3	16,611 (CC)
REGIONAL EXECUTIVE MANAGEMENT SEMINAR ON NUCLEONIC CONTROL SYSTEMS IN THE COAL INDUSTRY,RAS/8/061/017	BRISBANE,AUSTRALIA 28 SEPTEMBER - 2 OCTOBER	UNDP	9	0	0	30,193 (CC)
REGIONAL (RCA) WORKSHOP ON PHOTON, ELECTRON AND NEUTRON DOSIMETRY IN RADIOTHERAPY,RAS/8/062/001	TAEJEON, CHUNG-NAM,KOREA, R. 8 JUNE - 19 JUNE	AGENCY KOREA, R.	13	4	2	25,056 (CC) IN KIND
REGIONAL (RCA) WORKSHOP ON THE OPERATION AND MAINTENANCE OF RESEARCH REACTORS,RAS/8/062/002	BOMBAY,INDIA 16 NOVEMBER - 4 DECEMBER	AGENCY INDIA	9	0	12	1,712 (CC) IN KIND
REGIONAL (RCA) WORKSHOP ON THE USE OF IBM PERSONAL COMPUTERS FOR LABORATORY AUTOMATION AND DATA ACQUISTION,RAS/8/062/003	BOMBAY,INDIA 23 NOVEMBER - 11 DECEMBER	AGENCY INDIA	11	6	6	3,513 (CC) IN KIND
WORKSHOP ON DERIVED INTERVENTION LEVELS FOR ARAB COUNTRIES,RER/9/003/001	DAMASCUS,SYRIAN ARAB REP. 8 NOVEMBER - 13 NOVEMBER	AGENCY	5	0	7	9,112 (CC)
REGIONAL TRAINING COURSE FOR LIBRARIANS AND INFORMATION SPECIALISTS IN NUCLEAR SCIENCE AND TECHNOLOGY,RLA/0/010/001	SANTIAGO,CHILE 6 JULY - 31 JULY	AGENCY	10	0	4	66,210 (CC)
REGIONAL TRAINING COURSE ON DESIGN, CONSTRUCTION AND TESTING OF RESEARCH REACTOR INSTRUMENTATION,RLA/4/006/006	LIMA,PERU 26 OCTOBER - 18 DECEMBER	AGENCY	2	0	0	1,803 (CC)
REGIONAL WORKSHOP ON REPAIR OF NUCLEAR INSTRUMENT MODULE (NIM),RLA/4/006/007	MONTEVIDEO,URUGUAY 16 MARCH - 10 APRIL	AGENCY URUGUAY	9	0	2	5,017 (CC) IN KIND
REGIONAL SEMINAR ON RECENT ADVANCES IN NUCLEAR DATA ACQUISITION AND ANALYSIS SYSTEMS,RLA/4/006/008	GUATEMALA CITY,GUATEMALA 13 JULY - 24 JULY	AGENCY	15	0	4	25,114 (CC)
REGIONAL WORKSHOP ON SMALL COMPUTER SOFTWARE FOR PROJECTS IN NUCLEAR LABORATORIES: "DEVELOPMENT OF INTEGRATED SOFTWARE",RLA/4/006/009	VIENNA,AUSTRIA 17 AUGUST - 2 OCTOBER	AGENCY	3	2	0	18,070 (CC)

Project title and code	Place(s) and dates	Source of funds	Participation [a] (1)	(2)	(3)	Amount(s) expended [b] ($)
REGIONAL WORKSHOP ON COMPUTER INTERFACING AND THE DESIGN AN D CONSTRUCTION OF A PNEUMATIC TRANSFER SYSTEM AND ITS COMPUTER CONTROL.,RLA/4/006/010	LIMA,PERU 7 JULY - 1 AUGUST	AGENCY	6	0	5	4,656 (CC)
REGIONAL TRAINING COURSE ON FOOD IRRADIATION TECHNOLOGY,RLA/5/020/002	BUENOS AIRES,ARGENTINA 16 MARCH - 10 APRIL	AGENCY ARGENTINA	9	0	6	4,158 (CC) 80 (NCC) IN KIND
REGIONAL TRAINING COURSE ON THE USE OF MUTATION TECHNIQUES IN CONNECTION WITH CEREALS IN-IN-VITRO CULTURES,RLA/5/021/001	LIMA,PERU 16 NOVEMBER - 4 DECEMBER	AGENCY USA IANEC	9	0	2	4,268 (CC) 1,651 (CC) IN-KIND
REGIONAL SEMINAR ON NON-DESTRUCTIVE TESTING OF VIBRATIONS,RLA/8/005/192	BUENOS AIRES,ARGENTINA 14 SEPTEMBER - 18 SEPTEMBER	GERMANY, F.R.	15	0	0	17,984 (CC)
REGIONAL TRAINING COURSE ON EDDY CURRENTS (LEVEL III),RLA/8/005/193	SAO PAULO,BRAZIL 14 SEPTEMBER - 25 SEPTEMBER	GERMANY, F.R.	12	0	0	22,143 (CC)
REGIONAL SEMINAR ON HIGH ENERGY RT,RLA/8/005/194	QUITO,ECUADOR 14 SEPTEMBER - 18 SEPTEMBER	GERMANY, F.R.	12	0	0	12,814 (CC)
REGIONAL TRAINING COURSE ON EDDY CURRENTS (LEVEL II),RLA/8/005/196	SANTIAGO,CHILE 28 SEPTEMBER - 9 OCTOBER	GERMANY, F.R.	11	0	0	15,056 (CC)
REGIONAL VIII MEETING OF THE WORKING GROUP,RLA/8/005/200	LA PAZ,BOLIVIA 5 OCTOBER - 9 OCTOBER	AGENCY	16	0	0	14,546 (CC)
REGIONAL TRAINING COURSE ON MATERIALS AND PROCESSES,RLA/8/006/013	MEXICO CITY,MEXICO 10 AUGUST - 14 AUGUST	UNFSSTD	14	0	0	20,112 (CC)
REGIONAL WORKSHOP ON RADIATION PROTECTION,RLA/9/009/005	LIMA,PERU 6 APRIL - 10 APRIL	AGENCY	10	0	3	3,947 (CC)
REGIONAL WORKSHOP TO EVALUATE CO-ORDINATED STUDY ON ANALYSIS OF ABNORMAL EXPOSURES OCCURING FROM APPLICATION OF INDUSTRIAL GAMMA RADIOGRAPHY,RLA/9/009/006	BUENOS AIRES,ARGENTINA 16 NOVEMBER - 20 NOVEMBER	AGENCY	3	0	5	2,571 (CC)

[a] The figures under (1) denote the number of award-holders whose cost of participation was met out of project funds; those under (2) denote the number of participants who attended at the expense of their government, or of another organization or programme; those under (3) denote the number of local participants. No stipends or international travel costs were paid out of project funds in respect of participants shown under (2) and (3).

[b] The amounts expended (i.e. disbursements plus unliquidated obligations) do not include expenditures by host governments in respect of local lecturers, or expenditures for laboratory, lecture room and other facilities.

ANNEX III

PUBLISHED REPORTS

Recipient	Subject and project code	Author(s)	Reference no.	Status[a]
ARGENTINA	STUDIES OF COMPACT LATTICES IN NUCLEAR REACTORS (ARG/4/077)	CASALI, FRANCO	IAEA/UNDP-ARG/78/020-30	R
	NUCLEAR ENGINEERING WITH SPECIAL REFERENCE TO NEUTRON NOISE ANALYSIS AND THE EVALUATION OF RESEARCH PROJECTS ACCEPTED FOR UNDP FUNDING (ARG/4/077)	STEGEMANN, DIETER HELMUT	IAEA/UNDP-ARG/78/020-31	R
	TWO-PHASE FLOW AND HEAT TRANSFER (ARG/4/077)	VEZIROGLU, TURHAN NEJAT	IAEA/UNDP-ARG/78/020-32	R
	NUCLEAR ENGINEERING: TWO-PHASE FLOW INSTABILITIES (ARG/4/077)	PODOWSKI, MICHAEL ZBIGNIEW	IAEA/UNDP-ARG/78/020-33	R
	NUCLEAR REACTOR THERMOHYDRAULICS AND SAFETY TECHNOLOGY (ARG/4/077)	LAHEY, RICHARD THOMAS JR.	IAEA/UNDP-ARG/78/020-34	R
CHINA	WORKSHOP ON SELECTION OF SIMULATORS (CPR/4/003)	DISTLER, KLAUS GNOSSPELIUS, CARL FREDRIK	IAEA/UNDP-CPR/85/085-01	R
GHANA	RESUSCITATING UNDERGRADUATE AND GRADUATE PROGRAMMES IN APPLIED NUCLEAR PHYSICS (GHA/1/009)	ERICSON, ANNE	IAEA/UNDP-GHA/85/015-TR	R
INDONESIA	APPLICATION OF ISOTOPES AND RADIATION FOR INCREASING AGRICULTURAL PRODUCTION (INS/5/018)	HAMISSA, MOHAMED RIAD ALY	IAEA/UNDP-INS/78/074-03	R
IRAN, ISLAMIC REP.	PLANNING MISSION (IRA/4/016)	SZATMARY, ZOLTAN	IAEA-TA-2415	D
IRAQ	RETRAINING AND QUALIFICATION OF RESEARCH REACTOR OPERATOR STAFF (IRQ/9/004)	PYTEL, KRZYSZTOF MAURYCY SKORNIK, KAROL ZYSZKOWSKI, WICTOR	IAEA-TA-2403	D
	SAFETY ANALYSIS OF THE IRT REACTOR (IRQ/9/004)	STRUPCZEWSKI, ANDREJ LUDWIK GYIMESI, ZOLTAN	IAEA-TA-2405	R
	OPERATION OF RESEARCH REACTOR TAMMUZ-2 (IZIS) (IRQ/9/004)	PYTEL, KRZYSZTOF MAURYCY	IAEA-TA-2406	R

