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THE PROVISION OF TECHNICAL ASSISTANCE BY THE AGENCY WITH SPECIAL REFERENCE TO 1966

Report by the Director General

CONTENTS

List of abbreviations

Agency	International Atomic Energy Agency
CERN	European Organization for Nuclear Research
ECOSOC	Economic and Social Council of the United Nations
ENEA	European Nuclear Energy Agency of the Organisation for Economic Co-operation and Development
EPTA	United Nations Expanded Programme of Technical Assistance (now the Technical Assistance Component of the United Nations Development Programme)
FAO	Food and Agriculture Organization of the United Nations
IAEA	International Atomic Energy Agency
ILO	International Labour Organisation
IPA	Regional Joint Training and Research Programme using a Neutron Crystal Spectrometer between the Governments of India and the Philippines and the Agency
NORA	Joint Agency-Norwegian Programme of Research with the Zero Power Reactor "NORA"
NPY	Co-operative Programme for Research in Reactor Physics between the Governments of Norway, Poland and Yugoslavia
SGAE/ENEA/ IAEA	Co-operative programme of Research in the Irradiation of Fruit and Fruit Juices between the Österreichische Studiengesellschaft für Atomenergie (Austrian Atomic Energy Research Organization), the European Nuclear Energy Agency and the International Atomic Energy Agency
Theoretical Physics Centre	International Centre for Theoretical Physics at Trieste
UNDP	United Nations Development Programme
UNDP/SF	United Nations Development Programme/Special Fund Component
UNDP/TA	United Nations Development Programme/Technical Assistance Component
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization

Congo, D.R.	Democratic Republic of the Congo
CSSR	Czechoslovak Socialist Republic
Germany, F.R.	Federal Republic of Germany
Korea, R.	Republic of Korea
UAR	United Arab Republic
UK	United Kingdom of Great Britain and Northern Ireland
USA	United States of America
USSR	Union of Soviet Socialist Republics

NOTES

All sums of money are expressed in United States dollars.

The technical assistance projects described in this report are classified under the following ten fields of activity:

Code	Field of activity
0	General atomic energy development
1	Nuclear physics
2	Nuclear chemistry
3	Prospecting, mining and processing of nuclear materials
4	Nuclear engineering and technology
5	Application of isotopes and radiation in agriculture
6	Application of isotopes and radiation in medicine
7	Application of isotopes and radiation in biology
8	Other fields of application of isotopes and radiation
9	Safety in nuclear energy

The final figure relating to the actual cost of providing gifts of equipment, including shipping charges, was received too late for incorporation in the graphs and tables included in the report on the provision of technical assistance by the Agency, with special reference to 1966, which was submitted to the Board of Governors for review. Accordingly, the amounts shown in the present document in respect of 1966 should be increased by $8000 (where figures are rounded to the nearest thousand) in paragraphs 5 and 29(c), Fig. 1 and in Table 1, and by $8300 (where figures are rounded to the nearest hundred) in paragraphs 6, 32 and 42, Figs. 2 and 7, the analysis showing the distribution of equipment in paragraph 37, and in Tables 4, 7 and 8. The necessary adjustments will be reflected in next year's report.

Part I. INTRODUCTION

1. Following its usual practice, the Board of Governors has requested the communication to the General Conference of the material it used last June in reviewing the provision of technical assistance by the Agency, with special reference to 1966; this material is accordingly reproduced in the present document. The review was carried out pursuant to paragraph 20 of the Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the Agency [1].

2. The use of the resources placed at the Agency's disposal, in the form of voluntary contributions, gifts in kind or UNDP/TA funds, for the provision of technical assistance is reviewed in this document and, in part II, section C, information is given with regard to the four Special Fund projects for which the Agency served as Executing Agency in 1966.

3. The three components of technical assistance are the services of experts, equipment for demonstration purposes and fellowships. Their chief function is to promote the exchange of skills and knowledge relating to the peaceful uses of atomic energy and to encourage recipient countries to make provision for facilities and staff so that the knowledge acquired could continue to be applied after completion of the project. When these conditions are met, technical assistance can effectively contribute to economic and social development.

4. In 1966, 64 countries received assistance in one form or another under the Agency's technical assistance programme. All recipient countries are shown in Table 6 [2] except for one country, where the expert took up duty early in January 1967 (the associated equipment was purchased in 1966). Approximately 70% of all assistance provided related to nuclear engineering and technology, nuclear physics, and the use of radioisotopes in agriculture and medicine. Each of the ten fields of activity of technical assistance is broken down into five to eleven sub-divisions, of which there is a total of 71. The following four sub-divisions, taken together, accounted for about one third of the assistance provided in 1966: nuclear physics research; soil fertility, crop production and entomology; nucleonics instrumentation; and diagnostic and clinical research.

5. The assistance, including gifts and assistance "in kind", was provided through the services of 201 experts or visiting professors, the supply of equipment to a value of about $422 000, and 499 fellowship awards for individual studies, training courses, research work and scientific visits.

6. The resources allocated for carrying out the Agency's 1966 technical assistance programme amounted to $2 879 000; the total amount actually spent, however, was about $2 453 000 (see Table 7). This includes payments against 1966 and prior years' obligations and assistance "in kind" and closely approximates to the sum of $2 492 000 spent in 1965 (Table 4).

7. Following the pattern of the report on the technical assistance provided in 1965 [3], details are given below regarding some of the technical assistance activities in which Member States have shown special interest in 1966, together with information concerning integrated programming and the administrative procedures relating to the Agency's technical assistance activities in general.

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[1] GC(IV)/RES/65, Annex.

[2] All the statistical tables are given in Annex I to this document.

[3] See document GC(X)/INF/87.

A. Technical co-operation activities in which Governments have shown special interest

8. From an analysis of assistance provided it can be deduced that Member States are making considerable progress in developing their atomic energy programmes. This is borne out by the fact that nearly 40% of the assistance given in 1966 related to nuclear engineering and technology and nuclear physics. Advances in these subjects have already made it possible to use atomic energy for peaceful purposes, for example in agriculture and medicine, to which about 30% of the funds for 1966 were devoted.

9. In formulating their short-, medium- and long-term objectives, Governments look more and more to the highly developed countries and to international organizations for assistance, not only with a view to promoting economic and social development but, through expert advice, regional projects and technical publications, to conserving effectively their own limited resources. The advice of experts and the information obtained from publications are of considerable assistance to Governments in defining and solving problems and in making the necessary adjustments in development plans and priorities. The information provided by international organizations on costly research undertaken in advanced countries on subjects which are potentially of great practical and economic importance - such as water desalination, using nuclear energy, and food preservation by irradiation - helps developing countries in programme planning and enables them to devote their efforts and resources to other vitally important activities for which the need is more urgent.

10. By co-operating on the regional or inter-regional level, countries whose atomic energy activities have reached nearly the same stage of development can, to their mutual advantage, contribute to one another's medium- and long-range programmes. The following are examples of international advanced training projects, for which 16% of all UNDP/TA, Type I and Type II fellowship awards were made in 1965 and 1966:

The IPA neutron crystal spectrometer project;

The NORA reactor physics project;

The NPY reactor physics project; and

The SGAE/ENEA/IAEA irradiation of fruit and fruit juices project.

11. The IPA project, which was described in last year's report [4], is a good example of what can be done when countries pool their resources. The designing and construction, during 1966, of a triple-axis beryllium detector neutron spectrometer, a huge monochromator shield and several nucleonics instruments at the project site, using materials available on the local market, not only provided unique training experience for the local machining and electronics workshop staff, but enabled fellowship trainees to engage in more advanced research.

12. The NORA project, which was started in 1962, was primarily designed to stimulate research in the physics of light-water/heavy-water-moderated, slightly enriched uranium-dioxide fuelled cores. The NORA critical facility and the JEEPNIK sub-critical facility are used to develop experimental techniques and compile data resulting from experiments, and a CDC-3600 computer is used to develop methods for analysing such data; it is therefore possible to carry out a well-balanced programme of experimental and theoretical applications in reactor physics research. The results obtained in studying spatial reactor kinetics and reactor noise and in work with mixed moderator lattices - theoretical analyses and the development of experimental techniques - contribute greatly to the success of this project.

13. Reactor physics research is also the subject of the NPY project, begun in 1963. Through a mutually agreed programme, involving the exchange of information and staff between laboratories, the three countries concerned set out to achieve the maximum degree of co-ordination between national reactor physics and power reactor development programmes. The progress achieved shows that their close co-operation has also been of benefit to other Member States. For example, 91 scientists, excluding lecturers, representing 30 Member States, took part in an advanced reactor physics course held in Norway in August 1966. In addition to making the usual preparations for this course, the Agency met the costs of the

[4] Ibid., paras. 7 and 99-101.

of the nine lecturers and 40 participants. The first course of this type was conducted in Poland in 1964 and the third one, to be held in Yugoslavia, is being provisionally planned for 1968.

14. The SGAE/ENEA/IAEA project, as mentioned above, is concerned with the irradiation of fruit and fruit juices. The research work, which primarily consists of wholesomeness tests and microbiological investigations, is being carried out at the Reactor Centre of the Austrian Atomic Energy Research Organization at Seibersdorf [5].

15. The Agency's primary financial contribution to these projects consists of fellowship awards to scientists for training in specialized work. In addition, regional and interregional training courses are financed through, or by, the Agency. The continued success of these international projects will depend in large measure on the priority Member States give to the nominations of qualified candidates for advanced fellowship training of this kind under the auspices of the Agency.

16. Another activity which received generous support from Governments in 1966 was the assignment of experts as regional advisers. Two examples of the work done in the area of Asia and the Far East will serve to indicate the type of assistance provided. A regional adviser in radiotherapy physics was stationed in Bangkok late in 1965 and his assignment lasted 58 weeks. During this time he visited ten countries in the area; he subsequently paid longer visits to five of them, Burma, China, Malaysia, Pakistan and Singapore, during which he went to 14 radiotherapy centres. He also visited four radiotherapy departments in Thailand. Such facilities are now being considerably expanded. Eight radiotherapy departments are under construction and ten more are being planned. Without taking into account the facilities and staff in India, some 30 cobalt units, about six caesium units, one betatron and two linear accelerators are now in use and 12-14 radiotherapy physicists are employed in the area.

17. The regional adviser gave assistance and made recommendations with regard to planning, radiation protection, dosimetry, apparatus, literature and staffing wherever possible. His recommendations relate to the need for increases in training facilities for radiotherapy physicists - the Agency expects to hold a panel jointly with WHO on this subject in late 1967 - and the possibility of organizing refresher courses or a regional training school. The adviser felt that the planned expansion of facilities, especially in some countries, would require energetic steps to be taken to increase the supply of properly qualified staff. He also recommended the publication of guide-lines on the place of the physicist in radiotherapy, and the Agency may convene a panel to consider this matter.

18. During his four months' stay in the area, a regional adviser on rice cultivation visited eight countries, seven of which participate in the Agency's rice mutation breeding programme. It is understood that he was able to provide valuable assistance and advice with regard to a number of rice breeding projects. It has been clearly shown by the various investigators who are co-operating under the programme that induced mutants can significantly contribute to increased rice production. One of them was instrumental in developing a new radiation-induced mutant variety of rice, which was cultivated in 1967.

19. Rice yields are most easily increased through the use of fertilizers. However, the long weak straw of the standard varieties cannot normally support the vigorous growth due to the fertilizer, and the resulting lodging of the plants neutralizes the effect of the fertilizer and often ruins the crop. The induction of mutations to produce short, strong straw is one of the most promising applications of radiation in rice breeding. Other methods, which lead to a reduction in the time needed for maturity by up to 50 days and promote resistance to rice diseases, have also been successful in many of the participating countries. Promising rice mutant lines were tested in the FAO/IAEA Uniform International Trials in seven countries of the area for the first time. The adviser was able to assist in the organization of these trials.

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[5] Details of the project are given in the SGAE/ENEA/IAEA agreement reproduced in document INFCIRC/64.

20. The Laboratory at Seibersdorf has assisted with mutagen treatments of rice for a number of countries and has received fellows from the area for training. Additional advanced training in mutation techniques, partly at Seibersdorf, regional training courses and the provision of further services of regional experts are required to promote the effective application of induced mutations.

B. Integrated programming

21. As indicated in part II, Chapter I, of last year's report, the Agency, guided by past experience, took some positive steps to bring about integrated programming. The latter led to an improvement in the processing of requests and the co-ordination of, and effective inter-relationship between, the three components of technical assistance, namely, expert services, demonstration equipment and fellowships. It also helped the Secretariat to evaluate project requests and eliminate or minimize duplication and overlapping with technical assistance provided under bilateral and other arrangements.

22. The thorough preparation of requests facilitates the determination of technical soundness and feasibility by the Secretariat. Moreover, when requests are thoroughly prepared, it can be assumed that the proposed project will be accorded high priority by the requesting country and integrated into its development plan. The smooth functioning of governmental co-ordinating machinery primarily determines the effectiveness of integrated programming, and it is well known that Government support at the programming stage, including budgetary provision for the necessary facilities and staff, will enhance the success of the project and ensure its lasting value. Accordingly, since the priorities fixed by countries and the limited funds available to the Agency have been taken into account and the requests have been carefully evaluated in order to determine their technical soundness, the projects approved by the Board should result in effective use of the available resources.

23. It can be seen that integrated programming is not merely a device to reduce the Secretariat's administrative workload, but a means of improving the service provided to Member States. In addition to the need for full information on requests for assistance and the reason why it is required, it is necessary to adhere to the deadlines laid down for the submission of requests and demonstration equipment specifications and the acceptance of candidates for expert assignments and to ensure the timely provision of counterparts and facilities. These requirements are continuously kept under review and, in the light of experience, further refinements in procedures have been introduced; these are designed to assist Governments in the formulation of their requests and the maintenance of a balance between short-, medium- and long-term objectives.

C. Other developments

24. In providing the three components of technical assistance the problem of timing is a perennial one which is a matter of great concern both to the Agency and recipient countries. The Agency constantly tries to find ways and means of improving its procedures by ascertaining the problems that arise and taking remedial action. In a recent review of the recruitment of experts the following four difficulties were pinpointed:

(a) Recruitment is interrupted because Governments request that implementation of the project be postponed;

(b) Changes in the technical aspects of projects lead to delays because the qualifications of proposed candidates no longer meet the requirements in the revised job description and recruitment must begin anew;

(c) After waiting five to six months for the acceptance of candidates by Governments - in one case it took 16 months - experts were no longer available at the time notifications of acceptance were received; and

(d) Not enough qualified candidates could be found for certain specialized work.

25. It was recognized that nothing could be done about the first two difficulties mentioned, and attention was directed to the remaining ones. Since experience has shown that the best candidates are, in fact, accepted, the Agency will introduce the procedure - used successfully elsewhere in the United Nations family - of assuming that the expert is acceptable if no reply is received from the Government within three weeks.

26. Although the problem of finding suitable candidates for specialized work cannot be completely solved in the foreseeable future, current developments are encouraging. The review of the recruitment of experts revealed that 87% of all expert services, in terms of man-months authorized as at 1 January 1966, had either been completed or begun during the past year. The figure of 87%, which is thought to be the highest achieved by the Agency so far, does not include the experts recruited for short-term regional and inter-regional training courses. Of the total man-months authorized at the beginning of the year, only about 6% could not be utilized due to a lack of qualified candidates.

27. Delays in the procurement of equipment for demonstration purposes can be a crucial factor in determining whether a project is a success or a failure. In some instances it has been found necessary to send equipment by air, to ensure its timely arrival. As the gross weight of equipment is lower when shipped by air, and less loading and unloading is involved, the cost of air transport is often not significantly higher than that of surface transport. In the past, uncertainty as to the date on which the expert was expected to arrive gave rise to further difficulty. Another problem involving delays in starting projects is that of delivery dates. To minimize its effect, some United Nations organizations procure standard items of equipment in advance; these are ordered in large quantities at a lower unit cost and stored on the suppliers' premises, in duty-free port facilities, or at a headquarters or regional office. In the case of the Agency, the equipment required is unfortunately so diverse that this procedure can be followed only to a very limited extent.