Recipient	Subject and project code	Author(s)	Reference no.	Status[a]
KOREA, REP. OF	BREEDING OILSEED (BRASSICA NAPUS) (ROK/5/025)	THOMPSON, KENNETH FRANK	IAEA/UNDP-ROK/84/003-01	R
	MUTATION BREEDING IN HORTICULTURAL CROPS (ROK/5/025)	DONINI, BASILIO	IAEA/UNDP-ROK/84/003-02	R
ROMANIA	USE OF SIMULATORS AND OTHER TRAINING AIDS FOR CERNAVODA NPP OPERATORS (ROM/4/010)	BEREZNAI, GEORGE THOMAS	IAEA/UNDP-ROM/82/001-07	R
SENEGAL	THE INSTITUTE OF APPLIED NUCLEAR TECHNOLOGY (SEN/0/003)	MAKSOUDI, MOKDAD	IAEA/UNDP-SEN/77/005-TR	R
THAILAND	CROP MUTATION BREEDING FOR DISEASE RESISTANCE (THA/5/031)	BLIXT, STIG GUNNAR MURATA, NOBUO CONGER, ROBERT	IAEA/UNDP-THA/85/004-01	R
	NUCLEAR TECHNIQUES FOR ANIMAL REPRODUCTION (THA/5/031)	FRESCH, JOHN ERNEST	IAEA/UNDP-THA/85/004-02	R
	NUCLEAR TECHNIQUES FOR ANIMAL HEALTH (THA/5/031)	PFISTER, KURT	IAEA/UNDP-THA/85/004-03	R
TURKEY	GAMMA-RAY LOGGING AND INTERPRETATION (TUR/3/006)	HALLENBURG, JAMES KING	IAEA-TA-2395	D
	INITIATION OF SURVEY WORK (TUR/3/007)	PARKER, MARK EDWIN	IAEA-TA-2414	D
	CONTROL AND DIAGNOSIS OF BABESIA INFECTIONS IN SHEEP AND CATTLE (TUR/5/012)	WALTISBUHL, DAVID JOHN WRIGHT, IAN GORDON	IAEA-TA-2396	D
	MINERAL REQUIREMENTS OF RUMINANT LIVESTOCK (TUR/5/012)	FIELD, ALEXANDER CECIL	IAEA-TA-2397	D
YUGOSLAVIA	VESSEL EMBRITTLEMENT AND PRESSURE TEMPERATURE LIMIT CALCULATIONS (YUG/9/018)	SWAROOP, AMAR V.	IAEA-TA-2412	D
ZAIRE	PROJECT CONCLUSIONS AND RECOMMENDATIONS (ZAI/0/003)	MAKSOUDI, MOKDAD	IAEA/UNDP-ZAI/76/004-06	R
INTERREGIONAL	QUALITY CONTROL AND PREVENTIVE MAINTENANCE IN THE ASIA REGION (INT/4/054)	PATANKAR, AJIT MADHAV	IAEA-TA-2398	D
	RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO MEXICO (INT/9/055)	STROHAL, PETAR THOMAS, KARYANIL THOMAS WESTERLUND, ERIK-ANDERS	IAEA-TA-2401	D
	RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO COLOMBIA (INT/9/055)	STROHAL, PETAR WESTERLUND, ERIK-ANDERS THOMAS, KARYANIL THOMAS	IAEA-TA-2407	D

Recipient	Subject and project code	Author(s)	Reference no.	Status[a]
INTERREGIONAL (cont'd)				
	BASIC SAFETY STANDARDS RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO U.R. TANZANIA (INT/9/055)	STROHAL, PETAR BEAVER, PETER FRANCIS PLACER, ALEJANDRO	IAEA-TA-2408	R
	BASIC SAFETY STANDARDS RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO SUDAN (INT/9/055)	PLACER, ALEJANDRO STROHAL, PETAR THOMAS, KARYANIL THOMAS	IAEA-TA-2411	R
	RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO PERU (INT/9/055)	STROHAL, PETAR THOMAS, KARYANIL THOMAS	IAEA-TA-2413	R
	RADIATION PROTECTION ADVISORY TEAM (RAPAT) MISSION TO ZAIRE (INT/9/055)	STROHAL, PETAR PLACER, ALEJANDRO BECKER, KLAUS THOMAS, KARYANIL THOMAS	IAEA-TA-2416	R
	RESEARCH REACTOR SAFETY AND RADIOLOGICAL PROTECTION IN INDONESIA (INT/9/065)	UTTING, RODERICK CHRYSOCHOIDES, NICHOLAS GREGORY	IAEA-TA-2394	R
	RESEARCH REACTOR SAFETY AND RADIOLOGICAL PROTECTION IN MEXICO (INT/9/065)	CHRYSOCHOIDES, NICHOLAS GREGORY BIANCO, ANDREA	IAEA-TA-2399	D
	RESEARCH REACTOR SAFETY AND RADIOLOGICAL PROTECTION IN JAMAICA (INT/9/065)	CHRYSOCHOIDES, NICHOLAS GREGORY TREVINO, ROBERTO	IAEA-TA-2400	D
	ASSESSMENT OF SAFETY SIGNIFICANT EVENTS TEAM (YUGOSLAVIA) (INT/9/065)	THOMAS, BERNARD	IAEA-TA-2402	D
	RESEARCH REACTOR SAFETY AND RADIOLOGICAL PROTECTION IN CHILE (INT/9/065)	CHRYSOCHOIDES, NICHOLAS GREGORY TREVINO, ROBERTO	IAEA-TA-2404	D
	OPERATIONAL SAFETY REVIEW (GREECE) (INT/9/065)	BYSZEWSKI, WITOLD UTTING, RODERICK	IAEA-TA-2409	D
	PLANNING AND IMPLEMENTATION OF WASTE MANAGEMENT PROGRAMMES IN PORTUGAL (INT/9/081)	THOMAS, KARYANIL THOMAS IANSITI, ENZO FERADAY, MELVILLE	IAEA-TA-2410	R

[a] D = De-restricted distribution; R = Restricted distribution.

ANNEX IV

VOLUNTARY CONTRIBUTIONS PLEDGED AND PAID TO THE TECHNICAL ASSISTANCE AND CO-OPERATION FUND FOR 1987
(as at 31 December 1987)

Member State	Base rate %	Share of $34.0 million target for voluntary contributions for 1987 using base rate *	Pledged	Paid
Afghanistan	0.01	3400	-	-
Albania	0.01	3400	3400	3400
Algeria	0.14	47600	37605	18803
Argentina	0.61	207400	121000	-
Australia	1.64	557600	361750	361750
Austria	0.73	248200	248200	248200
Bangladesh	0.02	6800	-	-
Belgium	1.17	397800	158520	
Bolivia	0.01	3400	-	-
Brazil	1.38	469200	250000	-
Bulgaria	0.16	54400	54400	48263
Burma	0.01	3400	-	-
Byelorussian SSR	0.34	115600	116720	116720
Cameroon	0.01	3400	-	-
Canada	3.03	1030200	988122	988122
Chile	0.07	23800	23800	23800
China	0.78	265200	265200	265200
Colombia	0.13	44200	-	-
Costa Rica	0.02	6800	-	-
Côte d'Ivoire	0.02	6800	-	-
Cuba	0.09	30600	30600	26426
Cyprus	0.02	6800	6800	6800
Czechoslovakia	0.69	234600	234600	234600
Democratic Kampuchea	0.01	3400	-	-
Dem. P.R. Korea	0.05	17000	17000	17000
Denmark	0.71	241400	241400	241400
Dominican Republic	0.03	10200	-	-
Ecuador	0.03	10200	-	-
Egypt	0.07	23800	23800	14809
El Salvador	0.01	3400	-	-
Ethiopia	0.01	3400	-	-
Finland	0.49	166600	166600	166600
France	6.30	2142000	2142000	2142000
Gabon	0.03	10200	-	-
German D.R.	1.31	445400	445400	445400
Germany, F.R.	8.17	2777800	2777800	2777800
Ghana	0.01	3400	6000	-
Greece	0.43	146200	146200	146200
Guatemala	0.02	6800	6800	-
Haiti	0.01	3400	-	-
Holy See	0.01	3400	-	-
Hungary	0.22	74800	80899	80899
Iceland	0.03	10200	10200	10200
India	0.35	119000	119000	119000
Indonesia	0.14	47600	39000	39000
Iran, Islamic R.	0.62	210800	-	-
Iraq	0.12	40800	20400	20400
Ireland	0.18	61200	61200	61200
Israel	0.22	74800	-	-
Italy	3.75	1275000	617761	617761
Jamaica	0.02	6800	-	-
Japan	10.73	3648200	3648200	3648200
Jordan	0.01	3400	3400	-
Kenya	0.01	3400	-	-
Korea, Republic of	0.20	68000	68000	68000
Kuwait	0.29	98600	-	-
Lebanon	0.01	3400	-	-
Liberia	0.01	3400	-	-
Libyan Arab Jamahiriya	0.26	88400	-	-
Liechtenstein	0.01	3400	3400	3400