28. In prior years the fellowship nominations in respect of which awards had not been made by the end of, for example, programme year "A" were automatically added to the group of nominations received from Member States for programme year "B". This practice has now been modified. Beginning with the 1966 programme year Member States, in addition to being notified as awards were made, were told which candidates did not receive awards under the 1965 programme. The nominations of the latter were then withdrawn if the Member State did not specifically request that individual cases be carried forward for consideration during the 1966 programme year. This procedural change, together with the improved preliminary screening of candidates by Member States, has resulted in fewer nominations, a reduced administrative workload in the Fellowship Unit and, as the most welcome development, a lower percentage of withdrawals. The resultant improvement can be clearly seen by comparing the nominations and awards in 1965 and 1966 (excluding UNDP/SF nominations and awards) as shown below:

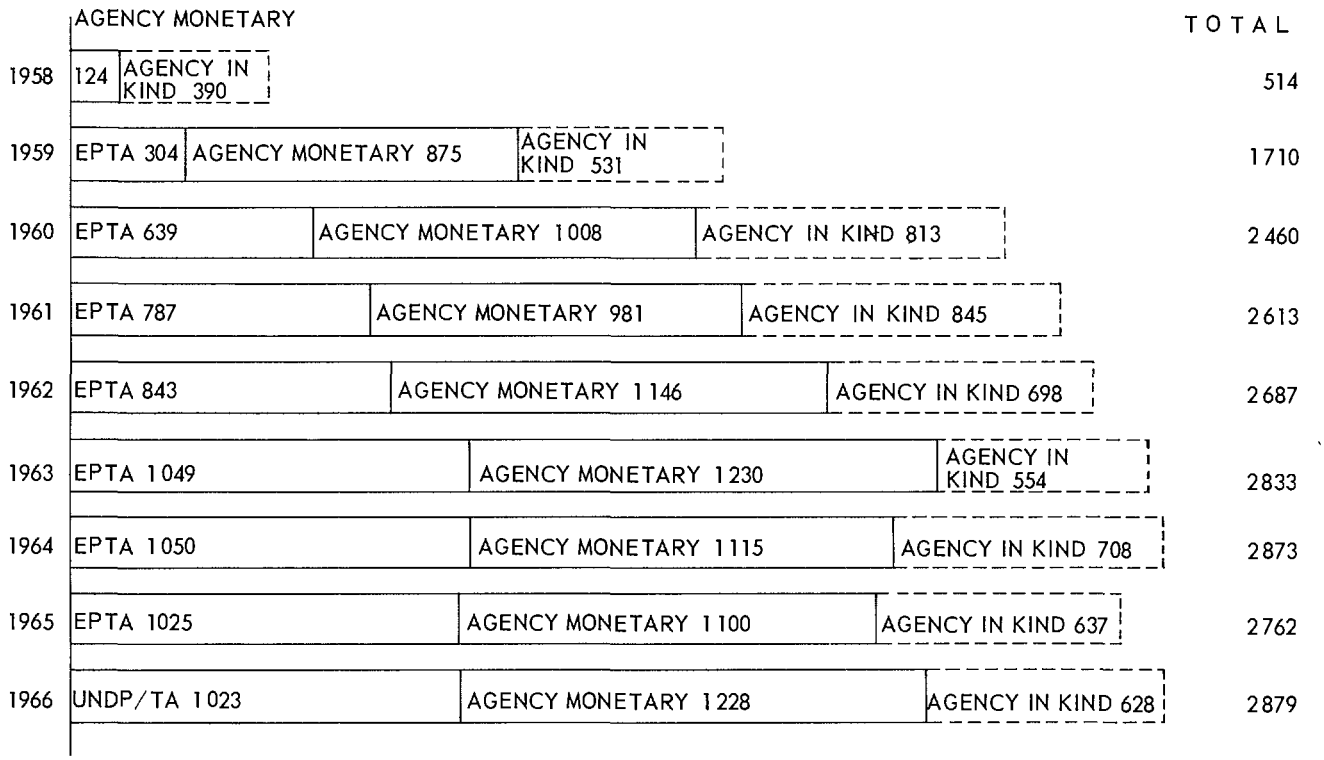
	1965	1966
Nominations received	536	426
Effective awards [6]	271	283
Percentage of nominations which led to effective awards	50.6%	66.4%

[6] Total number of awards less withdrawals as at 31 December.

FIGURE 1

RESOURCES AVAILABLE FOR TECHNICAL ASSISTANCE ACTIVITIES OF THE AGENCY (1958 - 1966)

(in thousands of dollars)



Part II. ANALYSIS OF THE ASSISTANCE PROVIDED

A. Resources available

1. General

29. In 1966 the resources available to the Agency for the provision of technical assistance amounted to $2 879 000 (see Fig. 1 and Table 1). This sum represents a 4% increase over the figure for 1965 ($2 762 000) and is made up as follows:

(a) UNDP/TA, $1 023 000 in cash;

(b) Voluntary contributions of Member States to the General Fund, $1 228 000 in cash; and

(c) Gifts in kind (services of cost-free experts, Type II fellowships and donations of equipment) valued at $628 000.

2. UNDP/TA

30. Under the 1965-66 biennial programme, begun under EPTA and concluded under UNDP/TA, the resources available in respect of 1966 amounted to $1 023 000, giving a total of $2 048 000 for 1965-66. At the close of the biennial period $1 748 000 had been obligated for field programmes and an additional amount of $257 500 was paid into the Agency's Administrative Fund for administrative and operational service costs in connection with UNDP technical assistance activities.

3. Agency's regular programme

31. Although the voluntary contributions again fell far short of the target figure, the amount available for technical assistance in 1966 from this source was still about 12% higher than in 1965 ($1 228 000 as compared with $1 100 000). This reversal in the trend of declining resources for technical assistance under the Agency's regular programme, first observed in 1963, is ample proof that Member States are aware of the need of strengthening the programme.

4. Gifts in kind

32. The rules applied in estimating the value of gifts in kind are set out in the Introductory Notes in Annex I. The slight decrease in 1966 ($628 000 as compared with $637 000 in 1965) is due to a slight reduction in the allocation for cost-free expert services (from $24 800 in 1965 to $19 200 in 1966) and in the allocation for Type II fellowships (from $534 400 in 1965 to $531 000 in 1966). Grants of equipment remained almost unchanged at $77 500 ($77 700 in 1965).

5. Other resources available

33. Under the Special Fund component of UNDP the Agency received funds totalling $384 683 in 1966 for four projects for which it served as executing agency: $36 000 for Yugoslavia, $10 400 for the Philippines, $283 283 for Central America, and $55 000 for Turkey.

34. As in previous years, under a funds-in-trust arrangement the Agency carried out a project in 1966 which cost $21 300.

6. Use of resources

35. The amount of money available for technical assistance gives only a superficial picture of the resources mobilized for the implementation of the programme. For example, a comparison of Table 3, which shows the nationality of experts and the countries in which fellowship training was received, with Table 7 in the reports on the assistance provided in 1964 [7] and 1965 [3] and in the present report for 1966 reveals that 24, 17 and 22 of the countries receiving some form of technical assistance also provided assistance to other countries in those years respectively. This contribution by the donor countries, the cost of which is difficult to assess, led in 1966 to a new impetus in the exchange of knowledge and skills between countries at different stages of nuclear energy development. As expected, the UNDP/TA expenditures in 1966 ($828 700) were higher than in 1965 ($649 100). Altogether, 98% ($1 748 000) of the UNDP/TA funds available for field programmes in 1965-66 were obligated by the end of the period.

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[7] GC(IX)/INF/80.

B. Distribution of assistance

1. Fields of activity

36. As mentioned in last year's report, a new classification was established for the fields in which technical assistance is provided. The main value of the new classification is that its use permits a more detailed analysis of the importance attached to individual fields by requesting countries; accordingly, this classification is used in Fig. 2 and Table 5. The tabulation below shows that in 1966 the largest share of assistance was provided to implement projects in the following four fields of activity listed in descending order.

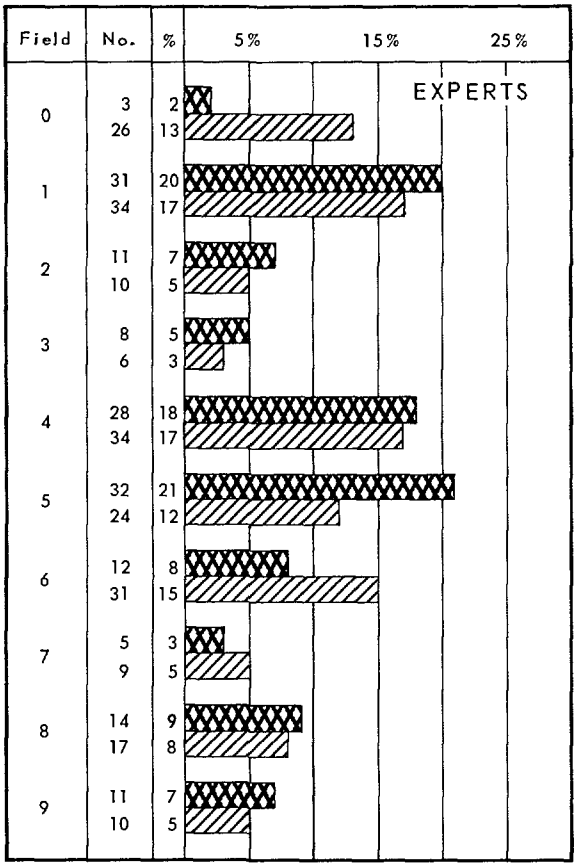
Assistance by field and component
(in thousands of dollars)

Field	Expert		Equipment	Fellowships		Share of total programme	
	No.	$	$	No.	$	$	%
Nuclear engineering and technology	34	167.3	91.2	84	253.4	511.9	20.9
Nuclear physics	34	161.4	30.3	121	260.5	452.2	18.4
Application of isotopes and radiation in agriculture	24	189.6	59.1	53	148.4	397.1	16.2
Application of isotopes and radiation in medicine	31	157.1	87.6	59	109.8	354.5	14.5
Total	123	675.4	268.2	317	772.1	1715.7	70.0
Total assistance	201	939.3	421.6	499	1092.1	2453.0	

A detailed analysis, by region, is given below in respect of all ten fields of activity.

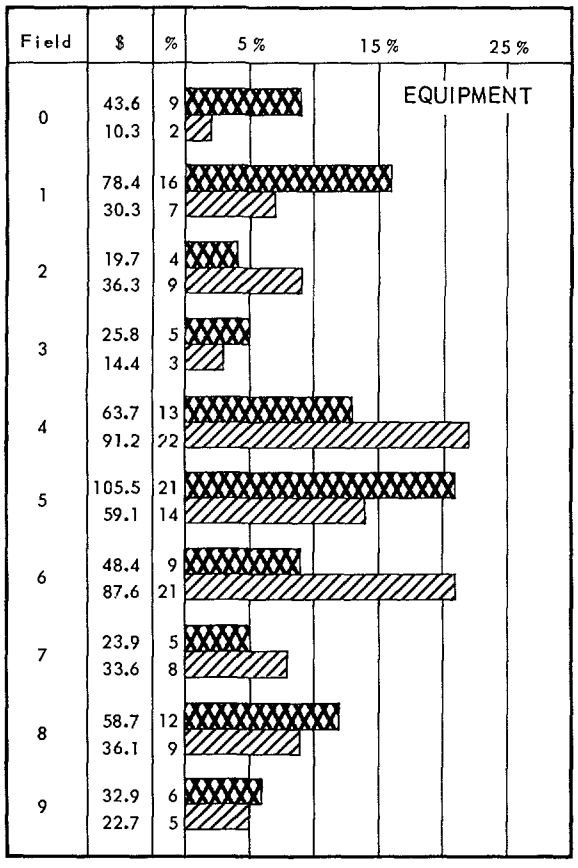
FIGURE 2

DISTRIBUTION OF TECHNICAL ASSISTANCE BY FIELD OF ACTIVITY (1965 AND 1966)



Code	Field of activity
0	General atomic energy development
1	Nuclear physics
2	Nuclear chemistry
3	Prospecting, mining and processing of *nuclear materials*
4	Nuclear engineering and technology
5	Application of isotopes and radiation in agriculture
6	Application of isotopes and radiation in medicine
7	Application of isotopes and radiation in biology
8	Other fields of application of isotopes and radiation
9	Safety in nuclear energy

The figures in the second and third columns of the charts indicate the numbers of experts or fellowships or the value (in thousands of dollars) of equipment, and the corresponding percentage share, by component, of the total assistance provided.



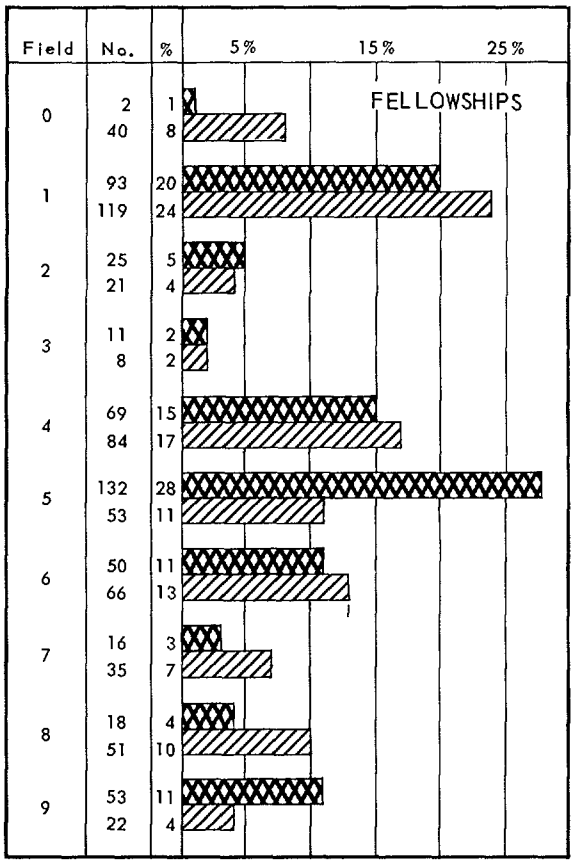


FIGURE 3

DISTRIBUTION OF TECHNICAL ASSISTANCE BY REGION
(1965, 1966, and 1958 - 1966)

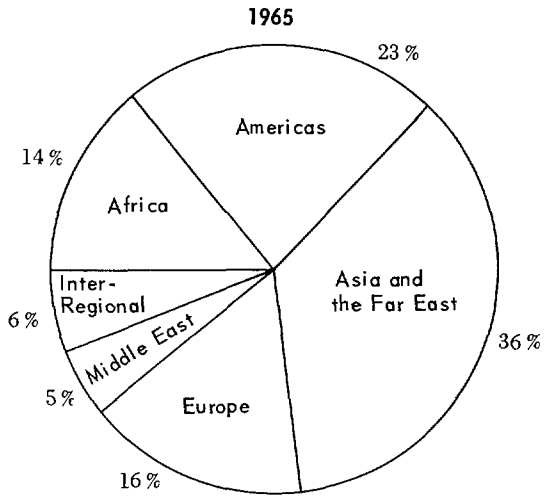


Diagram 1

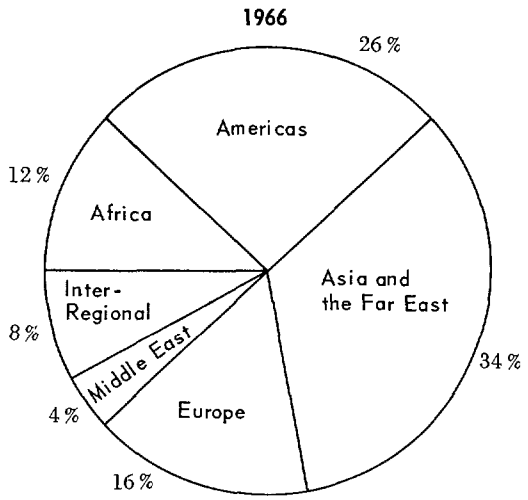


Diagram 2

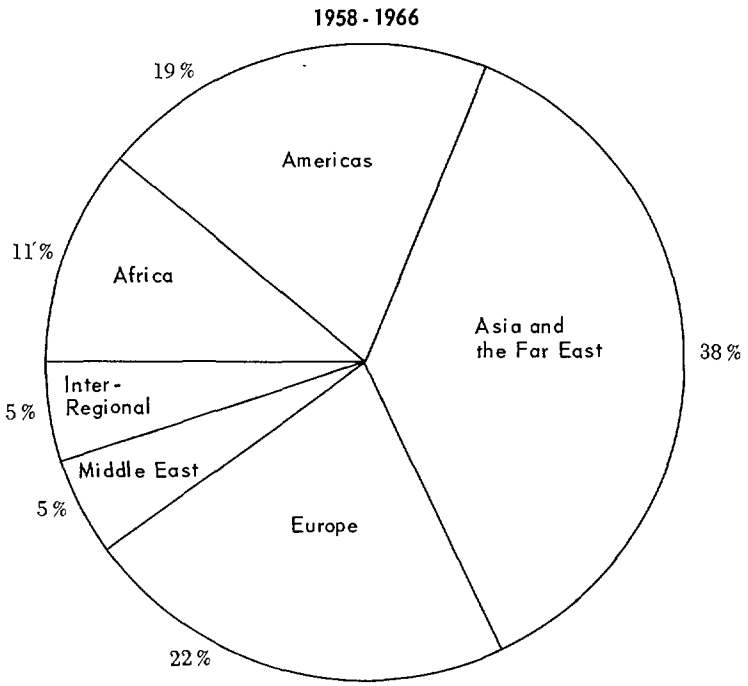


Diagram 3

DISTRIBUTION OF EXPERTS' SERVICES

Field	Year	Africa		Americas		Asia and the Far East		Europe		Middle East		Inter-regional		Total		% of Total	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
General atomic energy development	1965	-	-	2	9	1	1	-	-	-	-	-	-	3	10	1.9	1.7
	1966	-	-	1	2	1	2	1	9	-	-	23	3	26	16	12.3	2.7
Nuclear physics	1965	4	26	6	40	12	65	7	15	2	5	-	-	31	151	19.5	26.5
	1966	5	17	5	19	9	37	6	22	1	6	8	2	34	103	16.1	17.8
Nuclear chemistry	1965	-	-	3	13	3	7	4	15	1	12	-	-	11	47	6.9	8.2
	1966	-	-	2	17	3	7	4	10	1	6	-	-	10	40	4.7	6.9
Prospecting, mining and processing of nuclear materials	1965	5	13	1	12	1	8	1	3	-	-	-	-	8	36	5.0	6.3
	1966	3	13	4	8	-	-	-	-	-	-	-	-	7	21	3.3	3.6
Nuclear engineering and technology	1965	2	4	17	62	7	31	2	15	1	4	-	-	29	116	18.2	20.4
	1966	1	2	13	57	9	19	12	30	1	8	-	-	36	116	17.1	20.0
Application of isotopes and radiation in agriculture	1965	3	9	5	7	8	51	2	10	1	7	14	11	33	95	20.8	16.7
	1966	8	34	3	23	8	49	1	8	-	-	4	3	24	117	11.4	20.2
Application of isotopes and radiation in medicine	1965	3	15	2	6	5	24	2	2	-	-	1	1	13	48	8.2	8.4
	1966	4	18	4	9	12	47	1	3	1	12	11	3	35	92	16.6	15.9
Application of isotopes and radiation in biology	1965	-	-	1	7	3	8	1	3	-	-	-	-	5	18	3.1	3.2
	1966	-	-	4	8	-	-	1	1	1	1	4	1	10	11	4.7	1.9
Other fields of application of isotopes and radiation	1965	1	1	3	17	1	1	2	2	-	-	7	4	14	25	8.8	4.4
	1966	2	4	8	10	1	5	-	-	-	-	10	7	17	25	8.1	4.3
Safety in nuclear energy	1965	1	3	2	6	2	8	-	-	2	4	5	3	12	24	7.6	4.2
	1966	2	10	6	26	2	2	-	-	-	-	-	-	12	39	5.7	6.7
TOTAL	1965	19	71	42	179	43	204	21	65	7	32	27	19	159	570	100.0	100.0
	1966	25	98	50	179	45	168	26	83	5	33	60	19	211	580	100.0	100.0

(1) Number of experts and visiting professors.

(2) Number of man-months served.

2. Geographical distribution of assistance

(a) Distribution by region

37. Fig. 3 shows that the distribution of technical assistance by region did not vary by more than 3% as between 1965 and 1966. To facilitate a comparison in broad terms of the general stage of development in the peaceful uses of atomic energy, more detailed data are given below, by region and field of activity, for the three basic components: experts, equipment and fellowships.

DISTRIBUTION OF EQUIPMENT
(in thousands of dollars)

Field	Year	Africa	Americas	Asia and the Far East	Europe	Middle East	Inter-regional	Total	%
General atomic energy development	1965	11.1	6.2	18.5	10.3	-	-	46.1	9.2
	1966	-	-	8.2	2.0	-	0.1	10.3	2.4
Nuclear physics	1965	45.1	4.5	20.9	8.0	-	-	78.5	15.7
	1966	2.7	4.8	21.9	-	-	0.9	30.3	7.2
Nuclear chemistry	1965	5.1	4.8	(0.8)	11.8	-	-	20.9	4.2
	1966	-	-	29.6	-	6.7	-	36.3	8.6
Prospecting, mining and processing of nuclear materials	1965	1.8	4.2	16.6	-	-	-	22.6	4.5
	1966	9.3	5.1	-	-	-	-	14.4	3.4
Nuclear engineering and technology	1965	9.2	50.5	11.0	6.7	-	1.3	78.7	15.7
	1966	-	67.8	11.1	12.3	-	-	91.2	21.6
Application of isotopes and radiation in agriculture	1965	27.2	(1.5)	62.0	5.7	0.4	11.7	105.5	21.1
	1966	22.2	8.9	27.4	-	-	0.6	59.1	14.0
Application of isotopes and radiation in medicine	1965	-	5.1	29.3	-	0.9	-	35.3	7.0
	1966	13.2	7.5	47.4	18.0	-	1.5	87.6	20.8
Application of isotopes and radiation in biology	1965	-	23.5	0.4	-	-	-	23.9	4.8
	1966	-	16.9	-	12.7	0.4	3.6	33.6	8.0
Other fields of application of isotopes and radiation	1965	26.2	7.2	-	4.2	-	20.4	58.0	11.6
	1966	0.8	26.9	3.3	-	-	5.1	36.1	8.6
Safety in nuclear energy	1965	-	23.1	3.2	-	4.8	-	31.1	6.2
	1966	15.7	4.9	1.7	-	0.4	-	22.7	5.4
TOTAL	1965	$125.7	$127.6	$161.1	$46.7	$6.1	$33.4	$500.6	100.0
	1966	63.9	142.8	148.1	47.5	7.5	11.8	421.6	100.0

DISTRIBUTION OF FELLOWSHIPS

Field	Year	Africa		Americas		Asia and the Far East		Europe		Middle East		Inter-regional		Total		% of Total	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
General atomic energy development	1965	-	-	2	9	-	-	-	-	-	-	-	-	2	9	0.4	0.3
	1966	-	-	1	6	-	-	1	2	-	-	38	19	40	27	8.0	0.9
Nuclear physics	1965	19	232	13	140	28	238	31	298	3	28	-	-	94	936	20.0	29.2
	1966	11	85	15	126	19	191	32	290	2	14	40	20	119	726	23.9	23.6
Nuclear chemistry	1965	5	41	4	42	4	43	7	61	4	40	-	-	24	227	5.1	7.1
	1966	3	25	3	34	5	39	10	77	-	-	-	-	21	175	4.2	5.7
Prospecting, mining and processing of nuclear materials	1965	2	14	-	-	7	36	2	13	-	-	-	-	11	63	2.4	2.0
	1966	3	16	1	8	2	24	2	22	-	-	-	-	8	70	1.6	2.3
Nuclear engineering and technology	1965	6	59	20	186	26	322	16	159	1	10	-	-	69	736	14.7	22.9
	1966	13	182	16	95	31	394	20	175	4	16	-	-	84	862	16.9	28.1
Application of isotopes and radiation in agriculture	1965	1	12	12	60	17	61	9	80	3	36	90	162	132	411	28.2	12.8
	1966	2	13	7	67	25	155	7	67	1	12	11	20	53	334	10.6	10.9
Application of isotopes and radiation in medicine	1965	3	34	8	88	16	184	4	34	4	21	15	45	50	406	10.7	12.6
	1966	3	21	8	80	8	88	6	51	3	30	38	67	66	337	13.2	11.0
Application of isotopes and radiation in biology	1965	1	12	4	42	4	35	5	56	2	22	-	-	16	167	3.4	5.2
	1966	1	10	5	56	3	34	8	86	-	-	18	36	35	222	7.0	7.2
Other fields of application of isotopes and radiation	1965	1	10	2	15	1	5	3	23	-	-	11	22	18	75	3.8	2.3
	1966	12	9	14	33	5	28	5	32	-	-	15	45	51	147	10.2	4.8
Safety in nuclear energy	1965	1	12	1	12	8	80	4	30	1	12	38	33	53	179	11.3	5.6
	1966	1	10	1	12	12	107	-	-	4	34	4	8	22	171	4.4	5.5
TOTAL	1965	39	426	66	594	111	1004	81	754	18	169	154	262	469	3209	100.0	100.0
	1966	49	371	71	517	110	1060	91	802	14	106	164	215	499	3071	100.0	100.0

(1) Number of fellowships (includes UNDP/TA, Type I and Type II awards plus those for short-term training courses, research grants and scientific visits).

(2) Number of man-months of study.

(b) Distribution by country

38. A total of 64 countries, two more than in 1965, received technical assistance in one form or another in 1966. As mentioned earlier, 22 countries both received and provided assistance; 42 countries were recipients only. The number of countries in receipt of assistance amounting to more than $20 000 was 33 (34 in 1965). There were 14 countries which provided, but did not receive, technical assistance. Figs. 5 and 6 and Table 3 indicate the extent to which skills and knowledge were exchanged between countries during 1966.

3. Types of assistance

39. The percentage of the total resources allocated to the three components of assistance in 1965 and 1966 is shown below and in Fig. 4.

	1965	1966
Experts	34%	38%
Equipment	20%	17%
Fellowships	46%	45%

(a) Experts and visiting professors

40. In 1966 the assignments of 201 experts from 33 countries totalled 577 man-months at a cost of $939 300; in addition, at the end of the year, obligations amounting to $425 400 remained unliquidated.

41. Each of eight experts was assigned to two countries and one expert to three countries; in all 126 experts were sent to 45 countries and an additional 75 served in connection with regional and inter-regional projects in 1966. Of the total number, 19 were cost-free experts, one of whom was assigned to two countries; in 1965 eight cost-free and two partly cost-free experts were placed at the Agency's disposal.

(b) Equipment

42. Including the value of equipment donated as gifts in kind, 38 countries and 11 international projects were provided with equipment totalling $421 600 in 1966. In addition, equipment valued at $198 700 had not yet been delivered by the end of the year; this amount is included in the unliquidated obligations for 1966 shown in Table 4.

FIGURE 4

DISTRIBUTION OF TECHNICAL ASSISTANCE BY TYPE OF ASSISTANCE
(1965, 1966, and 1958 - 1966)

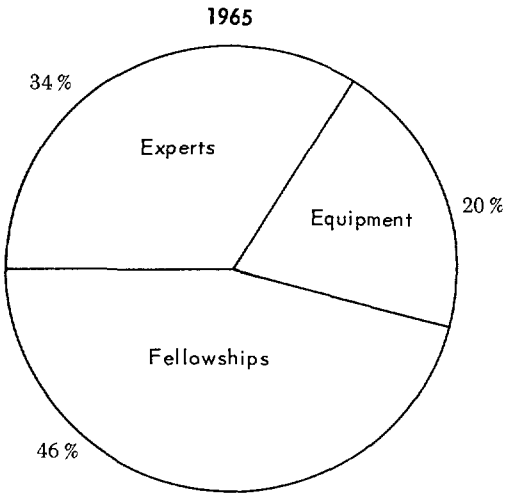


Diagram 1

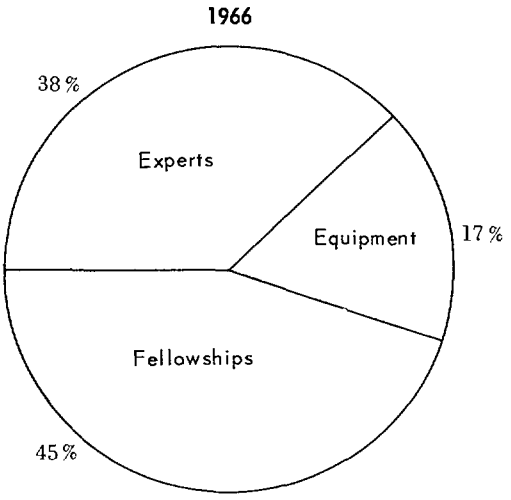


Diagram 2

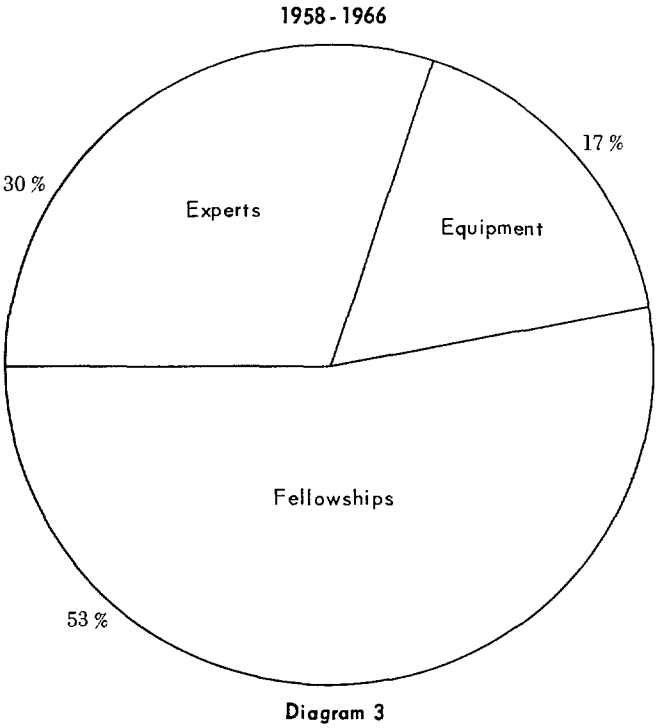


Diagram 3

Note: Fellowships include participants at training courses and special projects as well as long-term awards.