Member State	Base rate %	Share of $34.0 million target for voluntary contributions for 1987 using base rate *	Pledged	Paid
Luxembourg	0.05	17000	-	-
Madagascar	0.01	3400	3400	-
Malaysia	0.10	34000	34000	34000
Mali	0.01	3400	-	-
Mauritius	0.01	3400	-	-
Mexico	0.88	299200	299200	299200
Monaco	0.01	3400	-	-
Mongolia	0.01	3400	3400	-
Morocco	0.05	17000	-	-
Namibia	-	-	-	-
Netherlands	1.72	584800	584800	584800
New Zealand	0.24	81600	-	-
Nicaragua	0.01	3400	-	-
Niger	0.01	3400	-	-
Nigeria	0.19	64600	64600	64600
Norway	0.53	180200	180200	180200
Pakistan	0.06	20400	20400	20400
Panama	0.02	6800	-	-
Paraguay	0.02	6800	-	-
Peru	0.07	23800	-	-
Philippines	0.10	34000	6886	6886
Poland	0.63	214200	183077	183077
Portugal	0.18	61200	-	-
Qatar	0.04	13600	-	-
Romania	0.19	64600	-	-
Saudi Arabia	0.96	326400	-	-
Senegal	0.01	3400	-	-
Sierra Leone	0.01	3400	-	-
Singapore	0.10	34000	-	-
South Africa	0.43	146200	-	-
Spain	2.01	683400	30000	30000
Sri Lanka	0.01	3400	3400	3400
Sudan	0.01	3400	3400	-
Sweden	1.24	421600	421600	421600
Switzerland	1.11	377400	377400	377400
Syrian A.R.	0.04	13600	-	-
Thailand	0.09	30600	30600	30600
Tunisia	0.03	10200	-	-
Turkey	0.34	115600	115600	115600
Uganda	0.01	3400	-	-
Ukrainian SSR	1.27	431800	432558	432558
USSR	10.09	3430600	3393481	3393481
U.A. Emirates	0.18	61200	-	-
UK	4.81	1635400	1635400	1635400
United Republic of Tanzania	0.01	3400	3400	
USA	25.00	8500000	8208090	8208090
Uruguay	0.04	13600	-	-
Venezuela	0.59	200600	-	-
Viet Nam	0.01	3400	-	-
Yugoslavia	0.45	153000	153000	153000
Zaire	0.01	3400	-	-
Zambia	0.01	3400	3400	-
Zimbabwe	0.02	6800	-	-
TOTAL	100.00	34000000	29736469	29137993

* As recommended in GC(V)/RES/100 and amended in GC(XV)/RES/286.

ANNEX V

COST-FREE FELLOWSHIPS OFFERED AND AWARDED: 1987

Donor	Number of fellowships offered	Number of man-months offered	Number of fellowships awarded [a]	Number of man-months awarded [a]
Argentina	6	72	1	6
Austria	1	12	3	13
Belgium	3	12	6	32
Bulgaria	2	12	-	-
Czechoslovakia	9 [b]	-	2	24
Denmark	5	60	1	1
France	-	50	7	49
Germany, F.R.	-	105	12	116
Hungary	4	48	6	38
India	10	-	3	27
Israel	-	45	1	2
Italy	25	200	7	47
Japan	5	45	-	-
Mexico	2	24	-	-
Netherlands	8	-	5	17
Pakistan	6	-	1	4
Philippines	3	-	-	-
Poland	10	-	3	26
Spain	5	60	10	38
Thailand	2	-	-	-
United Kingdom	- [c]	-	7	52
United States of America	- [c]	-	84	582
Yugoslavia	-	22	-	-

a) Awards less rejections and withdrawals as at 31 December 1987.

b) Includes five long-term fellowships of up to 60 man-months each.

c) A specific amount of money was made available rather than a given number of fellowships.

ANNEX VI

APPROVED AND ON-GOING UNDP PROJECTS
(in thousands of dollars)

Recipient	Project title and code	Total amount approved	Prior to 1987	Approved budgets 1987	1988	1989	1990	1991
A. Projects executed by the IAEA								
Argentina	Nuclear engineering, ARG/78/020	3473	2763	497	213	-	-	-
Costa Rica	Strengthening national capacity for mineral prospection, COS/83/T02 (UNFSSTD)	617	591	26	-	-	-	-
China	Manpower development for nuclear power programme, CPR/85/085	1737	116	268	878	475	-	-
Cuba	Introduction of nuclear techniques into the national economy, CUB/77/001	1617	1618	(1)	-	-	-	-
	Extension of the application of nuclear technology to the national economy, CUB/86/018	600	-	-	302	224	74	-
Egypt	National Centre for Radiation Technology - Phase II, EGY/78/011	1096	662	41	393	-	-	-
Ghana	Teaching applied nuclear physics, GHA/85/015	79	62	17	-	-	-	-
Hungary	Establishment of an automated radiation laboratory, HUN/82/002	72	72	-	-	-	-	-
	Strengthening of an advanced automated radiation laboratory, HUN/86/004	20	-	-	10	10	-	-
Indonesia	Application of isotopes and radiation to increasing agricultural production, INS/78/074	1644	1453	102	89	-	-	-
Iran, Islamic R.	Pilot demonstration plant for radio-sterilization and other applications of radiation technology, IRA/82/003	1559	1501	58	-	-	-	-
Korea, R.	Isotopes and radiation in agricultural research, ROK/84/003	634	44	182	408	-	-	-
Peru	Medfly erradication in Southern Peru, PER/86/017	250	-	150	100	-	-	-
Philippines	Philippine nuclear manpower development programme, PHI/80/007	921	921	-	-	-	-	-
Romania	Assistance for nuclear power stations ROM/82/001	706	640	66	-	-	-	-
Syrian A.R.	Uranium exploration in Syria, SYR/86/005	424	-	279	145	-	-	-

Recipient	Project title and code	Total amount approved	Prior to 1987	Approved budgets 1987	1988	1989	1990	1991
Thailand	Improving food and agricultural production, THA/85/004	1456	432	356	399	156	113	-
Turkey	Development of non-destructive testing in nuclear research and training centre of IAEA, TUR/87/016	239	-	62	74	68	35	-
Venezuela	Centre for Nuclear Agriculture, VEN/86/007	293	-	21	200	72	-	-
Yugoslavia	Establishment of radiation polymer laboratory, Vinca, YUG/82/007	151	151	-	-	-	-	-
	Ljubljana Nuclear Training Centre, YUG/83/007	106	106	-	-	-	-	-
Region of Arab States	Industrial applications of isotopes and radiation technology, RAB/86/006	24	19	5	-	-	-	-
Asia and the Pacific	Support for regional co-operation in the industrial application of isotopes and radiation technology, RAS/79/061	4449	4449	-	-	-	-	-
	Support for regional co-operation in the industrial application of isotopes and radiation technology (Phase II), RAS/86/073	3000	-	770	687	647	540	356
Latin America	Regional non-destructive testing (NDT) project for Latin America and the Caribbean, RLA/84/T01 (UNFSSTD)	1611	1514	97	-	-	-	-
Sub-total		26778	17114	2996	3898	1652	762	356

B. Projects for which IAEA is associated agency (IAEA budget portion only)

China	Nuclear safety administration, CPR/85/067	549	34	206	309	-	-	-
Haiti	Underground water research and exploration services, HAI/79/001	2	2	-	-	-	-	-
Iran, Islamic R.	Strengthening the Water Resources Research Institute, IRA/85/015	105	-	105	-	-	-	-
Korea, R.	Groundwater resources development, ROK/82/014	13	13	-	-	-	-	-
Region of Arab States	Nuclear energy manpower, RAB/84/011	49	49	-	-	-	-	-
Sub-total		718	98	311	309	-	-	-
Grand total		27496	17212	3307	4207	1652	762	356

ANNEX VII

PROJECTS COMPLETED OR CANCELLED DURING 1987

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
A. COMPLETED PROJECTS				
ALBANIA				
APPLIED NUCLEAR TECHNIQUES AND DOCUMENTATION, ALB/0/002	1982, 1983	2.0	265,200	0
MOESSBAUER SPECTROSCOPY ALB/1/004	1984	1.0	110,800	0
ISOTOPES IN AGRICULTURE ALB/5/003	1984	0.0	27,500	0
IRRADIATION RESEARCH FACILITY ALB/8/003	1983, 1984	1.5	151,200	0
ALGERIA				
RAW MATERIALS ANALYSIS ALG/3/002	1984	1.0	23,200	0
PESTICIDE RESIDUE STUDIES ALG/5/007	1986	0.5	0	0
NUCLEAR MEDICINE ALG/6/004	1986	0.5	0	0
BANGLADESH				
NUCLEAR MATERIALS PROSPECTION BGD/3/005	1980, 1983 1984, 1985	4.5	98,400	0
ISOTOPES IN AGRICULTURE BGD/5/009	1982	0.0	14,600	0
BOLIVIA				
ISOTOPE HYDROLOGY BOL/8/004	1987	1.0	0	0
BRAZIL				
QUALITY ASSURANCE FOR NUCLEAR POWER PLANTS (CNEN), BRA/4/030	1982, 1983 1985, 1986	4.0	0	0
NUCLEAR QUALITY ASSURANCE (NUCLEBRAS) BRA/4/031	1982, 1983 1985	5.0	0	0
FOLIAR FERTILIZER STUDIES BRA/5/017	1984	2.0	15,700	0
NUCLEAR POWER PLANT SITING BRA/9/022	1984, 1985	2.5	100,200	0
BURMA				
NUCLEAR CHEMISTRY BUR/2/006	1982	0.0	60,900	0