FIGURE 5

DISTRIBUTION OF TECHNICAL ASSISTANCE EXPERTS BY REGION: 1966

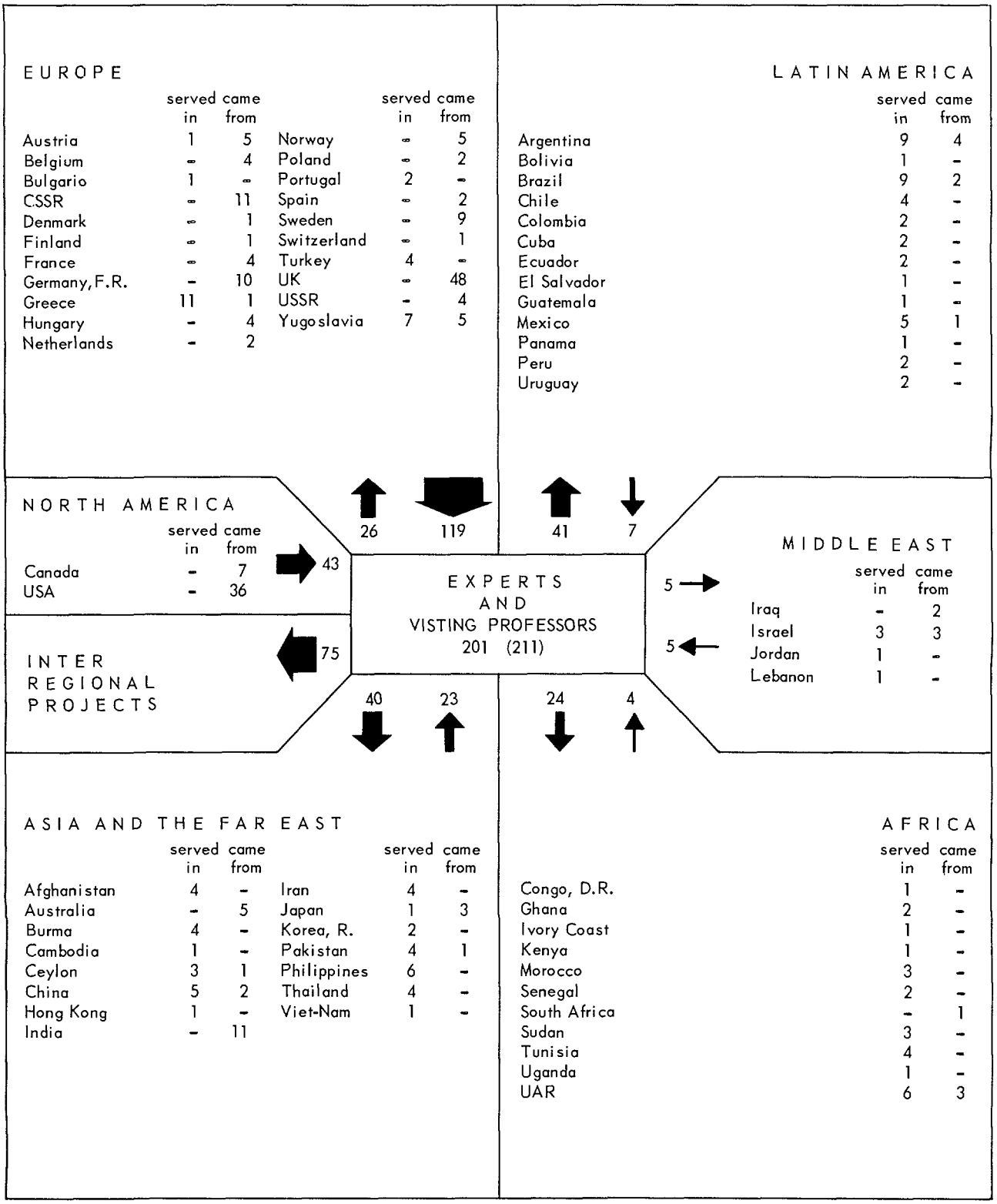
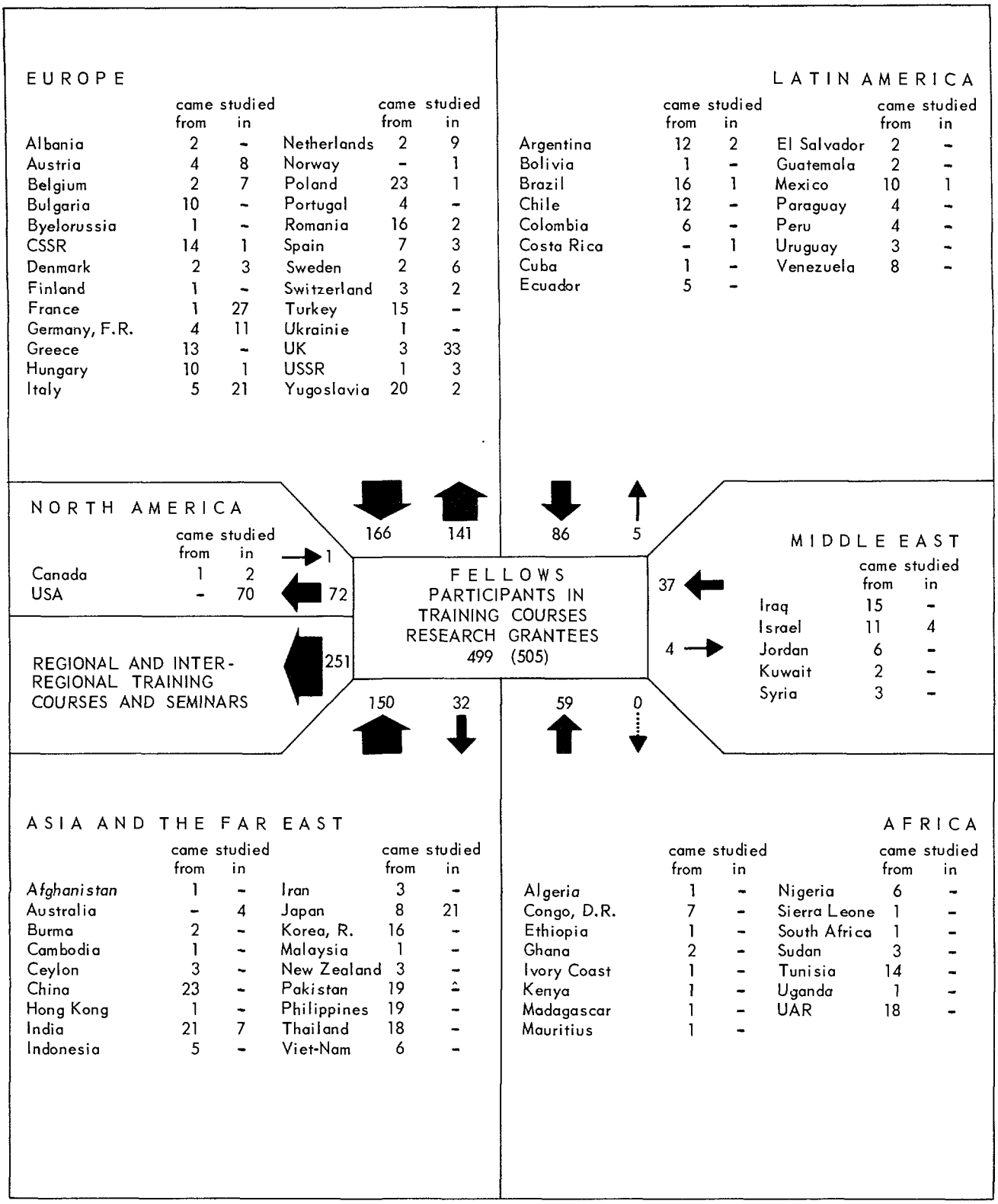


FIGURE 6

DISTRIBUTION OF TECHNICAL ASSISTANCE FELLOWSHIPS BY REGION: 1966



EUROPE	came from	studied in		came from	studied in
Albania	2	-	Netherlands	2	9
Austria	4	8	Norway	-	1
Belgium	2	7	Poland	23	1
Bulgaria	10	-	Portugal	4	-
Byelorussia	1	-	Romania	16	2
CSSR	14	1	Spain	7	3
Denmark	2	3	Sweden	2	6
Finland	1	-	Switzerland	3	2
France	1	27	Turkey	15	-
Germany, F.R.	4	11	Ukrainie	1	-
Greece	13	-	UK	3	33
Hungary	10	1	USSR	1	3
Italy	5	21	Yugoslavia	20	2

LATIN AMERICA	came from	studied in		came from	studied in
Argentina	12	2	El Salvador	2	-
Bolivia	1	-	Guatemala	2	-
Brazil	16	1	Mexico	10	1
Chile	12	-	Paraguay	4	-
Colombia	6	-	Peru	4	-
Costa Rica	-	1	Uruguay	3	-
Cuba	1	-	Venezuela	8	-
Ecuador	5	-			

NORTH AMERICA	came from	studied in
Canada	1	2
USA	-	70

MIDDLE EAST	came from	studied in
Iraq	15	-
Israel	11	4
Jordan	6	-
Kuwait	2	-
Syria	3	-

ASIA AND THE FAR EAST	came from	studied in		came from	studied in
Afghanistan	1	-	Iran	3	-
Australia	-	4	Japan	8	21
Burma	2	-	Korea, R.	16	-
Cambodia	1	-	Malaysia	1	-
Ceylon	3	-	New Zealand	3	-
China	23	-	Pakistan	19	-
Hong Kong	1	-	Philippines	19	-
India	21	7	Thailand	18	-
Indonesia	5	-	Viet-Nam	6	-

AFRICA	came from	studied in		came from	studied in
Algeria	1	-	Nigeria	6	-
Congo, D.R.	7	-	Sierra Leone	1	-
Ethiopia	1	-	South Africa	1	-
Ghana	2	-	Sudan	3	-
Ivory Coast	1	-	Tunisia	14	-
Kenya	1	-	Uganda	1	-
Madagascar	1	-	UAR	18	-
Mauritius	1	-			

(c) Fellowships

43. From Fig. 6 and Tables 3 and 6 it can be seen that 499 fellows from 77 countries whose studies represented 3071 man-months participated in the training programme in 1966. As at 31 December 1966 unliquidated obligations for fellowship training amounted to $482 800. A comparison of the awards made in 1965 (469 fellows from 70 countries) and 1966 is shown below:

	1965	1966
Country programmes	227	238
Short-term training courses	184	206
International projects	44	45
Research grants and scientific visits	14	10
Total number of fellows	469	499

(d) Regional and inter-regional activities

(i) Regional advisers

44. Six experts served as regional advisers under UNDP/TA in 1966: one on maize cultivation in Latin America, three on nuclear physics, one on radiotherapy physics and one on rice cultivation in Asia and the Far East.

(ii) Training courses

45. The Agency organized 11 regional and inter-regional training courses, as well as an inter-regional study tour, in 1966. Eight of the training courses and the study tour were financed under UNDP/TA, two courses took place at the Middle Eastern Regional Radioisotope Centre for the Arab Countries in Cairo and one each in Brazil, the Congo, Hong Kong, Mexico, the Philippines and Thailand. The remaining three training courses, financed under the Agency's regular programme, were conducted in Austria, Norway and Yugoslavia. Six training courses were devoted to the applications of isotopes and radiation (two in agriculture, two in medicine, one in industry, and one on general applications), and one course was devoted to each of the following five subjects: nuclear power, radiobiology, radiation protection and nuclear instrumentation, reactor physics, and repair of nucleonics equipment. As indicated in paragraph 41, 75 experts were engaged in these courses and 206 holders of Agency training awards took part. All five regions were represented by the 15 participants in the study tour of facilities in the CSSR, France, the USSR, and the United Kingdom, where numerous applications of isotopes and radiation in industry were explained and demonstrated.

(iii) Middle Eastern Regional Radioisotope Centre for the Arab Countries

46. As mentioned above, two training courses were held at the Centre during 1966, its fourth year of operation, one on the applications of isotopes in medicine and the other on radiation protection and nuclear instrumentation. They were attended by a total of 13 non-local trainees (7 from Iraq, 2 from Jordan, 1 from Kuwait and 3 from Sudan). In 1966 UNDP/TA provided $13 900 in support of the Centre's work: $2500 for experts, $5000 for equipment, and $6400 for training awards; the sum provided for 1965 was $19 600. The unliquidated obligations at the end of each year are not included.

(iv) Follow-up missions

47. No special Agency missions of this kind were sent out in 1965. However, in 1966 a one-man mission was sent to each of the five regions. The cost of sending the five staff members on these missions averaged about $250 for each of the 33 countries visited.

C. Special Fund activities

48. The Special Fund projects in the Philippines (Pre-investment Study on Power, including Nuclear Power, in Luzon) and Yugoslavia (Nuclear Research and Training in Agriculture) were completed in 1966; the latter was extended for nine months, i.e. to 31 December, and it is possible to continue support under UNDP/TA in 1967/68 and thus consolidate the progress made.

49. The main objectives of the project in Yugoslavia were to improve production of grain and other crops of importance and that of livestock. These were pursued mainly through research on fertilizer uses, studies in soil-plant relations, plant breeding, improved irrigation and drainage, and animal husbandry, particular emphasis being placed on the relevant applications of radiation and isotopes. Research and training were facilitated through the provision of experts in each of the main activities and the award of fellowships for advanced study abroad for periods of up to one year.

50. In respect of the nine-month extension to 31 December 1966, the Special Fund contribution to the project was increased to $646 000. The Yugoslav Government's contribution (about twice that of the Special Fund) financed items such as land, buildings, equipment and supplies available locally, staff, transport, installation of equipment, accommodation for international experts and facilities and services for the laboratories and local trainees. The costs directly related to the project which were met from the UNDP/SF contribution were approximately as follows: $204 000 for experts, $317 000 for equipment, and $70 000 for fellowships.

51. The Special Fund project in Central America (Eradication of the Mediterranean Fruit Fly) continued as planned and major advances have been reported in the techniques of fly breeding. For example, a new method of inducing oviposition has made it possible to double egg production; in addition, experimental work has resulted in the development of a larval rearing diet, with bagasse as a major constituent, which reduces the feeding cost to one fifth of that required for the original diet, in which dehydrated carrot was used.

52. A number of experimental releases of sterilized male flies has been made in Panama and Nicaragua, and methods have already been developed for the expeditious transport of large quantities of flies and their release from aircraft in the most effective and economic manner. The first large-scale releases took place during the first half of 1967.

53. Work on the project in Turkey (Pilot Project for Radiation Disinfestation of Stored Grain) continued during the year; construction of the irradiation facility and loading of the radiation source are expected to be completed early in 1967, following which evaluation testing will commence.

54. A further activity worthy of mention is the Agency's contribution, as a sub-contractor, in carrying out hydrology studies as a part of Special Fund projects implemented by other organizations. In 1966 investigations of this kind were carried out in Jamaica, Jordan, Niger and Spain.

55. The usual review of current and proposed Special Fund projects was carried out in December 1966 with UNDP officials. Of the several possible new projects discussed, it is anticipated that at least one of them will be given high priority by the requesting Government in 1967. In discharging its function as executing agency during 1966, the Agency recruited 15 experts, obligated $451 900 for equipment and contractual services, and awarded 26 fellowships for Special Fund projects.

D. Evaluation of the technical assistance programme

1. Evaluation in the United Nations family of organizations

(a) United Nations and ECOSOC practice

56. ECOSOC and other bodies and organizations reporting to the General Assembly continued to concern themselves with programme and project evaluation in 1966. In the case of the first three evaluation missions sent by the Secretary-General to Chile, Thailand and Tunisia, the Administrative Committee on Co-ordination considered that greater emphasis should be placed on the fact that Governments were primarily responsible for the evaluation of United Nations technical co-operation programmes. The Ad Hoc Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies also recommended that organizations should take steps to improve and strengthen the evaluation process wherever possible, and that they should utilize information resulting from internal reviews of their operations, as well as the views of Member States in which these operations are conducted, to a greater extent in programme formulation and execution [8].

57. Following the recommendations of these two committees and in view of the findings of its first evaluation teams, ECOSOC decided to continue and develop systematic evaluation; it endorsed the establishment of an inter-agency study group whose task would be to examine all matters of inter-agency concern raised in the reports of the evaluation teams and to propose practical steps for rendering more effective the operation of technical co-operation programmes. However, since further experience was required to ascertain appropriate techniques for evaluating the overall impact of international programmes, the Secretary-General was asked to undertake a limited number of further evaluation projects. It was suggested that the teams should spend longer periods in the field and broaden the range of their investigations.

58. The inter-agency study group, on which the Agency is represented, has held three meetings during which it was largely concerned with the revision of the terms of reference of future evaluation missions, the consideration of practical recommendations for improving the operational procedures suggested by the evaluation missions, and a preliminary review of methodology, terminology and common practices used by specialized agencies and the Agency in project evaluation and formulation.

59. Following the merger of the Secretariats of the former Technical Assistance Board and the Special Fund, a reorganization took place resulting in the creation in UNDP of an Evaluation Division within the Bureau of External Relations, Evaluation and Reports. This Division will carry out a continuous and systematic assessment of UNDP's effectiveness, by means of non-technical post-project evaluation.

60. Evaluation of a programme of technical assistance involves the determination of the effectiveness of single projects and projects which form part of large development schemes. While evaluation of the former projects is difficult, it will be virtually impossible to evaluate the latter projects (which constitute the majority of those assisted by the Agency) until appropriate methods have been devised. It is the consensus in the United Nations family that project evaluations already made, although sometimes unsystematic and incomplete, have led to an improvement in programme formulation and the preparation of field programmes in general. Even when only a limited, formal evaluation of completed projects has been made, the experience gained by recipient Governments and the specialized agencies has proved useful in the planning and implementation of new activities.

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[8] United Nations document A/6343, para. 79(a).

(b) Agency practice

61. The Agency, in common with other United Nations organizations, has followed a procedure whereby project evaluation is a routine part of programme and project formulation and management. Beginning at the planning stage, the project is subjected to review and appraisal throughout its duration and after completion. This is done by asking Governments, when they submit requests, to give a general description of the project, its purpose and scope, the institutions responsible for technical and scientific work, the existing facilities, the plans for implementing the project and any assistance which is being granted from other sources. In co-operation with the Government, the request is reviewed by the Secretariat in the light of the economic, social and scientific programmes of the country. If the project forms part of a larger development scheme, additional factors are taken into account and an effort is made to assess the usefulness of the project in its wider context, due consideration being given to the relative value of the contribution of atomic energy. The technical feasibility and soundness of the request are then considered.

62. The form and magnitude of the assistance to be provided under each project is therefore determined in consultation with Governments. Projects are kept continuously under surveillance and changes in the Government's scientific or economic development policy having an effect upon an approved project are taken into account in the evaluation procedure described above.

2. Evaluation of the Agency's technical assistance programme

(a) Expert assignments

63. Independent reports by Government authorities and UNDP representatives in various countries almost without exception pay tribute to the outstanding technical qualifications of the experts. Some experts had difficulty in adapting themselves to the local environment - a problem which is being overcome by more extensive briefing - but by the conclusion of their assignment they succeeded in imparting their knowledge and skill to local personnel who could assume responsibility for the future of the project. Examples of projects of special interest to Governments are given in Part I, section A, and the successful manner in which technical assistance has been assimilated into the scientific and economic development programmes of recipient countries has been stressed in several reports on the assistance provided by the Agency. This has happened particularly in countries where the use of atomic energy is both feasible and beneficial because of local conditions. In such cases the essential governmental counterpart services, both in personnel and facilities, have been made available.

64. The following examples serve to illustrate the inter-relationship and co-ordination of the services provided by Governments with the provision of assistance by the Agency. In one country an expert delivered a number of lectures on applications of radioisotopes in medicine and biology, trained the local staff in operating a new scintiscanner and made useful recommendations to the local authorities with regard to the future programme in the medical uses of radioisotopes. At a coffee research institute in another country, a small radioisotope laboratory has been constructed by the local authorities and equipped by the Agency; studies have been commenced on a new coffee-berry disease which has affected coffee plantations throughout the country and is threatening to become worse and spread beyond the national boundaries. As a contribution to the advancement of nuclear chemistry at one university, an expert delivered lectures and guided the students in a practical course in which they carried out a number of experiments, thus acquiring the necessary knowledge and experience to continue the work; he also contributed to co-operation between various institutes in the country which were concerned with nuclear chemistry.

65. There are, however, a few cases where a lack of this co-ordination of counterpart facilities has resulted in the expert assignment failing to achieve its objective in full. In one case, for instance, financial support for work involving one application of atomic energy had been expected from the Government, and the Agency expert had drawn up the appropriate programme. Halfway through the expert's assignment the Government changed its priorities

and financial support was not forthcoming; the expert was, however, able to carry out work which served as the basis for future action. In another case, a Government planned an integrated project requiring the services of several international organizations, including the Agency, and considerable supporting equipment. The equipment was ordered but a lack of co-ordination between government services led to a change of priorities and the cancellation of the project. The equipment was later transferred for use in another Agency-assisted project in the same country.

(b) Follow-up action

66. Before they take up their duties experts are specifically instructed that their recommendations should be practical and realistic. Before leaving the country the experts discuss the recommendations contained in their final report with government representatives and broad agreement is reached.

67. The continuous appraisal and evaluation of programmes are carried out in co-operation with the recipient Governments and indicate the extent to which experts' recommendations and the projects in which they have assisted can be followed up by Governments. Since the inception of the Agency's technical assistance programme, over 300 final reports have been prepared and submitted to Governments. As these reports are usually made available to a number of organizations and institutions interested in a given subject, follow-up action is often initiated by such bodies or by private concerns.

68. Whilst the majority of expert assignments consist of the short-term provision of outside assistance to satisfy a requirement which the country cannot meet from its own resources, the projects being assisted are, from the Government's point of view, of a continuous nature. Thus, in one country in which the Government recently attached importance to prospecting for nuclear raw materials, an Agency expert on a short-term assignment gave such valuable advice that the Government amended its long-term programme and even changed its approved programme relating to assistance from the Agency to include a return visit by the expert for a longer period. In another instance, an expert on aerial prospecting advised on the desirability of completing the current work by co-ordinating prospecting carried out on foot with aerial and car-borne prospecting and following this up with an analysis of any anomalies encountered. The country concerned has requested the Agency's assistance in this task.

69. Experts are often assigned to advise and instruct local technical staff in the design and construction of instruments and in the use of the most modern techniques. Several such assignments have recently been successfully completed; in one case advice and assistance were given in building two important instruments that will be an asset to the physics laboratory in the institute concerned; and the Government involved praised the contribution made by the expert during the course of his assignment, particularly in the design and development of techniques and instrumentation. The resultant training experience acquired has stimulated the activities of the staff of the institute in such a way that it is expected that the expert's contribution will continue to have a beneficial effect in the future.

70. Advice and assistance are frequently given in reactor engineering and an expert has recently advised on the establishment of an instruments and control division in an atomic energy institute. He also prepared a list of equipment, which the Government ordered, and installed the equipment which arrived while he was in the country in addition to training local technicians to install those items of equipment which were due to arrive subsequently.

71. In several countries assistance is being given in the establishment of small radioisotope units in research institutes dealing with local agricultural problems and also in the introduction of radiodiagnostic services into hospitals, which entails the establishment of laboratories and supporting facilities. In one case a small unit has been set up in an institute and, following the departure of the expert, its staff and services are being used to solve a local problem and at the same time the unit is being integrated into a programme co-ordinated by the Agency on tree fertilizer studies. The expert and the Government have pointed out that such small laboratories, established with the help of technical assistance from the Agency, can profitably be integrated in many of the co-ordinated research programmes for the study of world-wide

problems in a local environment. They are also easily assimilated into the national technical services programmes, since they concentrate on relevant local problems.

72. In carrying out his assignment, an expert cannot, of course, transfer more knowledge than his counterparts can absorb. He tends to act as a catalyst and encourages participation in the project which he is assisting. It is inevitable, therefore, that, on his departure, interest will decline; on the other hand, if the project is essential for economic and scientific development, its impetus will maintain itself. Thus, after the departure of the expert, the Government - either through lack of financial resources, a change in priorities, the departure of local trained personnel or a lack of interest - sometimes does not take follow-up action with regard to projects which have received Agency assistance. For example, some laboratories are not being fully utilized or equipment cannot be used since there is not enough foreign exchange to buy the necessary spare parts. Occasionally, Governments have been premature in requesting aid; in one country, where a request for equipment and advisory personnel was accepted, it will be several years before the building required to house the equipment will be ready; elsewhere, legislation drafted by Agency experts to meet local conditions for health protection has, after several years, still not been enacted even though some regulations are enforced.

(c) Equipment

73. Equipment for demonstration purposes continued to be supplied to implement projects. Specialized items, several of which involved considerable expenditure in foreign currency, were complemented by ancillary instrumentation provided by the recipient Government. In general, good use was made of the equipment during the assignment of the expert. In one country, a scanner is being utilized almost to the maximum extent possible in treating 20 patients daily In another country, using nuclear equipment provided by the Agency in conjunction with other conventional items and facilities already available, an expert was able to establish a radiochemical laboratory which is now in operation and in process of expansion. Difficulties in project implementation were experienced, however, in a few cases because of damage to equipment in the course of delivery, failure of suppliers to meet production and delivery schedules, domestic customs formalities and similar causes; these matters are almost entirely outside the Agency's control, but efforts are constantly being made to ensure that equipment is delivered in good working order and on time, using air transport whenever appropriate.

74. On conclusion of the expert's assignment, in accordance with the practice common to all United Nations organizations, title to the equipment is transferred on the "understanding that the Government will ensure the continuation of the proper operation and adequate maintenance of the equipment concerned and that it will be made available in the future for the use of any expert provided by the Agency to the Government. It is also understood that, from the effective date of transfer of title, the Government will be exclusively responsible for operation, maintenance and storage of the equipment." Unfortunately, reports from experts and subsequent requests from Governments (e.g. for spare parts) sometimes revealed that the likelihood of these obligations actually being carried out was not always present at the time the equipment was requested, generally owing to the absence of financial provision or a lack of foreign currency for maintenance or replacement of equipment.

(d) Training

(i) General

75. As a part of the continuous evaluation of the fellowship programme and as mentioned in paragraph 94 of last year's report, current supervisors of former Agency fellows have been requested to provide a brief evaluation of the training received. The procedure followed is to send a questionnaire to the person in the home country whom the former Agency fellow has mentioned as being his supervisor in the factory, hospital, institute or university where he is now employed.

76. The supervisors' evaluation bears witness to the success of the fellowship programme. From the replies received, it was found that, on his return to his country, the duties of the fellow were directly related to his training in over 90% of the cases reviewed. Only in approximately 1.5% of the cases reviewed was it found that his duties were not related to his training, partly because the necessary equipment was not available or the fellow was working on another project. In some cases his work, for instance on a research project, was related only to certain aspects of his training and, in the remaining cases, although his work was not related to his training, the latter proved useful.

77. These supervisors were also requested to express their views on the quality of the training received. Nearly 90% considered the training to be "valuable", "very beneficial", "of high scientific value", "excellent", etc. For example, one supervisor considered that the fellow's "specialization was of great importance to his own work and to the whole Institute as well." About 8% of the supervisors felt that the training was "adequate", beneficial", "useful", etc., as illustrated by the comment that "the training he received was adequate and well served our purpose". Only 2% found the quality of training "difficult to assess", because the duties being performed were unrelated to the training, or "inadequate", because the training period was thought to have been too short. Thus, it is apparent that host countries are providing Agency fellows with a high standard of training, well adapted to their individual needs and those of the recipient country.

78. Following the recommendations made by a panel of experts convened by the Agency in 1965, the Agency has initiated closer contact with both UNESCO and ILO in connection with education and training. One of the primary purposes of establishing such contacts was to discuss the training of technicians, laboratory assistants and middle-grade technical staff, as well as the idea of introducing the teaching of nuclear science into the educational programme of the developing countries. Although UNESCO and ILO have at present no programmes which specifically meet the Agency's needs, several activities in which co-operation is possible have been identified. In addition to expressing its willingness to assist in the placement of Agency-sponsored technicians for training, ILO has indicated an interest in acting as host for Agency-sponsored courses for the training of technicians at its International Centre for Advanced Technical and Vocational Training in Turin, Italy. The Centre appears to be particularly well suited for courses in the maintenance of nucleonics equipment. The discussions with UNESCO have revealed several new possibilities for co-operation in education and training, one of which is the joint sponsorship of a panel to discuss the problem of introducing nuclear science into the educational programmes of the developing countries.

(ii) Regional and inter-regional training projects

79. The training courses for groups and the individual fellowships made available for advanced work in connection with the IPA, NORA, NPY and SGAE/ENEA/IAEA projects, mentioned earlier in this report, continue to provide an opportunity for scientists to participate, at the intermediate and advanced levels, in atomic energy training.

80. The first Agency study tour, to the CSSR, France, the USSR and the United Kingdom, was carried out in September and October 1966. Fifteen participants from as many Member States toured more than 50 installations, most of which manufactured or used nucleonics instruments and isotopes for industrial purposes. The study tour not only proved of value to the countries represented but, through the comprehensive report on the experience gained, is expected to benefit other Member States as well. Although this report on the industrial uses of radioisotopes is not exhaustive, it is believed that it will serve as a valuable source of information for those already engaged in, or wishing to start, work on the subject.

81. Six regional advisers served in 1966. One lectured in radiotherapy physics, calibrated equipment and advised on the physics work done in radiotherapy departments and his recommendations are now being considered by Governments. Another gave advice on the use of radioisotopes for achieving improvements in rice production; this work is continuing with the full support of the Governments in the region. In the same region three advisers assisted at various times during the year in co-ordinated nuclear physics research. In another region, advice was given on the applications of radioisotopes to improve maize cultivation - in one

country a programme has been initiated and in others assistance was provided in continuing existing projects.

82. The Agency continued to participate in the work of one regional centre. It provided the services of a technical adviser in the medical applications of radioisotopes for a short period, provided lecturers for training courses, and supplied demonstration equipment and radioisotopes. In addition, scientific staff from the Agency's Headquarters continued, through periodic visits, to advise on the research programmes being carried out by the centre in several of the participating countries. In a recent appraisal, the Director of the centre estimated that at least 30% of the former trainees now work with radioisotopes; it is hoped to arrange for the "in-service" training of some of the others.

83. The Agency's support to an inter-regional centre under the technical assistance programme was limited to the provision of Type I fellowships.

Part III. CONCLUSIONS

A. General trends

84. Research reactors planned in the mid 1950's are now coming into operation in many developing countries and radioisotopes are being produced in them for use in the study of local problems. Reactor instrumentation and control systems are also being introduced and work on activation analysis, together with other reactor-based programmes in chemistry and physics, is being started. The need for nuclear raw materials, not only for domestic consumption but for future export and for the prospecting and analysis of such materials, is recognized in many countries. The importance which Governments attach to those activities is reflected in their recent requests for assistance.

85. Since the majority of developing countries have an agricultural economy, it is only natural that they should concentrate their attention on the possible applications of atomic energy in various branches of agricultural research and development. That they are doing so is shown by the increasing number of Agency-assisted projects which are designed to introduce new crop-plant varieties, eradicate pests and also to increase food and other agricultural production, particularly through the efficient use of fertilizers. The loss of stored grain and other commodities due to insects and climatic conditions has prompted the developed countries to investigate the possibility of preservation by irradiation; the gradual introduction of this technique in the developing countries is a noticeable feature of the technical assistance now provided by the Agency, and in view of its great potential economic importance the demand for this kind of assistance is likely to expand. Moreover the need for water, reflected in national development plans, has been evidenced by the increase in the number of requests for assistance in the applications of radioisotopes in hydrological studies. These studies are usually part of multi-purpose river-basin or other water development schemes, many of which are being implemented on a regional basis. These developments seem to indicate that the atomic energy programmes of developing countries are, in fact, beginning to receive priority from Governments and are figuring more prominently in national development plans; this is borne out by the fact that more requests are being made for assistance from the Agency.

86. As stated in paragraph 60 above, many of the Agency-assisted projects form part of large development schemes. The assistance is therefore planned and implemented to an increasing extent, not only in consultation with the Government concerned, but in co-operation with other members of the United Nations family, particularly FAO, UNESCO and WHO. The Secretariat keeps in touch with the headquarters of these organizations, and close contact is also maintained with their regional and country offices by the Agency's regional advisers and field experts; in general, these contacts have greatly assisted in the co-ordination of country programmes.

87. Atomic energy authorities in recipient countries are tending to consolidate their requests and to integrate Agency-assisted projects into their programmes. As this tendency grows, there is a move away from small projects which are unrelated to one another; thus, radioisotope units in agricultural research institutes or hospitals are becoming integrated into the countries' agricultural or medical services. The introduction of nuclear science into programmes of higher education and the resultant research are also being integrated into educational and scientific programmes. It is coming to be realized that atomic energy programmes can be more effective if they are carried out in conjunction with institutions and bodies responsible for economic and social progress. It is to be expected that the trend towards continuation and consolidation of atomic energy projects will be maintained in future and that the authorities in the recipient countries will become increasingly aware of the need always to provide enough staff, supported by adequate facilities, to ensure that the knowledge acquired while the Agency is providing assistance can continue to be applied after the provision of assistance has ended.