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
CHILE				
STUDIES ON PHOSPHATE FERTILIZER USE EFFICIENCY, CHI/5/010	1983, 1984	2.5	17,800	0
ISOTOPES IN HYDROLOGY CHI/8/013	1982, 1983 1984	2.0	6,900	0
COLOMBIA				
IRRADIATED VACCINES AGAINST PARASITES COL/5/005	1981, 1982 1983, 1984 1985	5.0	89,700	0
STUDIES ON NITROGEN FERTILIZER USE EFFICIENCY, COL/5/007	1983, 1985 1986	11.0	174,800	6,800
COTE D'IVOIRE				
SOIL FERTILITY STUDIES IVC/5/014	1986	0.5	0	0
CUBA				
NUCLEAR TECHNOLOGY CUB/0/002	1977, 1983 1984, 1985 1986, 1987	0.0	562,200	15,900
MOESSBAUER SPECTROMETRY CUB/4/007	1981, 1982	0.0	235,000	0
CYPRUS				
RADIATION DOSIMETRY CYP/1/003	1984	0.0	55,800	0
DOMINICAN REPUBLIC				
MOESSBAUER SPECTROMETRY DOM/1/003	1983	7.0	58,600	0
ECUADOR				
NUCLEAR TECHNIQUES IN ANIMAL HEALTH AND PRODUCTION, ECU/5/006	1982, 1984 1985, 1986	12.0	47,700	0
ISOTOPIC HYDROLOGY ECU/8/009	1987	1.0	0	0
RADIOLOGICAL SAFETY INSPECTION ECU/9/007	1984, 1985 1986	1.0	101,700	0
EGYPT				
RADIOMETALLURGY LABORATORY EGY/4/026	1986	1.0	0	0
RADIOISOTOPES IN AGRICULTURE EGY/5/006	1979, 1983	7.0	42,000	0
MEDFLY ERADICATION (TCDC) EGY/5/014	1983, 1984 1985	5.5	0	78,500

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
EGYPT (cont'd.)				
ANIMAL SCIENCE (PYRAMID RESEARCH INSTITUTE), EGY/5/015	1984, 1985 1986, 1987	0.5	60,700	0
GROUND WATER STUDIES EGY/8/007	1984	3.0	67,600	0
GHANA				
TEACHING APPLIED NUCLEAR PHYSICS GHA/1/009	1985, 1986 1987	2.0	69,700	0
RIVERINE TSETSE FLY STUDY GHA/5/010	1982	1.0	55,100	0
GREECE				
RADIOPHARMACEUTICALS GRE/2/015	1980, 1981 1982, 1985	0.5	224,600	0
RADIOPHARMACOLOGY GRE/2/017	1984	0.0	13,200	0
RADIOIMMUNOCHEMISTRY GRE/2/019	1986, 1987	0.0	28,700	0
NITROGEN-15 FERTILIZER STUDIES GRE/5/016	1986	0.0	14,800	0
NUCLEAR MEDICINE GRE/6/006	1982	0.0	23,300	0
ENVIRONMENTAL RADIOACTIVITY GRE/9/011	1982, 1983	0.5	83,200	0
HUNGARY				
THERMOHYDRAULIC LOOP EXPERIMENTS HUN/4/005	1985	0.5	91,700	0
ENVIRONMENTAL RADIOACTIVITY HUN/9/009	1986	0.0	24,200	0
INDONESIA				
NUCLEAR MANPOWER DEVELOPMENT INS/0/005	1985	2.5	0	0
REORGANIZATION OF BATAN'S MANAGEMENT AND ADMINISTRATION, INS/0/006	1985	1.0	0	0
NUCLEAR MATERIALS ANALYSIS INS/3/005	1979, 1980	9.5	15,200	0
NUCLEAR INSTRUMENT MAINTENANCE INS/4/020	1985, 1986	7.0	22,600	0
JAMAICA				
APPLIED RADIOCHEMISTRY JAM/2/003	1978, 1981 1983	9.0	169,700	0
HORMONE RECEPTORS IN TISSUE JAM/6/005	1984	0.0	15,400	0
KENYA				
INTRACAVITARY RADIATION THERAPY FOR CERVICAL CANCER, KEN/6/006	1986	0.0	70,100	0

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
KOREA, REPUBLIC OF				
URANIUM ORE ANALYSIS ROK/3/004	1983	1.0	23,400	0
ISOTOPES IN ANIMAL PRODUCTION ROK/5/022	1984	3.0	49,200	0
RADIOISOTOPES IN FERTILIZER STUDIES ROK/5/023	1985	1.0	12,900	0
LEBANON				
NUCLEAR ANALYTICAL CENTRE LEB/0/003	1983, 1984 1985, 1986 1987	0.0	94,400	0
PESTICIDE ANALYSIS LEB/5/011	1984, 1985 1986, 1987	0.0	32,400	0
LIBYAN ARAB JAMAHIRIYA				
NUCLEAR RAW MATERIALS LIB/3/004	1980, 1984	6.5	74,700	6,900
MALAYSIA				
NITROGEN-15 FERTILIZER STUDIES MAL/5/017	1984	2.0	22,200	0
ENVIRONMENTAL MONITORING MAL/9/003	1982, 1983 1984	5.0	126,100	0
PERSONNEL MONITORING MAL/9/005	1985	2.0	99,200	15,300
MEXICO				
THERMOLUMINESCENCE DOSIMETRY MEX/1/011	1984, 1985 1986	5.5	4,000	0
SECONDARY STANDARDS DOSIMETRY LABORATORY MEX/1/013	1985	1.5	20,200	0
NUCLEAR POWER PROGRAMME MEX/9/022	1981, 1983 1984	23.0	0	0
PAKISTAN				
SECONDARY STANDARDS DOSIMETRY LABORATORY PAK/1/019	1979, 1980 1981, 1982 1983, 1986 1987	4.5	366,200	0
PERU				
NUCLEAR SCIENCE TRAINING PER/0/015	1983, 1984	14.5	0	0
RADIOCHEMISTRY TEACHING PER/2/011	1984, 1986	4.0	0	0
REACTOR OPERATION (TRAINING) PER/4/009	1984	1.0	0	0

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
POLAND				
NUCLEAR ANALYTICAL TECHNIQUES POL/1/004	1983, 1985 1986, 1987	0.0	139,200	0
NEUTRON STANDARDIZATION LABORATORY POL/1/005	1983, 1987	0.5	43,400	0
ISOTOPES IN HYDROLOGY POL/8/005	1984	0.0	46,700	0
FOOD IRRADIATION POL/8/006	1986	0.0	14,200	0
RADIATION PROTECTION POL/9/007	1983, 1986	0.0	64,300	0
PORTUGAL				
URANIUM ORE PROCESSING POR/3/006	1983, 1985	1.0	45,200	0
REACTOR PNEUMATIC TRANSFER SYSTEM POR/4/010	1985	0.0	54,400	0
NUCLEAR FUEL CYCLE DATA BANK POR/4/011	1986	0.5	0	0
NUCLEAR POWER SAFETY POR/9/004	1983	0.5	0	0
NUCLEAR POWER PLANT SITING (EDP) POR/9/005	1984, 1985	1.5	0	0
ROMANIA				
RADIATION POLYMERIZATION ROM/8/008	1982	0.0	16,100	0
SENEGAL				
SOIL SCIENCE SEN/5/016	1982	2.0	30,500	0
SINGAPORE				
TRAINING IN NON-DESTRUCTIVE TESTING SIN/8/010	1986	1.0	0	0
SRI LANKA				
PROSPECTION AND EXTRACTION OF RADIOACTIVE MATERIALS, SRL/3/005	1985, 1987	0.5	0	0
SUDAN				
RADIATION PROTECTION SUD/9/004	1984, 1985	2.0	100,000	0
SYRIAN ARAB REPUBLIC				
NUCLEAR TRAINING LABORATORY SYR/0/004	1984, 1985	0.0	58,000	0
URANIUM EXPLORATION SYR/3/002	1985, 1986	17.0	72,900	0

Recipient Project title and code	Year of approval	Assistance provided Experts (m/m)	 Equipment ($)	 Fellows ($)
UNITED REPUBLIC OF TANZANIA				
SEDIMENT DYNAMICS URT/8/005	1983	1.5	33,800	0
URUGUAY				
GAMMA IRRADIATION TECHNOLOGY URU/8/005	1983	0.0	45,400	0
VENEZUELA				
PLANNING OF NUCLEAR ENERGY DEVELOPMENT VEN/0/006	1986	3.0	0	0
THERMOLUMINESCENCE DOSIMETRY VEN/1/005	1984	1.0	44,000	0
MOESSBAUER SPECTROMETRY VEN/4/007	1981, 1985	1.5	100,800	0
YUGOSLAVIA				
HEAT EXCHANGER CORROSION STUDIES YUG/4/023	1984	0.0	223,700	0
NUCLEAR POWER SAFETY YUG/9/010	1979, 1980 1981, 1982	22.5	48,100	0
ZAIRE				
COMPUTING FACILITY ZAI/0/004	1980, 1982 1984, 1985	0.5	110,400	0
INDUSTRIAL APPLICATIONS OF NUCLEAR TECHNIQUES, ZAI/8/007	1983, 1984	0.0	25,800	0
ZAMBIA				
NUCLEAR EQUIPMENT MAINTENANCE ZAM/4/002	1982, 1984	7.0	28,100	0
REGIONAL EUROPE				
SCIENCE AND TECHNOLOGY (OPS CONSULTANCY) RER/0/002	1986	0.5	0	0
INTERREGIONAL				
PRE-PROJECT ASSISTANCE INT/0/038	1984, 1985 1986	28.5	21,500	0
OPERATIONAL SAFETY OF NUCLEAR INSTALLATIONS, INT/9/065	1985, 1986	76.0	0	0
CO-ORDINATION OF SAFETY-RELATED ASSISTANCE, INT/9/067	1985, 1986	15.0	0	0

B. CANCELLED PROJECTS

Recipient Project title and code	Year of approval	Assistance approved Experts (m/m)	 Equipment ($)	 Fellows ($)
IRAN, ISLAMIC REPUBLIC OF				
FEASIBILITY STUDY FOR AN ACCELERATOR FACILITY, IRA/1/006	1984	1.0	0	0
NUCLEAR POWER PLANT SIMULATOR IRA/4/015	1984	0.5	0	0
PERU				
HEALTH PHYSICS PER/6/008	1981	4.0	0	0

ANNEX VIII

FOOTNOTE-a/ PROJECTS MADE OPERATIONAL OR EXTENDED DURING 1987

Recipient Project title and code	Expert services (m/m)	Equipment ($)	Fellowships ($)	Group training ($)	Sub-contracts ($)	Source[a]
BOLIVIA						
RADIOISOTOPES IN AGRICULTURE BOL/5/004 [b]	3	40,000	0	0	0	UK
BRAZIL						
RADIATION PROTECTION (IRD) BRA/9/023 [b]	6	117,000	12,900	0	0	GFR
BULGARIA						
CONSTRUCTION OF A NEUTRON GENERATOR BUL/4/003 [c]	0	247,930	0	0	0	USSR
CAMEROON						
NUCLEAR ANALYTICAL LABORATORY CMR/1/002 [b]	2	16,000	0	0	0	USA
CHINA						
SECONDARY STANDARDS DOSIMETRY LABORATORY CPR/1/003 [b]	3	260,000	0	0	0	GFR
COLOMBIA						
RESEARCH REACTOR CONVERSION COL/4/006 [b]	1	60,000	0	0	0	USA
COTE D'IVOIRE						
FUEL WOOD PRODUCTION IVC/5/018 [b]	2	20,000	0	0	0	USA
ECUADOR						
MUTATION BREEDING ECU/5/010 [b]	3	50,000	0	0	0	USA
EGYPT						
DETERMINATION OF PESTICIDE RESIDUES EGY/5/017 [c]	2	66,000	28,500	0	0	UK
RADIOIMMUNOASSAY IN ANIMAL SCIENCE EGY/5/018 [b]	2	7,500	0	0	0	USA
RADIOLOGICAL SAFETY EGY/9/020 [b]	5	33,300	0	0	0	USA
EL SALVADOR						
ANIMAL DISEASES AND REPRODUCTION ELS/5/002 [b]	2	6,000	0	0	0	USA
GREECE						
RADIOPHARMACEUTICALS GRE/2/020 [b]	0	105,000	0	0	0	USA
GUATEMALA						
DOSIMETRY LABORATORY (SSDL) GUA/1/004 [b]	2	100,000	0	0	0	USA

Recipient Project title and code	Expert services (m/m)	Equipment ($)	Fellowships ($)	Group training ($)	Sub-contracts ($)	Source[a]
HUNGARY						
CHEMICAL AND BIOCHEMICAL RESEARCH HUN/2/002 [b]	0	336,200	0	0	0	USSR
INDONESIA						
NUCLEAR MATERIALS ACCOUNTING INS/0/004 [b]	0	27,000	0	0	0	USA
UTILIZATION OF MULTI-PURPOSE RESEARCH REACTOR, INS/1/015 [c]	0	26,000	0	0	0	GFR
SOIL WATER MANAGEMENT STUDIES INS/5/020 [b]	7	25,000	0	0	0	UK
IRAN, ISLAMIC REPUBLIC OF						
ENVIRONMENTAL RADIOACTIVITY MONITORING IRA/9/008 [c]	3	7,000	0	0	0	TACF
KOREA, REPUBLIC OF						
URANIUM EXPLORATION ROK/3/006 [b]	2	0	0	0	0	GFR
RADIOIMMUNOASSAY IN CATTLE PRODUCTIVITY STUDIES, ROK/5/026 [b]	3	35,000	0	0	0	USA
MALAYSIA						
PESTICIDE RESIDUES MAL/5/014 [b]	1	45,000	0	0	0	USA
FOOD IRRADIATION MAL/8/007 [c]	1	30,000	41,100	0	0	UK
MEXICO						
IN-CORE FUEL MANAGEMENT MEX/4/034 [b]	2	60,000	0	0	0	USA
PLANT MUTATION BREEDING MEX/5/013 [c]	12	100,000	45,000	0	0	UK
MOROCCO						
TRAINING AND RESEARCH IN NUCLEAR SCIENCE MOR/1/006 [c]	3	52,000	0	0	0	USA
ISOTOPE TECHNIQUES IN HYDROLOGY MOR/8/003 [b]	4	63,000	23,400	0	0	UK
NIGERIA						
OIL PALM PRODUCTION NIR/5/016 [b]	0	27,500	0	0	0	USA
PANAMA						
GENETIC IMPROVEMENT OF BANANAS, PLANTAINS AND SUGAR-CANE, PAN/5/004 [b]	3	45,000	0	0	0	USA
PARAGUAY						
RADIATION PROTECTION IN MEDICINE PAR/9/002 [c]	4	50,000	0	0	0	USA
PERU						
PLANT MUTATION BREEDING PER/5/015 [b]	2	50,000	0	0	0	USA

Recipient Project title and code	Expert services (m/m)	Equipment ($)	Fellow-ships ($)	Group training ($)	Sub-contracts ($)	Source[a]
PORTUGAL						
STAINLESS STEEL PROPERTIES POR/1/004 [b]	4	70,000	0	0	0	USA
ENVIRONMENTAL RADIOACTIVITY MONITORING POR/9/007 [b]	3	110,000	0	0	0	GFR
SRI LANKA						
TRACER TECHNIQUES IN INDUSTRY SRL/8/014 [b]	1	50,000	0	0	0	USA
SYRIAN ARAB REPUBLIC						
URANIUM RECOVERY FROM PHOSPHORIC ACID SYR/3/003 [c]	2	70,000	0	0	0	TACF
THAILAND						
ENVIRONMENTAL POLLUTION THA/5/030 [c]	2	42,000	0	0	0	UK
URUGUAY						
USE OF COMPUTERS IN NUCLEAR MEDICINE URU/6/016 [c]	0	76,000	0	0	0	USA
YUGOSLAVIA						
NUCLEAR ANALYTICAL LABORATORY YUG/1/010 [c]	0	25,000	0	0	0	USA
REGIONAL LATIN AMERICA						
NUCLEAR INSTRUMENTATION (ARCAL II) RLA/4/006 [b]	2	60,000	0	0	0	USA
RESEARCH REACTOR UTILSATION (ARCAL V) RLA/4/007 [b]	1	22,000	46,800	56,200	0	GFR
FOOD IRRADIATION (ARCAL VI) RLA/5/020 [b]	3.5	0	0	0	0	CAN
IMPROVEMENT OF CEREALS THROUGH MUTATION BREEDING (ARCAL VII), RLA/5/021 [b]	4	100,000	0	0	0	USA
RADIOIMMUNOASSAY OF THYROID-RELATED HORMONES, RLA/6/011 [b]	2	123,300	0	0	0	CEC
NON-DESTRUCTIVE TESTING IN LATIN AMERICA RLA/8/005 [b]	5	70,000	78,000	80,000	0	GFR

a) Explanation of abbreviations: CAN = Canada; CEC = Commission of the European Communities; GFR = Federal Republic of Germany; TACF = Technical Assistance and Co-operation Fund; UK = United Kingdom; USA = United States of America; USSR = Union of Soviet Socialist Republics.

b) Project extended or made operational in 1987 and approved in that year by the Board.

c) Project extended or made operational in 1987 but approved in a prior year by the Board.