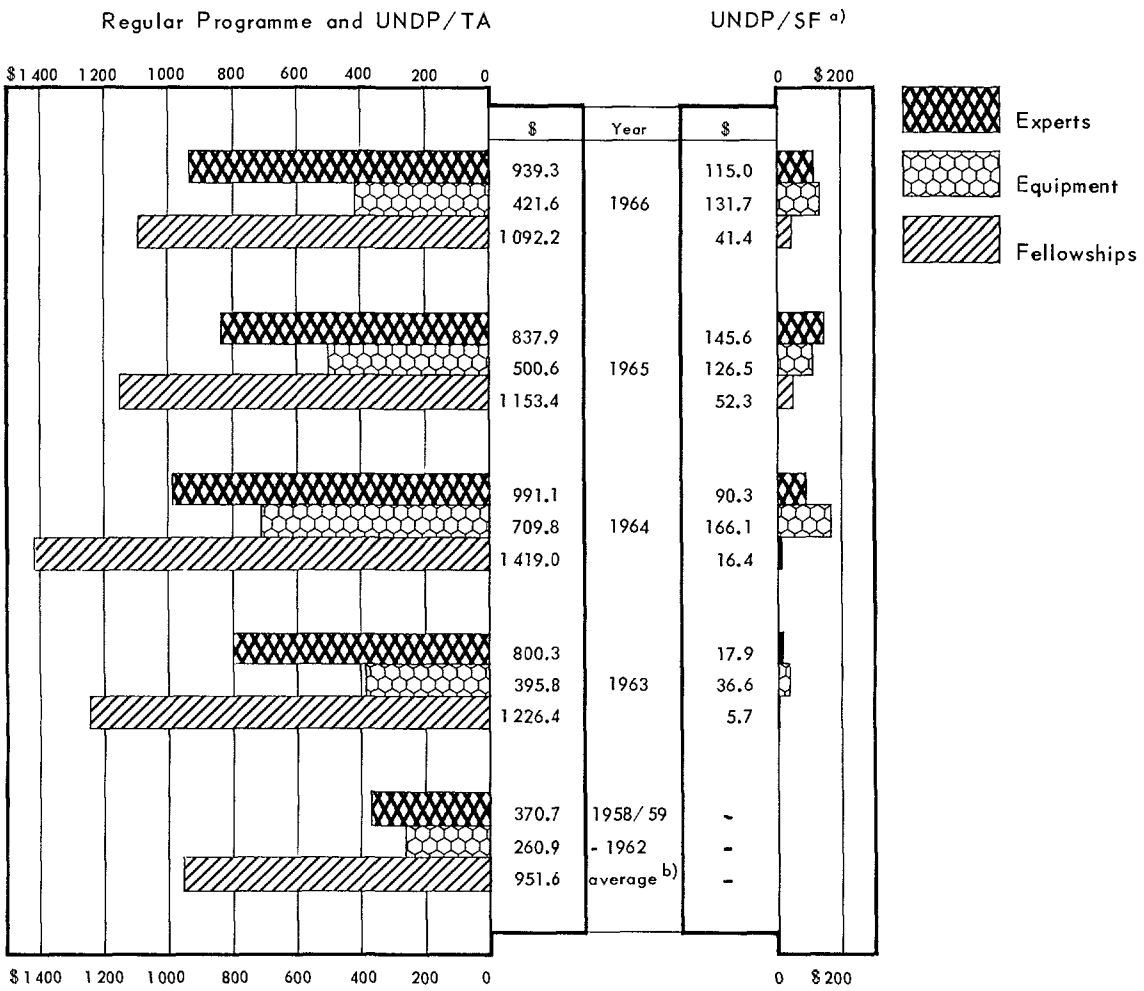
B. Available resources

88. For a number of years, the resources available to the Agency for the provision of technical assistance have been inadequate to meet the requests received. Furthermore, the value of those resources has progressively declined in terms of purchasing power; the effect of this decline on the scope and material value of the experts' services and equipment provided is described in paragraphs 111-113 of last year's report and the decline in purchasing power continued in 1966. Moreover, stipend rates for fellowships have had to be increased.

89. There has been a welcome increase in voluntary contributions in respect of 1967 and, if the Agency is to provide more assistance than has been possible in the past, it is essential that these contributions should continue to increase in future. In this connection, recipient countries might well consider the desirability of increasing their voluntary contributions as a potential investment, with a view to obtaining more technical assistance from the Agency. Having regard to the growth in the Agency's membership and to the increase in the need for assistance, it must indeed be obvious to all Member States that the Agency will require additional resources if it is to meet more than one request out of three, as it is at present doing. It is also clear that, with the increase in the number of countries requiring assistance and the decline in the value of resources in terms of purchasing power, more funds will be needed to enable the Agency to maintain, let alone increase, the amount of assistance it is now providing to each recipient country.

FIGURE 7

TRENDS IN THE TECHNICAL ASSISTANCE ACTIVITIES OF THE AGENCY
(in thousands of dollars)



a) The UNDP/SF figures given here do not reflect expenditures on sub-contracts and miscellaneous project costs, which include "experts" and "equipment"; these amounted to an additional $21 400 in 1963-64, $91600 in 1965 and $280 500 in 1966.

b) The amounts of $370700 and $951600 shown above for experts and fellowships respectively represent the average for the five years 1958 - 62. However, as equipment was first provided in 1959, the figure of $260900 represents the average for the four years 1959 - 62.

ANNEX I

STATISTICAL TABLES

Introductory Notes

General

1. In the statistical tables in this Annex the assistance provided by the Agency (experts, equipment and fellowships) includes actual cash payments against 1966 and prior years' obligations, regardless of the time when funds were made available or obligated, plus the total value of assistance in kind. The unpaid balance of funds obligated in 1966 is not included in the figures specifically relating to assistance provided, but is shown separately in Table 4, column (9); the total unpaid balance of funds obligated in 1966 and prior years is given at the bottom of this column in Tables 4, 7 and 8.

Resources

2. All monetary values appearing under the headings "Agency resources in kind", or "free experts" or "Type II fellowships" are estimated in accordance with the following rules:

(a) Experts. The value of the services of each cost-free expert is estimated on the basis of the average salary of an equivalent expert engaged by the Agency and the applicable daily subsistence allowance as established by UNDP, plus the cost of a round-trip air ticket;

(b) Equipment. The value of equipment is estimated according to information received from the donor Government (see also the Notes following the list of abbreviations); and

(c) Fellowships. The value of Type II fellowships is estimated on the basis of the monthly stipend, either as proposed by the host country or as established currently by UNDP, multiplied by the duration of the award in months. The estimated travel costs have been added if they were paid by the host country.

These values and the totals in which they are included must therefore be considered as approximations.

Special Fund activities and funds-in-trust arrangements

3. Although these are mentioned in the report as part of the Agency's technical assistance co-operation activities, none of the statistical tables includes Special Fund activities or projects carried out under funds-in-trust arrangements.

International Centre for Theoretical Physics

4. In 1966, 23 fellowships were awarded for study at the Theoretical Physics Centre at a total cost of $52 800, however, as $35 000 of this amount were transferred from Operating Fund II to Operating Fund I to cover part of these costs, it is not possible to specify from which of these two sources individual fellowships at the centre were financed.

Types of assistance

5. (a) Experts. When not shown separately, the assignments of visiting professors are included under the heading "experts". With regard to Table 6, it should be noted that under "International projects" the assignments of some experts are not sub-divided by region but included, with associated training awards, under the heading "short-term training courses";

(b) Equipment. As can best be seen in Table 7, the total assistance provided under this heading is the sum of the amounts disbursed for equipment and supplies in respect of country programmes, regional and inter-regional training courses and also storage charges in the case of one mobile radioisotope laboratory; and

(c) Fellowships. In Table 6 the number of fellowships classified by nationality does not include awards for short-term training courses, research grants and scientific visits, since their inclusion would significantly distort the statistics relating primarily to holders of one-year fellowships. Although awards for short-term training courses, research grants and scientific visits are included in Tables 3 and 6 under "UNDP/TA" and "Agency Type I" (in Table 5 under "Number of fellowships"), and are financed either by UNDP/TA or the Agency, they are not in the same category as Type I, Type II or similar UNDP/TA fellowship awards. On the other hand, in Tables 7 and 8 the expenditure on short-term training courses and study at the Theoretical Physics Centre is not shown as assistance to individual countries but is given under "International projects". It will be noted that the total assistance provided in respect of "International projects" in Tables 7 and 8 corresponds to the relevant totals under "Training courses" in Table 4. None of the tables includes any reference to local participants in training courses.

International projects

6. In the broadest sense, this heading covers regional projects with an expert component only (e.g. regional advisers on maize and rice cultivation and radiotherapy physics), regional and inter-regional projects with expert, equipment and fellowship components (short-term training courses) and regional and inter-regional projects with a fellowship component only (NORA, NPY, the Theoretical Physics Centre, etc.). In Table 7 only the expenditure on training at the Theoretical Physics Centre and at short-term courses is given under "International projects".

Figures and percentages

7. Due to the rounding-off of monetary amounts to the nearest hundred or thousand dollars, the totals indicated in various places may differ slightly. In preparing figures and tables, percentages have also been rounded off.

A. TECHNICAL ASSISTANCE RESOURCES

Table 1

Resources available: 1958-1966

(in thousands of dollars)

Year	UNDP/TA	Agency		Sub-totals		Total[a]
	(1)	Monetary (2)	In kind[a] (3)	Monetary (1) + (2)	Agency[a] (2) + (3)	(1) + (2) + (3)
1958	-	124	390	124	514	514
1959	304	875	531	1179	1406	1710
1960	639	1008	813	1647	1821	2460
1961	787	981	845	1768	1826	2613
1962	843	1146	698	1989	1844	2687
1963	1049	1230	554	2279	1784	2833
1964	1050	1115	708	2165	1823	2873
1965	1025	1100	637	2125	1737	2762
1966	1023	1228	628	2251	1856	2879
1958-1966	6720	8807	5804	15 527	14 611	21 331

a/ Estimated - see Introductory Notes, para. 2, to this Annex.

Table 2

Agency funds for technical assistance: 1958-1966

(in thousands of dollars)

Item	1958-1962	1963	1964	1965	1966	1958-1966
Target for voluntary contributions to the General Fund[a]	7050	2000	2000	2000	2000	15 050
Budgeted for technical assistance	5703	1799	1680	1749	1777	12 708
Amount pledged[a]	4946	1435	1394	1257	1277	10 309
Actually made available for technical assistance from the General Fund and Operating Fund II	4134	1230	1115	1100	1228	8 807

a/ The use of funds from voluntary contributions is not restricted to technical assistance activities but also covers other operations of the Agency like the Monaco and Seibersdorf Laboratories, contributions to the Theoretical Physics Centre and certain research contracts during the period under review.

Table 3

Number of experts classified by nationality and fellowships classified by place of study: 1966

Source	Number of experts classified by nationality				Number of fellowships classified by place of study			
	UNDP/TA	Agency		Total	UNDP/TA	Agency		Total
		Paid	Free			Type I	Type II	
Country programmes								
Argentina	4	-	-	4	-	-	2	2
Australia	4	1	-	5	2	1	-	3
Austria	4	1	-	5	-	2	3	5
Belgium	2	2	-	4	2	-	5	7
Brazil	-	2	-	2	-	-	1	1
Canada	-	4	3	7	2	-	-	2
Ceylon	1	-	-	1	-	-	-	-
China	2	-	-	2	-	-	-	-
Costa Rica	-	-	-	-	1	-	-	1
CSSR	4	7	-	11	-	-	1	1
Denmark	1	-	-	1	-	-	2	2
Finland	1	-	-	1	-	-	-	-
France	2	2	-	4	10	16	-	26
Germany, F.R.	6	4	-	10	3	5	2	10
Greece	-	1	-	1	-	-	-	-
Hungary	4	-	-	4	-	1	-	1
India	8	3	-	11	-	-	7	7
Iraq	1	1	-	2	-	-	-	-
Israel	1	2	-	3	1	2	1	4
Italy	-	-	-	-	2	-	18	20
Japan	3	-	-	3	2	3	15	20
Mexico	1	-	-	1	-	-	1	1
Netherlands	1	1	-	2	1	1	7	9
Norway	2	3	-	5	-	1	-	1
Pakistan	1	-	-	1	-	-	-	-
Poland	2	-	-	2	-	-	1	1
Romania	-	-	-	-	-	-	2	2
South Africa	1	-	-	1	-	-	-	-
Spain	2	-	-	2	-	-	3	3
Sweden	-	8	1	9	2	1	2	5
Switzerland	-	1	-	1	1	-	1	2
UAR	2	1	-	3	-	-	-	-
United Kingdom	26	19	3	48	18	13	-	31
USA	11	13	12	36	10	-	57	67
USSR	1	3	-	4	1	-	2	3
Yugoslavia	2	3	-	5	-	-	2	2
International projects								
Theoretical Physics Centre					-	23	-	23
CERN, Switzerland					4	1	-	5
IAEA, Austria					2	6	-	8
Neutron Crystal Spectrometer, Philippines					-	2	-	2
NPY (NORA) Project: Norway, Poland, Yugoslavia					1	1	-	2
SGAE/ENEA/IAEA Irradiation of Fruit/ Fruit Juice, Austria					-	2	-	2
Uppsala International Seminar, Sweden					1	2	-	3
Joint Institute for Nuclear Research, Dubna, USSR					-	-	2	2
Short-term training courses[a/]					95	111	-	206
Research grants and scientific visits[b/]					-	10	-	10
TOTAL	100	82	19	201	161	204	137	502[c/]

a/ Eight regional and inter-regional courses were financed under UNDP/TA and were held in Brazil, the Democratic Republic of the Congo, Hong Kong, Mexico, the Philippines, Thailand and the UAR; participants in an inter-regional study tour (financed under UNDP/TA) visited the CSSR, France, the United Kingdom and the USSR. Three inter-regional courses were financed from the Agency's monetary resources and were held in Austria, Norway and Yugoslavia. In addition, 15 participants in the 1965 radiotherapy course in the United Kingdom continued their studies over a period of 30 man-months in 1966.

b/ The ten holders of research grants and awards for scientific visits studied in 13 countries.

c/ The difference between the number of fellows (499) and the number of places of study is due to the fact that three fellows studied in two different countries.