ANNEX IX

APPROVALS AGAINST THE RESERVE FUND IN 1987

Recipient	Project title and number	Experts	Equipment	Other	Total
		m/m	$	$	$
A. New projects					
Bolivia	Isotope hydrology, BOL/8/004	1/00	-	-	7050
Ecuador	Isotopic hydrology, ECU/8/009	0/18	-	-	6250
El Salvador	Nuclear medicine services, ELS/6/009	-	25000	-	25000
Iceland	Radiation protection, ICE/9/002	-	25000	-	25000
Indonesia	Energy economics calculations with nuclear options, INS/0/007	3/00	15000	12000 (a)	48150
Kuwait	Use of isotope hydrology, KUW/8/002	1/00	1000	-	8050
Mongolia	Training in English for nuclear science fellows, MON/0/003	3/00	9100	-	30250
	X-ray fluorescence for coal analysis, MON/2/004	-	20000	-	20000
Nigeria	Repair of neutron generator tube, NIR/1/006	-	10000	-	10000
Philippines	Uranium exploration data bank, PHI/3/007	-	18000	-	18000
Thailand	Process control of food irradiation, THA/5/034	1/00	-	-	7050
Viet Nam	Preparatory studies for a nuclear power project, VIE/0/004	1/00	-	-	7050
Zimbabwe	Fellowship training in radiation protection, ZIM/9/002	-	-	20000 (a)	20000
Interregional	International conference on neutron physics, INT/1/043	-	-	50000 (a)	50000
	TC on planning and response to nuclear accidents, INT/9/083	-	-	50000 (b)	50000
Regional Asia and the Pacific	Regional/RCA WASP users workshop, RAS/0/012	4/00	-	-	24000
	RCA isotope hydrology workshop and seminar support, RAS/8/059	-	-	14000 (b)	14000
Sub-total		14/18	123100	146000	369850

Recipient	Project title and number	Experts	Equipment	Other	Total
		m/m	$	$	$

B. Supplementary assistance to existing projects

Colombia	Research reactor conversion, COL/4/006	1/00	-	-	7050
Cuba	Nuclear cardiology, CUB/6/007	2/00	14000	-	28,100
Malaysia	Radioimmunoassay in medicine, MAL/6/011	-	25000	-	25000
	Radiation processing facility, MAL/8/004	-	15000	-	15000
Nigeria	Nuclear techniques application, NIR/1/004	-	8000	-	8000
Philippines	Radiation sterilization facility, PHI/8/010	-	10000	10000 (c)	20000
Sudan	Use of gamma camera, SUD/6/012	-	19000	-	19000
Interregional	Nuclear power promotion (expert group), INT/4/090	-		28300 (c)	28300
Regional Asia and the Pacific	Radioisotopes in industry, RAS/8/062	-	-	40000 (b)	40000
Reg. Latin America	Radioimmunoassay of thyroid-related hormones, RLA/6/011	3/00	-	-	21150
Sub-total		6/00	91000	78300	211600
TOTAL		20/18	214100	224300	581450

(a) Approval for fellowship. (b) Approval for training courses. (c) Approval for sub-contract.

ANNEX X

NET PROGRAMME CHANGES BY RECIPIENT

Recipient	Component	Existing approval	Net change
ALBANIA			
	EXPERTS (M/M)	8/00	-2/04
	EQUIPMENT (CC)	525,970	47,816
	EQUIPMENT (NCC)	134,000	-1,500
ALGERIA			
	EXPERTS (M/M)	22/03	-7/06
	EQUIPMENT (CC)	313,100	26,985
	EQUIPMENT (NCC)	66,000	-15,000
	FELLOWSHIPS (NCC)	0	3,000
BANGLADESH			
	EXPERTS (M/M)	53/00	-12/20
	EQUIPMENT (CC)	605,100	61,150
	FELLOWSHIPS (CC)	0	3,500
BOLIVIA			
	EXPERTS (M/M)	27/28	-2/10
	EQUIPMENT (CC)	385,000	35,690
	FELLOWSHIPS (CC)	30,300	-12,800
	TRAINING COURSES (CC)	0	7,800
BRAZIL			
	EXPERTS (M/M)	154/08	-2/12
	EQUIPMENT (CC)	1,237,950	207,704
	EQUIPMENT (NCC)	42,000	18,016
	FELLOWSHIPS (CC)	157,900	15,409
BULGARIA			
	EXPERTS (M/M)	7/23	-0/26
	EQUIPMENT (CC)	125,200	-68,129
	EQUIPMENT (NCC)	2,028,089	-43,000
BURMA			
	EXPERTS (M/M)	6/00	-1/14
	EQUIPMENT (CC)	242,000	4,550
	EQUIPMENT (NCC)	90,000	-23,144
CAMEROON			
	EXPERTS (M/M)	26/00	-3/23
	FELLOWSHIPS (CC)	36,000	-23,400
CHILE			
	EXPERTS (M/M)	30/00	-6/05
	EQUIPMENT (CC)	474,000	-5,461
	FELLOWSHIPS (CC)	51,400	3,150

Recipient	Component	Existing approval	Net change
CHINA			
	MISCELLANEOUS (CC)	4,000	-4,000
	EXPERTS (M/M)	17/00	-3/03
	EQUIPMENT (CC)	36,000	4,000
COLOMBIA			
	EXPERTS (M/M)	33/00	-4/06
	EQUIPMENT (CC)	439,000	-4,187
	EQUIPMENT (NCC)	103,100	-12,136
	FELLOWSHIPS (CC)	9,000	-2,205
COSTA RICA			
	EXPERTS (M/M)	30/20	2/08
	EQUIPMENT (CC)	203,000	-14,969
	EQUIPMENT (NCC)	96,500	12,800
	FELLOWSHIPS (CC)	0	13,000
COTE D'IVOIRE			
	EXPERTS (M/M)	35/01	-5/17
	EQUIPMENT (CC)	34,900	7,050
	FELLOWSHIPS (CC)	53,250	-20,263
	FELLOWSHIPS (NCC)	0	6,800
CUBA			
	EXPERTS (M/M)	19/15	0/15
	EQUIPMENT (CC)	434,800	37,550
	EQUIPMENT (NCC)	920,000	30,000
	FELLOWSHIPS (CC)	60,000	10,500
CYPRUS			
	EXPERTS (M/M)	4/15	-0/17
	EQUIPMENT (CC)	223,800	4,000
	EQUIPMENT (NCC)	10,000	-10,000
	FELLOWSHIPS (CC)	5,850	-5,850
CZECHOSLOVAKIA			
	EQUIPMENT (NCC)	50,000	-10,000
DEM. P.R. KOREA			
	EXPERTS (M/M)	3/00	-1/00
	EQUIPMENT (CC)	474,500	7,200
DOMINICAN REPUBLIC			
	EXPERTS (M/M)	11/23	-4/00
	EQUIPMENT (CC)	167,300	28,200
	EQUIPMENT (NCC)	0	2,625
ECUADOR			
	EXPERTS (M/M)	50/09	-5/22
	EQUIPMENT (CC)	1,207,350	69,784
	FELLOWSHIPS (CC)	101,100	-26,197

Recipient	Component	Existing approval	Net change
EGYPT			
	EXPERTS (M/M)	49/09	-15/02
	EQUIPMENT (CC)	773,900	255,790
	EQUIPMENT (NCC)	450,500	-125,000
EL SALVADOR			
	EXPERTS (M/M)	11/00	-2/24
	EQUIPMENT (CC)	46,000	9,120
ETHIOPIA			
	EXPERTS (M/M)	17/08	-5/03
	EQUIPMENT (CC)	221,400	12,820
	FELLOWSHIPS (CC)	0	9,000
GABON			
	EXPERTS (M/M)	6/00	-2/01
	EQUIPMENT (CC)	80,000	-22,490
	FELLOWSHIPS (CC)	42,000	-36,200
GHANA			
	EXPERTS (M/M)	39/18	-12/16
	EQUIPMENT (CC)	989,300	13,530
	EQUIPMENT (NCC)	0	3,583
	FELLOWSHIPS (CC)	16,348	49,211
GREECE			
	EXPERTS (M/M)	7/16	-2/29
	EQUIPMENT (CC)	275,400	-42,373
	EQUIPMENT (NCC)	22,000	-22,000
	FELLOWSHIPS (CC)	6,000	-2,000
GUATEMALA			
	EXPERTS (M/M)	17/12	0/07
	EQUIPMENT (CC)	422,900	2,409
	FELLOWSHIPS (CC)	27,300	-11,329
HAITI			
	EXPERTS (M/M)	6/00	-0/22
	FELLOWSHIPS (CC)	24,300	-11,700
HUNGARY			
	EXPERTS (M/M)	2/10	-1/11
	EQUIPMENT (CC)	460,750	17,753
	EQUIPMENT (NCC)	3,378,256	114,188
INDONESIA			
	EXPERTS (M/M)	40/00	-6/20
	EQUIPMENT (CC)	200,000	-4,300
	EQUIPMENT (NCC)	0	213,300
	FELLOWSHIPS (CC)	61,600	30,400
	SUB-CONTRACTS (CC)	0	25,000