B. DISTRIBUTION OF TECHNICAL ASSISTANCE

Table 4

Types of technical assistance: 1958-1966[a/]

(in thousands of dollars)

YEAR Type of resource	Experts (1)		Visiting professors (2)		Equipment (3)		Fellowships (4)		Research fellowships (5)		Training courses (6)		Mobile radioisotope laboratory (7)		TOTAL (8)		Unliquidated obligations (9)	TOTAL expenditures and unliquidated obligations (10)
	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	$
1958-1962																		
EPTA	883.1	51.6	-	-	207.2	12.1	527.9	30.8	-	-	90.4	5.3	2.2	1.2	1 710.8	100.0	-	1 710.8
Agency monetary	618.9	23.2	252.2	9.5	247.9	9.3	1 303.9	48.9	54.0	2.0	110.0	4.1	80.3	3.0	2 667.2	100.0	0.6	2 667.8
Agency in kind[b/]	48.8	1.5	-	-	469.5	14.3	2 759.1	84.2	-	-	-	-	-	-	3 277.4	100.0	-	3 277.4
TOTAL	1 550.8	20.3	252.2	3.3	924.6	12.0	4 590.9	60.0	54.0	0.7	200.4	2.6	82.5	1.1	7 655.4	100.0	0.6	7 656.0
1963																		
EPTA	220.4	30.7	-	-	146.6	20.4	227.7	31.6	-	-	122.3	17.1	-	-	717.0	100.0	-	717.0
Agency monetary	359.4	31.2	121.3	10.5	200.8	17.5	355.2	30.9	19.5	1.7	78.5	6.8	16.4	1.4	1 151.1	100.0	5.5	1 156.6
Agency in kind[b/]	32.4	5.8	-	-	1.0	0.2	521.0	94.0	-	-	-	-	-	-	554.4	100.0	-	554.4
TOTAL	612.2	25.3	121.3	5.0	348.4	14.4	1 103.9	45.5	19.5	0.8	200.8	8.3	16.4	0.7	2 422.5	100.0	5.5	2 428.0
1964																		
EPTA	359.2	32.1	-	-	265.1	23.7	170.5	15.3	-	-	323.1	28.9	-	-	1 117.9	100.0	-	1 117.9
Agency monetary	424.7	32.8	79.6	6.1	283.2	21.9	393.3	30.4	11.8	0.9	97.9	7.6	3.7	0.3	1 294.2	100.0	38.9	1 333.1
Agency in kind[b/]	13.6	1.9	-	-	71.0	10.0	621.1	87.8	-	-	2.1	0.3	-	-	707.8	100.0	-	707.8
TOTAL	797.5	25.6	79.6	2.5	619.3	19.8	1 184.9	38.0	11.8	0.4	423.1	13.6	3.7	0.1	3 119.9	100.0	38.9	3 158.8
1965																		
EPTA	272.0	41.9	-	-	150.6	23.2	91.4	14.1	-	-	135.1	20.8	-	-	649.1	100.0	31.7	680.8
Agency monetary	345.6	28.7	117.3	9.7	207.9	17.2	398.6	33.0	31.1	2.6	84.1	7.0	21.3	1.8	1 205.9	100.0	151.7	1 357.6
Agency in kind[b/]	24.8	3.9	-	-	77.7	12.2	534.4	83.9	-	-	-	-	-	-	636.9	100.0	-	636.9
TOTAL	642.4	25.8	117.3	4.7	436.2	17.5	1 024.4	41.1	31.1	1.2	219.2	8.8	21.3	0.9	2 491.9	100.0	183.4	2 675.3
1966																		
UNDP/TA	354.0	42.7	-	-	195.8	23.6	97.1	11.7	-	-	181.8	22.0	-	-	828.7	100.0	544.0	1 372.7
Agency monetary	359.0	36.0	106.4	10.7	115.9	11.6	279.1	28.0	23.4	2.4	112.6	11.3	0.2	0.0	996.6	100.0	334.5	1 331.1
Agency in kind[b/]	10.3	1.6	-	-	77.5	12.4	531.0	84.6	-	-	8.9	1.4	-	-	627.7	100.0	-	627.7
TOTAL	723.3[c/]	29.5	106.4	4.3	389.2	15.9	907.2	37.0	23.4	0.9	303.3	12.4	0.2	0.0	2 453.0	100.0	878.5	3 331.5
1958-1966																		
UN (EPTA & UNDP/TA)	2 088.7	41.6	-	-	965.3	19.2	1 114.6	22.2	-	-	852.7	17.0	2.2	0.0	5 023.5	100.0	575.7	5 599.2
Agency monetary	2 107.6	28.8	676.8	9.3	1 055.7	14.4	2 730.1	37.3	139.8	1.9	483.1	6.6	121.9	1.7	7 315.0	100.0	531.2	7 846.2
Agency in kind[b/]	129.9	2.2	-	-	696.7	12.0	4 966.6	85.6	-	-	11.0	0.2	-	-	5 804.2	100.0	-	5 804.2
TOTAL	4 326.2	23.8	676.8	3.7	2 717.7	15.0	8 811.3	48.6	139.8	0.8	1 346.8	7.4	124.1	0.7	18 142.7	100.0	1 106.9	19 249.6

a/ Data as at 31 December 1966.

b/ Estimated - see Introductory Notes, para. 2, to this Annex.

c/ The 1966 figures for "Experts" include miscellaneous and bank charges amounting to $4000 under "UNDP/TA" and $3200 under "Agency monetary".

Table 5

Fields of activity of technical assistance: 1966

Field	Number of experts	Cost of equipment (in thousands of dollars)	Number of fellowships[a]
General atomic energy development	26	10.3	40
Nuclear physics	34	30.3	119
Nuclear chemistry	10	36.3	19
Prospecting, mining and processing of nuclear materials	6	14.4	8
Nuclear engineering and technology	34	91.2	84
Application of isotopes and radiation in agriculture	24	59.1	53
Application of isotopes and radiation in medicine	31	87.6	66
Application of isotopes and radiation in biology	9	33.6	35
Other fields of application of isotopes and radiation	17	36.1	51
Safety in nuclear energy	10	22.7	22
TOTAL	201	421.6	499

a/ These figures include 206 participants in 13 regional and inter-regional training courses, of which one was a continuation of a 1965 course, and ten research grantees and holders of awards for scientific visits.

Table 6

Recipients of experts and fellowship awards

Number of experts classified by place of assignment and fellowships classified by nationality of recipient: 1966

RECIPIENT	Number of experts classified by place of assignment								Number of fellowships classified by nationality of recipient							
	UNDP/TA		Agency				Total		UNDP/TA		Agency				Total	
			Paid		Free						Type I		Type II			
	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months
Country programmes																
Afghanistan	4	4	-	-	-	-	4	4	-	-	-	-	1	72	1	72
Albania	-	-	-	-	-	-	-	-	-	-	-	-	2	12	2	12
Algeria	-	-	-	-	-	-	-	-	-	-	-	-	1	12	1	12
Argentina	5	24	4	24	-	-	9	48	1	10	3	22	5	50	9	82
Austria	-	-	1	3	-	-	1	3	-	-	1	10	1	6	2	16
Bolivia	-	-	1	3	-	-	1	3	-	-	-	-	1	6	1	6
Brazil	7	18	2	9	-	-	9	27	7	64	1	6	5	52	13	122
Bulgaria	-	-	1	3	-	-	1	3	-	-	2	12	4	32	6	44
Burma	3	21	1	6	-	-	4	27	-	-	-	-	-	-	-	-
Cambodia	-	-	1	8	-	-	1	8	-	-	-	-	-	-	-	-
Ceylon	2	4	1	12	-	-	3	16	-	-	2	11	-	-	2	11
Chile	1	1	3	11	-	-	4	12	1	12	-	-	6	59	7	71
China	3	9	2	7	-	-	5	16	7	66	2	16	8	87	17	169
Colombia	1	12	1	2	-	-	2	14	-	-	1	12	2	24	3	36
Congo, D.R.	1	2	-	-	-	-	1	2	-	-	-	-	1	10	1	10
Cuba	-	-	2	8	-	-	2	8	-	-	-	-	-	-	-	-
CSSR	-	-	-	-	-	-	-	-	-	-	2	22	4	37	6	59
Ecuador	1	2	1	3	-	-	2	5	-	-	-	-	2	18	2	18
El Salvador	-	-	1	3	-	-	1	3	-	-	-	-	1	6	1	6
Germany, F.R.	-	-	-	-	-	-	-	-	-	-	1	6	-	-	1	6
Ghana	1	11	1	7	-	-	2	18	-	-	1	9	1	12	2	21
Greece	6	12	4	23	1	1	11	36	3	36	4	33	2	18	9	87
Guatemala	1	2	-	-	-	-	1	2	-	-	-	-	2	24	2	24
Hong Kong	-	-	1	2	-	-	1	2	-	-	-	-	-	-	-	-
Hungary	-	-	-	-	-	-	-	-	-	-	2	14	4	32	6	46
India	-	-	-	-	-	-	-	-	4	46	2	12	8	82	14	140
Indonesia	-	-	-	-	-	-	-	-	-	-	3	27	2	24	5	51
Iran	4	8	-	-	-	-	4	8	-	-	2	20	1	12	3	32
Iraq	-	-	-	-	-	-	-	-	3	26	1	6	1	8	5	40
Israel	-	-	2	14	1	1	3	15	-	-	3	28	-	-	3	28
Italy	-	-	-	-	-	-	-	-	-	-	1	6	-	-	1	6
Ivory Coast	1	2	-	-	-	-	1	2	-	-	-	-	-	-	-	-
Japan	-	-	-	-	1	1	1	1	-	-	1	10	-	-	1	10
Jordan	1	12	-	-	-	-	1	12	4	36	-	-	-	-	4	36
Kenya	-	-	1	6	-	-	1	6	-	-	-	-	-	-	-	-
Korea, R.	-	-	1	3	1	1	2	4	-	-	1	12	11	109	12	121
Lebanon	-	-	1	6	-	-	1	6	-	-	-	-	-	-	-	-
Madagascar	-	-	-	-	-	-	-	-	-	-	1	3	-	-	1	3
Mexico	2	9	3	11	-	-	5	20	2	14	1	2	4	38	7	54
Morocco	2	1	1	3	-	-	3	4	-	-	-	-	-	-	-	-
New Zealand	-	-	-	-	-	-	-	-	-	-	1	8	-	-	1	8
Nigeria	-	-	-	-	-	-	-	-	1	12	2	16	2	24	5	52
Pakistan	1	2	2	5	1	1	4	8	5	58	1	8	6	67	12	133
Panama	1	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-	2	20	2	20
Peru	1	7	1	5	-	-	2	12	-	-	-	-	-	-	-	-
Philippines	3	8	3	12	-	-	6	20	1	12	3	29	8	88	12	129
Poland	-	-	-	-	-	-	-	-	5	58	7	54	3	28	15	140
Portugal	-	-	2	8	-	-	2	8	-	-	2	18	-	-	2	18
Romania	-	-	-	-	-	-	-	-	3	24	5	48	4	34	12	106
Senegal	-	-	2	12	-	-	2	12	-	-	-	-	-	-	-	-
Spain	-	-	-	-	-	-	-	-	-	-	3	22	-	-	3	22
Sudan	1	6	2	9	-	-	3	15	-	-	-	-	-	-	-	-
Thailand	2	17	2	12	-	-	4	29	3	32	2	22	7	72	12	126
Tunisia	3	6	1	5	-	-	4	11	4	19	6	50	2	84	12	153

RECIPIENT	Number of experts classified by place of assignment								Number of fellowships classified by nationality of recipient							
	UNDP/TA		Agency				Total		UNDP/TA		Agency				Total	
			Paid		Free						Type I		Type II			
	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months	Number	Man months
Turkey	1	3	3	18	-	-	4	21	1	12	-[a]	2	8	78	9	92
Uganda	1	4	-	-	-	-	1	4	-	-	-	-	-	-	-	-
UAR	5	16	1	7	-	-	6	23	5	31	3	25	6	54	14	110
United Kingdom	-	-	-	-	-	-	-	-	-	-	1	8	-	-	1	8
Uruguay	1	3	1	1	-	-	2	4	-	-	1	6	-	-	1	6
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-	3	36	3	36
Viet-Nam	1	2	-	-	-	-	1	2	1	12	1	6	3	36	5	54
Yugoslavia	1	1	6	11	-	-	7	12	3	34	6	62	3	30	12	126
Sub-total	68	230	63	282	5	5	136	517	64	614	82[a]	683	137	1493	283	2790
International projects																
Americas	1	12	-	-	-	-	1	12	-	-	-	-	-	-	-	-
Asia and Far East	5	23	-	-	-	-	5	23	-	-	-	-	-	-	-	-
Short-term training courses	34	22	20	5	15	1	69	28	95	157	111	105	-	-	206	262
Research grants and scientific visits	-	-	-	-	-	-	-	-	-	-	10	19	-	-	10	19
Sub-total	40	57	20	5	15	1	75	63	95	157	121	124	-	-	216	281
GRAND TOTAL	108	287	83	287	20	6	211[b]	580	159	771	203	807	137	1493	499	3071

a/ One eight-month award was financed from two sources (two man-months under Type I and six man-months under Type II fellowships); the award is shown under "Type I".

b/ The difference between the number of assignments and the actual number of experts (201) is due to the fact that eight experts were each assigned to two and one expert to three different countries.

Table 7

Financial summary: 1966

(in thousands of dollars)

RECIPIENT	Expenditures								Unliquidated obligations at 31 December 1966	TOTAL[a] expenditures and unliquidated obligations
	On				By					
						Agency				
	Experts[a]	Equipment[a]	Fellowships[a]	TOTAL[a]	UNDP/TA	Monetary	In kind[a]	TOTAL[a]		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country programmes										
Afghanistan	2.7	3.7	9.0	15.4	2.6	3.8	9.0	15.4	7.9	23.3
Albania	-	-	3.0	3.0	-	-	3.0	3.0	-	3.0
Algeria	-	-	3.4	3.4	-	0.7	2.7	3.4	0.3	3.7
Argentina	66.9	31.2	28.8	126.9	64.0	46.9	16.0	126.9	54.4	181.3
Austria	4.7	-	2.3	7.0	-	5.5	1.5	7.0	3.6	10.6
Bolivia	3.9	-	3.6	7.5	-	4.0	3.5	7.5	1.5	9.0
Brazil	45.9	33.3	43.4	122.6	67.9	26.6	28.1	122.6	58.3	180.9
Bulgaria	4.0	9.4	13.8	27.2	-	18.9	8.3	27.2	5.9	33.1
Burma	35.3	33.5	0.4	69.2	54.5	14.7	-	69.2	18.9	88.1
Cambodia	12.8	2.0	-	14.8	-	14.8	-	14.8	2.1	16.9
Ceylon	23.4	6.7	4.6	34.7	6.9	27.8	-	34.7	19.4	54.1
Chile	21.6	20.1	33.1	74.8	17.9	22.6	34.3	74.8	22.7	97.5
China	24.4	-	47.6	72.0	20.8	14.3	36.9	72.0	26.3	98.3
Colombia	18.8	1.9	17.0	37.7	12.8	5.4	19.5	37.7	8.2	45.9
Congo, D.R.	4.3	-	5.8	10.1	4.3	2.2	3.6	10.1	7.7	17.8
Cuba	12.3	0.1	0.7	13.1	-	13.1	-	13.1	3.5	16.6
CSSR	-	-	29.0	29.0	-	20.9	8.1	29.0	15.5	44.5
Ecuador	9.7	1.3	5.0	16.0	3.0	8.0	5.0	16.0	7.0	23.0
El Salvador	6.3	8.0	1.5	15.8	-	10.3	5.5	15.8	5.7	21.5
Ethiopia	-	8.6	-	8.6	-	8.6	-	8.6	5.2	13.8
Ghana	27.0	4.0	8.5	39.5	20.1	17.0	2.4	39.5	6.7	46.2
Greece	61.4	-	15.4	76.8	15.8	52.0	9.0	76.8	58.8	135.6
Guatemala	3.3	8.2	3.4	14.9	11.5	-	3.4	14.9	0.8	15.7
Hong Kong	1.5	0.2	-	1.7	-	1.7	-	1.7	-	1.7
Hungary	-	12.7	21.4	34.1	-	26.5	7.6	34.1	21.6	55.7
India	-	0.6	55.6	56.2	11.5	3.8	40.9	56.2	24.1	80.3
Indonesia	-	-	27.1	27.1	2.8	10.3	14.0	27.1	11.3	38.4
Iran	17.2	1.6	18.8	37.6	18.8	11.8	7.0	37.6	72.9	110.5
Iraq	-	-	20.3	20.3	1.7	11.6	7.0	20.3	7.8	28.1
Israel	23.9	7.4	4.1	35.4	3.5	31.0	0.9	35.4	14.4	49.8
Italy	-	-	4.9	4.9	-	4.9	-	4.9	0.7	5.6
Ivory Coast	3.3	-	-	3.3	3.3	-	-	3.3	-	3.3
Japan	1.6	-	2.7	4.3	-	2.7	1.6	4.3	7.7	12.0
Jordan	19.8	-	-	19.8	19.8	-	-	19.8	15.7	35.5
Kenya	7.9	11.8	-	19.7	-	19.7	-	19.7	0.9	20.6
Korea, R.	7.9	1.0	57.0	65.9	3.0	12.7	50.2	65.9	13.4	79.3
Lebanon	9.3	-	2.3	11.6	-	11.6	-	11.6	-	11.6
Madagascar	-	-	1.9	1.9	-	1.9	-	1.9	-	1.9
Mexico	34.4	14.3	21.0	69.7	28.4	20.8	20.5	69.7	19.9	89.6
Morocco	4.9	-	1.5	6.4	0.4	6.0	-	6.4	17.7	24.1
New Zealand	-	-	0.5	0.5	-	0.5	-	0.5	-	0.5
Nicaragua	-	-	4.7	4.7	-	4.7	-	4.7	1.0	5.7
Nigeria	-	6.1	4.8	10.9	-	6.1	4.8	10.9	6.9	17.8
Pakistan	23.2	7.5	25.5	56.2	9.4	20.7	26.1	56.2	48.6	104.8
Panama	4.1	-	-	4.1	4.1	-	-	4.1	-	4.1
Paraguay	-	-	8.8	8.8	-	-	8.8	8.8	0.9	9.7
Peru	23.5	6.5	3.9	33.9	14.0	16.9	3.0	33.9	23.8	57.7
Philippines	31.6	36.9	58.8	127.3	40.5	45.4	41.4	127.3	49.9	177.2
Poland	0.1	-	33.3	33.4	4.3	23.5	5.6	33.4	67.2	100.6
Portugal	9.8	-	6.2	16.0	-	16.0	-	16.0	20.0	36.0
Romania	0.3	8.8	20.9	30.0	0.9	20.5	8.6	30.0	30.2	60.2
Saudi Arabia	-	-	0.1	0.1	-	0.1	-	0.1	24.5	24.6
Senegal	22.6	4.9	-	27.5	-	27.5	-	27.5	12.8	40.3
South Africa	-	-	1.7	1.7	-	1.7	-	1.7	-	1.7
Spain	-	-	3.2	3.2	-	3.2	-	3.2	1.7	4.9