Recipient	Component	Existing approval	Net change
INTERREGIONAL			
	EXPERTS (M/M)	573/00	-46/00
	EQUIPMENT (CC)	456,200	-13,100
	FELLOWSHIPS (CC)	0	25,145
	TRAINING COURSES (CC)	144,000	-60,250
	SUB-CONTRACTS (CC)	0	30,000
IRAN, ISLAMIC REPUBLIC OF			
	EXPERTS (M/M)	15/00	-5/15
	EQUIPMENT (CC)	98,177	9,290
	FELLOWSHIPS (CC)	5,000	49,965
	FELLOWSHIPS (NCC)	0	4,300
IRAQ			
	EXPERTS (M/M)	63/00	-7/26
	EQUIPMENT (NCC)	30,000	-2,000
	FELLOWSHIPS (CC)	0	5,875
	FELLOWSHIPS (NCC)	0	15,395
	SUB-CONTRACTS (CC)	0	15,000
	SUB-CONTRACTS (NCC)	0	6,400
JAMAICA			
	EXPERTS (M/M)	9/06	-0/09
	EQUIPMENT (CC)	173,000	-3,284
JORDAN			
	EXPERTS (M/M)	21/00	-2/20
	EQUIPMENT (CC)	436,700	11,750
	EQUIPMENT (NCC)	8,000	1,500
	FELLOWSHIPS (CC)	15,000	3,900
KENYA			
	EXPERTS (M/M)	7/15	-2/24
	EQUIPMENT (CC)	174,000	2,900
	EQUIPMENT (NCC)	0	10,000
	FELLOWSHIPS (CC)	48,600	-15,900
KOREA, REPUBLIC OF			
	EXPERTS (M/M)	62/06	-19/23
	EQUIPMENT (CC)	271,000	-96,366
KUWAIT			
	EXPERTS (M/M)	0/00	1/00
	EQUIPMENT (CC)	0	1,000
LEBANON			
	EXPERTS (M/M)	9/00	-2/00
LIBYAN ARAB JAMAHIRIYA			
	EXPERTS (M/M)	4/00	-1/00
	EQUIPMENT (CC)	84,000	-24,000
	FELLOWSHIPS (CC)	36,000	31,050

Recipient	Component	Existing approval	Net change
MADAGASCAR			
	EXPERTS (M/M)	14/00	-1/00
	EQUIPMENT (CC)	497,600	7,050
	EQUIPMENT (NCC)	6,400	12,850
	FELLOWSHIPS (CC)	10,749	-232
MALAYSIA			
	EXPERTS (M/M)	31/00	-10/04
	EQUIPMENT (CC)	744,880	34,002
	EQUIPMENT (NCC)	262,000	29,900
	FELLOWSHIPS (CC)	54,004	-16,295
MALI			
	EXPERTS (M/M)	46/19	-6/06
	EQUIPMENT (CC)	373,400	43,150
	FELLOWSHIPS (CC)	13,050	-1,849
MAURITIUS			
	EXPERTS (M/M)	8/00	-0/28
	EQUIPMENT (CC)	109,500	6,580
	EQUIPMENT (NCC)	22,000	-22,000
MEXICO			
	EXPERTS (M/M)	69/05	-10/19
	EQUIPMENT (CC)	429,200	-82,320
	FELLOWSHIPS (CC)	1,950	-1,950
	SUB-CONTRACTS (CC)	299,600	126,280
MONGOLIA			
	EXPERTS (M/M)	28/00	-4/16
	EQUIPMENT (CC)	368,000	31,100
	FELLOWSHIPS (CC)	13,650	-1,950
	FELLOWSHIPS (NCC)	0	1,950
MOROCCO			
	EXPERTS (M/M)	62/11	-11/23
	EQUIPMENT (CC)	456,600	-3,950
	FELLOWSHIPS (CC)	39,450	-17,118
	SUB-CONTRACTS (CC)	18,600	-600
NICARAGUA			
	EXPERTS (M/M)	5/00	-1/10
	EQUIPMENT (CC)	37,000	0
	EQUIPMENT (NCC)	80,000	17,000
	FELLOWSHIPS (CC)	23,850	-17,550
NIGER			
	EXPERTS (M/M)	41/05	-6/04
	EQUIPMENT (CC)	291,620	44,185
	EQUIPMENT (NCC)	159,000	-149,000
	FELLOWSHIPS (CC)	16,350	-12,156

Recipient	Component	Existing approval	Net change
NIGERIA			
	EXPERTS (M/M)	28/06	-3/17
	EQUIPMENT (CC)	220,767	26,600
	EQUIPMENT (NCC)	0	6,100
	FELLOWSHIPS (CC)	60,750	-29,250
PAKISTAN			
	EXPERTS (M/M)	25/00	-2/24
	EQUIPMENT (CC)	135,000	-27,665
	FELLOWSHIPS (CC)	114,000	-49,273
PANAMA			
	EXPERTS (M/M)	9/23	0/19
	EQUIPMENT (CC)	557,780	-19,287
	EQUIPMENT (NCC)	56,000	-18,140
	FELLOWSHIPS (CC)	23,400	-23,400
PARAGUAY			
	EXPERTS (M/M)	18/00	0/00
	EQUIPMENT (CC)	579,000	-12,724
	EQUIPMENT (NCC)	27,000	-12,075
	FELLOWSHIPS (CC)	0	32,950
PERU			
	EXPERTS (M/M)	111/25	4/02
	EQUIPMENT (CC)	1,627,700	-52,185
	FELLOWSHIPS (CC)	67,050	-15,850
PHILIPPINES			
	EXPERTS (M/M)	38/10	-13/13
	EQUIPMENT (CC)	511,100	-74,853
	SUB-CONTRACTS (CC)	0	10,000
POLAND			
	EXPERTS (M/M)	16/24	-7/14
	EQUIPMENT (CC)	400,220	54,350
	EQUIPMENT (NCC)	359,945	46,900
	FELLOWSHIPS (CC)	16,250	6,750
PORTUGAL			
	EXPERTS (M/M)	24/20	-11/22
	EQUIPMENT (CC)	949,100	50,315
	EQUIPMENT (NCC)	634,000	130,000
REGIONAL AFRICA			
	EXPERTS (M/M)	7/00	8/00
	EQUIPMENT (CC)	112,500	-4,500
	FELLOWSHIPS (CC)	19,500	-19,500
	TRAINING COURSES (CC)	0	26,000

Recipient	Component	Existing approval	Net change
REGIONAL ASIA AND PACIFIC			
	EXPERTS (M/M)	50/00	0/23
	EQUIPMENT (CC)	195,000	25,200
	TRAINING COURSES (CC)	62,100	11,900
	TRAINING COURSES (NCC)	3,000	12,100
REGIONAL EUROPE			
	EXPERTS (M/M)	14/00	-3/09
	EQUIPMENT (CC)	15,000	-15,000
	FELLOWSHIPS (CC)	0	13,500
	TRAINING COURSES (CC)	60,000	-10,500
	SUB-CONTRACTS (CC)	1,013,000	7,105
REGIONAL LATIN AMERICA			
	EXPERTS (M/M)	332/01	6/15
	EQUIPMENT (CC)	571,650	133,682
	FELLOWSHIPS (CC)	117,000	-103,938
	TRAINING COURSES (CC)	128,600	129,613
	TRAINING COURSES (NCC)	0	80
	SUB-CONTRACTS (CC)	0	52,000
ROMANIA			
	EXPERTS (M/M)	8/08	-0/17
	EQUIPMENT (CC)	1,710,931	-17,980
	FELLOWSHIPS (CC)	12,100	4,180
SAUDI ARABIA			
	EXPERTS (M/M)	12/00	-0/11
SENEGAL			
	EXPERTS (M/M)	17/09	-5/04
	EQUIPMENT (CC)	63,000	50,200
	FELLOWSHIPS (CC)	11,700	-11,700
SINGAPORE			
	EXPERTS (M/M)	9/13	-1/00
	EQUIPMENT (CC)	243,900	6,000
SRI LANKA			
	EXPERTS (M/M)	6/00	-3/24
	EQUIPMENT (CC)	408,300	33,000
SUDAN			
	EXPERTS (M/M)	51/14	-12/14
	EQUIPMENT (CC)	336,600	7,975
	EQUIPMENT (NCC)	15,000	4,500
	FELLOWSHIPS (CC)	21,200	26,825
	SUB-CONTRACTS (CC)	8,000	2,200

Recipient	Component	Existing approval	Net change
SYRIAN ARAB REPUBLIC			
	EXPERTS (M/M)	88/07	-20/25
	EQUIPMENT (CC)	1,319,850	152,673
	EQUIPMENT (NCC)	20,000	-20,000
	FELLOWSHIPS (CC)	0	3,525
	FELLOWSHIPS (NCC)	0	9,165
	SUB-CONTRACTS (CC)	0	15,000
	SUB-CONTRACTS (NCC)	0	6,400
THAILAND			
	EXPERTS (M/M)	17/00	-2/00
	EQUIPMENT (CC)	1,378,200	-6,755
	EQUIPMENT (NCC)	73,600	5,000
	FELLOWSHIPS (CC)	63,900	3,593
TUNISIA			
	EXPERTS (M/M)	34/18	-9/29
	EQUIPMENT (CC)	501,200	60,539
	FELLOWSHIPS (CC)	21,300	-7,945
TURKEY			
	EXPERTS (M/M)	145/08	-13/22
	EQUIPMENT (CC)	311,640	62,744
	EQUIPMENT (NCC)	20,000	0
	FELLOWSHIPS (CC)	163,402	6,335
UGANDA			
	EXPERTS (M/M)	9/04	-1/08
	EQUIPMENT (CC)	50,844	3,000
UNITED ARAB EMIRATES			
	EXPERTS (M/M)	3/04	-1/00
UNITED REPUBLIC OF TANZANIA			
	EXPERTS (M/M)	29/15	-7/06
	EQUIPMENT (CC)	204,000	-25,950
	FELLOWSHIPS (CC)	30,888	17,500
URUGUAY			
	EXPERTS (M/M)	24/25	-3/02
	EQUIPMENT (CC)	473,200	-7,823
	EQUIPMENT (NCC)	0	9,275
	FELLOWSHIPS (CC)	32,100	-15,270
VENEZUELA			
	EXPERTS (M/M)	51/15	-2/15
	EQUIPMENT (CC)	598,700	-26,200
	EQUIPMENT (NCC)	28,000	-3,764