RECIPIENT	Expenditures								Unliquidated obligations at 31 December 1966	TOTAL[a] expenditures and unliquidated obligations
	On				By					
						Agency				
	Experts[a]	Equipment[a]	Fellowships[a]	TOTAL[a]	UNDP/TA	Monetary	In kind[a]	TOTAL[a]		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sudan	17.5	5.1	3.0	25.6	6.4	14.5	4.7	25.6	17.2	42.8
Thailand	54.0	39.4	50.8	144.2	62.9	41.4	39.9	144.2	24.2	168.4
Tunisia	14.0	9.7	36.3	60.0	19.3	23.5	17.2	60.0	20.1	80.1
Turkey	30.6	2.0	40.7	73.3	11.6	33.3	28.4	73.3	7.6	80.9
Uganda	6.5	3.5	-	10.0	10.0	-	-	10.0	0.2	10.2
UAR	35.0	9.4	26.0	70.4	31.9	23.5	15.0	70.4	15.6	86.0
Uruguay	9.0	0.6	3.4	13.0	5.3	7.7	-	13.0	-	13.0
Venezuela	-	-	23.2	23.2	-	2.2	21.0	23.2	3.0	26.2
Viet-Nam	4.6	15.0	24.2	43.8	5.5	2.3	36.0	43.8	11.4	55.2
Yugoslavia	15.7	12.2	32.7	60.6	21.5	30.3	8.8	60.6	51.3	111.9
Sub-total	822.5	389.2	930.6	2142.3	642.9	880.6	618.8	2142.3	1006.6	3148.9
International projects										
Africa	0.8	0.8	3.2	4.8	4.8	-	-	4.8	3.7	8.5
Americas	29.5	17.1	11.0	57.6	57.6	-	-	57.6	19.6	77.2
Asia and the Far East	45.8	2.5	1.6	49.9	49.9	-	-	49.9	23.1	73.0
Inter-regional projects	33.5	11.8	110.7	156.0	69.5	77.6	8.9	156.0	53.9	209.9
Theoretical Physics Centre	-	-	35.0	35.0	-	35.0	-	35.0	-	35.0
Sub-total	109.6	32.2	161.5	303.3	181.8	112.6	8.9	303.3	100.3	403.6
Miscellaneous										
Bank charges	7.2	-	-	7.2	4.0	3.2	-	7.2	-	7.2
Mobile laboratories storage	-	0.2	-	0.2	-	0.2	-	0.2	-	0.2
GRAND TOTAL	939.3	421.6	1092.1	2453.0	828.7	996.6	627.7	2453.0	1106.9	3559.9

a/ Assistance "in kind" can only be estimated; see Introductory Notes, para. 2 to this Annex.

Table 8

Financial summary: 1958-1966

(in thousands of dollars)

RECIPIENT	Number of years in programme	Expenditures								Unliquidated obligations at 31 December 1966	TOTAL[a] expenditures and unliquidated obligations
		On				By					
		Experts[a]	Equipment[a]	Fellowships[a]	TOTAL[a]	UNDP/TA	Agency		TOTAL[a]		
							Monetary	In kind[a]			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country programmes											
Afghanistan	8	70.7	83.6	61.9	216.2	65.9	85.7	64.6	216.2	7.9	224.1
Albania	2	-	-	27.7	27.7	-	-	27.7	27.7	-	27.7
Algeria	2	-	-	3.4	3.4	-	0.7	2.7	3.4	0.3	3.7
Argentina	9	352.1	215.6	320.6	888.3	299.3	356.2	232.8	888.3	54.4	942.7
Austria	8	60.5	13.8	92.6	166.9	-	115.3	51.6	166.9	3.6	170.5
Bolivia	4	42.2	16.4	24.1	82.7	-	72.2	10.5	82.7	1.5	84.2
Brazil	9	367.2	207.2	205.8	780.2	272.3	382.0	125.9	780.2	58.3	838.5
Bulgaria	7	4.0	9.4	168.3	181.7	-	111.0	70.7	181.7	5.9	187.6
Burma	9	162.1	94.1	64.0	320.2	229.1	43.8	47.3	320.2	18.9	339.1
Cambodia	5	35.3	12.3	3.0	50.6	-	47.6	3.0	50.6	2.1	52.7
Ceylon	8	154.2	55.3	23.0	232.5	88.8	121.7	22.0	232.5	19.4	251.9
Chile	7	95.6	74.6	106.2	276.4	95.9	92.4	88.1	276.4	22.7	299.1
China	9	121.9	64.9	328.6	515.4	136.4	119.5	259.5	515.4	26.3	541.7
Colombia	6	87.8	34.5	92.2	214.5	66.7	72.5	75.3	214.5	8.2	222.7
Congo, D.R.	4	19.2	28.4	7.2	54.8	4.3	38.2	12.3	54.8	7.7	62.5
Cuba	3	12.3	0.1	7.2	19.6	-	17.0	2.6	19.6	3.5	23.1
CSSR	9	-	-	195.4	195.4	-	123.7	71.7	195.4	15.5	210.9
Denmark	3	12.9	-	29.6	42.5	-	31.2	11.3	42.5	-	42.5
Ecuador	8	9.7	25.8	72.4	107.9	16.8	29.8	61.3	107.9	7.0	114.9
El Salvador	4	17.9	8.0	17.6	43.5	14.1	10.9	18.5	43.5	5.7	49.2
Ethiopia	2	-	8.6	18.0	26.6	-	8.6	18.0	26.6	5.2	31.8
Finland	4	0.3	-	30.9	31.2	1.3	7.2	22.7	31.2	-	31.2
France	2	-	-	12.4	12.4	-	2.4	10.0	12.4	-	12.4
Germany, F.R.	2	-	1.6	1.4	3.0	-	3.0	-	3.0	-	3.0
Ghana	5	139.5	37.9	70.7	248.1	53.4	152.8	41.9	248.1	6.7	254.8
Greece	8	315.8	56.4	194.4	566.6	192.0	224.1	150.5	566.6	58.8	625.4
Guatemala	4	9.8	27.5	20.0	57.3	29.1	17.5	10.7	57.3	0.8	58.1
Haiti	1	-	-	18.1	18.1	-	-	18.1	18.1	-	18.1
Hong Kong	1	5.3	7.2	-	12.5	-	12.5	-	12.5	-	12.5
Hungary	9	-	12.7	221.3	234.0	-	170.5	63.5	234.0	21.6	255.6
Iceland	6	19.7	55.4	12.0	87.1	-	43.1	44.0	87.1	-	87.1
India	8	2.8	30.7	419.9	453.4	99.7	95.5	258.2	453.4	24.1	477.5
Indonesia	9	161.3	35.7	686.7	883.7	134.9	174.6	574.2	883.7	11.3	895.0
Iran	8	223.9	5.6	274.8	504.3	167.9	174.8	161.6	504.3	72.9	577.2
Iraq	7	105.9	20.8	269.9	396.6	52.1	137.6	206.9	396.6	7.8	404.4
Israel	8	131.9	112.9	90.5	335.3	96.2	135.2	103.9	335.3	14.4	349.7
Italy	8	9.0	-	161.9	170.9	-	94.6	76.3	170.9	0.7	171.6
Ivory Coast	4	6.0	4.3	2.9	13.2	10.3	2.9	-	13.2	-	13.2
Japan	9	49.4	-	314.3	363.7	45.3	124.6	193.8	363.7	7.7	371.4
Jordan	2	21.5	-	-	21.5	21.5	-	-	21.5	15.7	37.2
Kenya	3	11.6	32.7	-	44.3	2.2	42.1	-	44.3	0.9	45.2
Korea, R.	9	160.2	53.6	462.9	676.7	111.3	269.8	295.6	676.7	13.4	690.1
Lebanon	3	29.5	9.5	13.0	52.0	-	45.0	7.0	52.0	-	52.0
Madagascar	1	-	-	1.9	1.9	-	1.9	-	1.9	-	1.9
Malaysia	1	3.2	4.8	-	8.0	-	4.8	3.2	8.0	-	8.0
Mali	1	2.1	-	-	2.1	2.1	-	-	2.1	-	2.1
Mexico	8	195.4	97.5	144.6	437.5	150.8	179.8	106.9	437.5	19.9	457.4
Monaco	3	-	-	4.2	4.2	-	4.2	-	4.2	-	4.2
Morocco	7	42.6	38.6	72.4	153.6	24.3	71.0	58.3	153.6	17.7	171.3
Netherlands	4	-	-	16.8	16.8	-	10.8	6.0	16.8	-	16.8
New Zealand	5	-	-	36.4	36.4	-	26.2	10.2	36.4	-	36.4
Nicaragua	3	-	-	16.2	16.2	-	16.2	-	16.2	1.0	17.2
Nigeria	3	8.2	21.1	49.8	79.1	3.8	10.5	64.8	79.1	6.9	86.0
Norway	3	-	-	9.5	9.5	-	5.3	4.2	9.5	-	9.5
Pakistan	9	252.3	160.4	267.0	679.7	185.9	292.1	201.7	679.7	48.6	728.3

RECIPIENT	Number of years in programme	Expenditures								Unliquidated obligations at 31 December 1966	TOTAL[a] expenditures and unliquidated obligations
		On				By					
		Experts[a]	Equipment[a]	Fellowships[a]	TOTAL[a]	UNDP/TA	Agency		TOTAL[a]		
							Monetary	In kind[a]			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Paraguay	6	10.3	4.6	31.0	45.9	-	31.3	14.6	45.9	0.9	46.8
Panama	1	4.1	-	-	4.1	4.1	-	-	4.1	-	4.1
Peru	8	44.7	24.7	39.0	108.4	44.6	42.4	21.4	108.4	23.8	132.2
Philippines	8	178.4	183.6	374.0	736.0	278.8	207.4	249.8	736.0	49.9	785.9
Poland	9	0.7	54.6	401.7	457.0	70.1	246.5	140.4	457.0	67.2	524.2
Portugal	6	41.9	46.0	36.8	124.7	-	67.4	57.3	124.7	20.0	144.7
Rhodesia	3	2.2	25.0	7.6	34.8	25.4	2.2	7.2	34.8	-	34.8
Romania	7	1.5	8.8	114.4	124.7	0.9	56.5	67.3	124.7	30.2	154.9
Saudi Arabia	2	-	-	25.0	25.0	-	3.5	21.5	25.0	24.5	49.5
Senegal	6	36.1	44.6	8.9	89.6	53.2	36.4	-	89.6	12.8	102.4
South Africa	6	-	-	102.2	102.2	-	42.1	60.1	102.2	-	102.2
Spain	8	-	-	53.1	53.1	-	29.3	23.8	53.1	1.7	54.8
Sudan	7	32.7	27.2	17.4	77.3	15.2	57.4	4.7	77.3	17.2	94.5
Sweden	1	-	-	8.8	8.8	-	8.8	-	8.8	-	8.8
Switzerland	4	-	-	12.1	12.1	-	5.6	6.5	12.1	-	12.1
Thailand	9	391.3	94.5	399.8	885.6	301.3	366.7	217.6	885.6	24.2	909.8
Tunisia	8	99.9	57.0	118.1	275.0	84.3	131.4	59.3	275.0	20.1	295.1
Turkey	9	284.1	132.6	318.5	735.2	139.0	362.9	233.3	735.2	7.6	742.8
Uganda	5	16.7	18.2	5.3	40.2	40.2	-	-	40.2	0.2	40.4
UAR	9	156.9	183.9	405.5	746.3	151.1	284.1	311.1	746.3	15.6	761.9
USA	1	-	-	2.6	2.6	-	2.6	-	2.6	-	2.6
Uruguay	5	26.5	7.0	13.6	47.1	13.3	28.7	5.1	47.1	-	47.1
Venezuela	8	21.7	30.7	131.4	183.8	14.0	66.4	103.4	183.8	3.0	186.8
Viet-Nam	7	20.0	42.5	66.8	129.3	18.2	44.2	66.9	129.3	11.4	140.7
Yugoslavia	9	66.9	70.3	491.9	629.1	231.2	247.6	150.3	629.1	51.3	680.4
Sub-total		4969.4	2835.3	8951.1	16755.8	4158.6	6804.0	5793.2	16755.8	1006.6	17762.4
International projects											
Africa		18.0	20.5	6.2	44.7	44.7	-	-	44.7	3.7	48.4
Americas		49.3	40.0	35.5	124.8	124.2	-	0.6	124.8	19.6	144.4
Asia and the Far East		113.2	36.9	18.0	168.1	166.6	-	1.5	168.1	23.1	191.2
Europe		21.0	18.6	17.3	56.9	56.9	-	-	56.9	-	56.9
Middle East		5.8	1.2	5.3	12.3	12.3	-	-	12.3	-	12.3
Inter-regional projects		211.8	112.6	510.6	835.0	448.0	378.1	8.9	835.0	53.9	888.9
Theoretical Physics Centre		-	-	105.0	105.0	-	105.0	-	105.0	-	105.0
Sub-total		419.1	229.8	697.9	1346.8	852.7	483.1	11.0	1346.8	100.3	1447.1
Miscellaneous											
Bank charges		33.6	-	-	33.6	12.2	21.4	-	33.6	-	33.6
Mobile laboratories storage		-	6.5	-	6.5	-	6.5	-	6.5	-	6.5
GRAND TOTAL		5422.1	3071.6	9649.0	18142.7	5023.5	7315.0	5804.2	18142.7	1106.9	19249.6

a/ Assistance "in kind" can only be estimated; see Introductory Notes, para. 2, to this Annex.

ANNEX II

REGIONAL AND INTER-REGIONAL PROJECTS: 1966

A. UNDP/TA

1. Inter-regional training course on the application of isotopes and radiation in medicine;
   Bangkok, Thailand, 17 January-11 February.

2. Training course on the application of isotopes and radiation in medicine;
   Cairo, UAR, 16 April-23 June.

3. Study tour on the application of radioisotopes in industry;
   CSSR, United Kingdom and USSR, 28 August-3 November.

4. Training course on radiation protection and nuclear instrumentation;
   Cairo, UAR, 10 September-3 November.

5. FAO/IAEA inter-regional training course on the application of radioisotopes in soil and plant investigations;
   Manila, Philippines, 3 October-25 November.

6. Training course on the maintenance and repair of nucleonics equipment;
   Rio de Janeiro, Brazil, 3 October-23 December.

7. Training course on the application of radioisotopes in industry;
   Mexico City, Mexico, 7 November-3 December.

8. Training course on general radioisotope techniques;
   Kinshasa, Congo, D.R., 21 November-16 December.

9. Fifth meeting of contractors in the co-ordinated rice fertilization programme;
   Hong Kong, 12-16 December.

10. Regional adviser on the application of radioisotopes in maize cultivation for Latin America;
    Lima, Peru.

11. Regional adviser on rice cultivation for Asia and the Far East:
    Bangkok, Thailand.

12. Regional adviser on radiotherapy physics for Asia and the Far East;
    Bangkok, Thailand.

13. Demonstration project in the application of neutron diffraction (IPA project);
    Manila, Philippines.

B. REGULAR PROGRAMME

1. Advanced international training course on radiotherapy physics;
   London, UK, 4 October 1965-4 March 1966.

2. International advanced summer school in reactor physics;
   Sandefjord, Norway, 22 August-2 September.

3. International survey course on economic and technical aspects of nuclear power;
   Vienna, Austria, 5-17 September.

4. International training course on radiobiology;
   Vinca, Yugoslavia, 12 September-4 November.