Recipient	Component	Existing approval	Net change
VIET NAM			
	EXPERTS (M/M)	35/00	-3/05
	EQUIPMENT (CC)	197,000	3,935
	EQUIPMENT (NCC)	1,295,000	115,000
	FELLOWSHIPS (CC)	28,800	-4,079
YUGOSLAVIA			
	EXPERTS (M/M)	141/05	-20/23
	EQUIPMENT (CC)	1,080,790	104,250
ZAIRE			
	EXPERTS (M/M)	13/14	-4/26
	EQUIPMENT (CC)	391,200	0
	FELLOWSHIPS (CC)	9,000	2,820
ZAMBIA			
	EXPERTS (M/M)	32/15	-0/12
	EQUIPMENT (CC)	703,100	-10,550
	EQUIPMENT (NCC)	232,000	21,300
	FELLOWSHIPS (CC)	8,800	23,500
TOTALS			
	MISCELLANEOUS (CC)	4,000	-4,000
	EXPERTS (M/M)	3,210/28	-385/13
	EXPERTS ($)	22,461,987	-2,976,891
	EXPERTS ($) (NCC)	0	31,960
	EQUIPMENT (CC)	31,446,769	1,132,166
	EQUIPMENT (NCC)	10,718,391	315,078
	FELLOWSHIPS (CC)	1,781,141	-125,569
	FELLOWSHIPS (NCC)	0	40,610
	TRAINING COURSES (CC)	394,700	104,563
	TRAINING COURSES (NCC)	3,000	12,180
	SUB-CONTRACTS (CC)	1,339,200	281,985
	SUB-CONTRACTS (NCC)	0	12,800
	TOTAL ALLOTTED	68,149,189	-1,175,117

ANNEX XI

NET REPHASINGS UNDERTAKEN DURING 1987

Recipient	Project component	Net allotted/ Net rephased	Current year	Rephased into 1988	Rephased into 1989-90	Rephased into 1991-92
ALGERIA						
	Experts	Allotted	3/07	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
BULGARIA						
	Equipment	Allotted	1,000,000	170,000	100,000	-
	(NCC)	Rephased	202,000	-170,000	-32,000	-
BURMA						
	Experts	Allotted	8/00	-	-	-
	(m/m)	Rephased	-4/00	4/00	-	-
COLOMBIA						
	Equipment	Allotted	30,000	-	-	-
	(CC)	Rephased	-15,000	15,000	-	-
DEM. P.R. KOREA						
	Experts	Allotted	5/00	1/00	-	-
	(m/m)	Rephased	-2/00	2/00	-	-
EGYPT						
	Experts	Allotted	8/00	-	-	-
	(m/m)	Rephased	-5/00	5/00	-	-
ETHIOPIA						
	Experts	Allotted	13/15	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
GABON						
	Experts	Allotted	6/00	-	-	-
	(m/m)	Rephased	-3/00	3/00	-	-
GHANA						
	Experts	Allotted	4/18	1/00	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
HAITI						
	Equipment	Allotted	45,000	20,000	-	-
	(CC)	Rephased	-15,000	15,000	-	-
HUNGARY						
	Equipment	Allotted	1,735,000	1,100,000	-	-
	(NCC)	Rephased	1,100,000	-1,100,000	-	-

Recipient	Component	Net allotted/ Net rephased	Current year	Rephased into 1988	Rephased into 1989-90	Rephased into 1991-92
INDONESIA						
	Experts	Allotted	14/00	5/00	-	-
	(m/m)	Rephased	-4/00	4/00	-	-
KOREA, REPUBLIC OF						
	Experts	Allotted	18/00	8/00	-	-
	(m/m)	Rephased	-8/15	8/15	-	-
LIBYAN ARAB JAMAHIRIYA						
	Experts	Allotted	3/00	-	-	-
	(m/m)	Rephased	-2/00	2/00	-	-
MALAYSIA						
	Experts	Allotted	55/07	9/00	-	-
	(m/m)	Rephased	-11/28	12/00	-	-
MALI						
	Experts	Allotted	2/00	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
MAURITIUS						
	Experts	Allotted	8/00	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
MEXICO						
	Experts	Allotted	49/00	-	-	-
	(m/m)	Rephased	-6/00	6/00	-	-
MONGOLIA						
	Experts	Allotted	6/00	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
MOROCCO						
	Experts	Allotted	6/13	-	-	-
	(m/m)	Rephased	-1/00	1/00	-	-
NIGER						
	Experts	Allotted	8/18	-	-	-
	(m/m)	Rephased	-4/00	4/00	-	-
PAKISTAN						
	Experts	Allotted	23/00	-	-	-
	(m/m)	Rephased	-9/00	9/00	-	-
PANAMA						
	Equipment	Allotted	133,000	30,000	-	-
	(CC)	Rephased	-15,000	15,000	-	-

Recipient	Component	Net allotted/ Net rephased	Current year	Rephased into 1988	Rephased into 1989-90	Rephased into 1991-92
PHILIPPINES						
	Experts	Allotted	43/10	-	-	-
	(m/m)	Rephased	-9/00	9/00	-	-
	Equipment	Allotted	18,100	-	-	-
	(CC)	Rephased	-14,580	14,580	-	-
POLAND						
	Equipment	Allotted	31,000	2,000	-	-
	(CC)	Rephased	2,000	-2,000	-	-
SAUDI ARABIA						
	Experts	Allotted	14/00	4/00	-	-
	(m/m)	Rephased	-7/11	7/11	-	-
SENEGAL						
	Experts	Allotted	12/01	2/00	-	-
	(m/m)	Rephased	-3/00	3/00	-	-
SIERRA LEONE						
	Experts	Allotted	11/12	-	-	-
	(m/m)	Rephased	-2/00	2/00	-	-
SRI LANKA						
	Experts	Allotted	24/21	3/00	-	-
	(m/m)	Rephased	-10/00	10/00	-	-
	Equipment	Allotted	90,000	-	-	-
	(CC)	Rephased	-20,000	20,000	-	-
SUDAN						
	Experts	Allotted	10/27	-	-	-
	(m/m)	Rephased	-3/00	3/00	-	-
THAILAND						
	Experts	Allotted	10/00	-	-	-
	(m/m)	Rephased	-4/00	4/00	-	-
TUNISIA						
	Fellowships	Allotted	11,700	-	-	-
	(CC)	Rephased	-6,000	6,000	-	-
UNITED REPUBLIC OF TANZANIA						
	Experts	Allotted	15/00	-	-	-
	(m/m)	Rephased	-9/00	9/00	-	-
	Fellowships	Allotted	26,688	4,200	-	-
	(CC)	Rephased	-7,800	7,800	-	-

Recipient	Component	Net allotted/ Net rephased	Current year	Rephased into 1988	Rephased into 1989-90	Rephased into 1991-92
URUGUAY						
	Equipment	Allotted	10,000	-	-	-
	(CC)	Rephased	-10,000	10,000	-	-
VENEZUELA						
	Experts	Allotted	27/00	12/00	9/00	-
	(m/m)	Rephased	-7/00	5/00	2/00	-
	Equipment	Allotted	158,000	90,000	70,000	-
	(CC)	Rephased	-50,000	50,000	-	-
VIET NAM						
	Experts	Allotted	33/00	2/00	-	-
	(m/m)	Rephased	-12/00	12/00	-	-
ZAIRE						
	Fellowships	Allotted	3,900	-	-	-
	(CC)	Rephased	-3,900	3,900	-	-
ZAMBIA						
	Experts	Allotted	12/14	1/00	-	-
	(m/m)	Rephased	-4/15	4/15	-	-
	Equipment	Allotted	52,000	-	-	-
	(CC)	Rephased	-30,000	30,000	-	-
REGIONAL AFRICA						
	Experts	Allotted	38/14	-	-	-
	(m/m)	Rephased	-7/00	7/00	-	-
TOTALS						
	Experts	Allotted	493/27	48/00	9/00	-
	(m/m)	Rephased	-144/09	142/11	2/00	-
	Experts	Allotted	3,310,965	345,600	67,500	-
	($)	Rephased	-1,000,941	1,025,040	15,000	-
	Equipment	Allotted	567,100	142,000	70,000	-
	(CC)	Rephased	-167,580	167,580	-	-
	Equipment	Allotted	2,735,000	1,270,000	100,000	-
	(NCC)	Rephased	1,302,000	-1,270,000	-32,000	-
	Fellowships	Allotted	42,288	4,200	-	-
	(CC)	Rephased	-17,700	17,700	-	-
	Total allotted		6,655,353	1,761,800	237,500	-
	Total rephased		115,778	-59,680	-17,000	-