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## THE PROVISION OF TECHNICAL ASSISTANCE BY THE AGENCY WITH SPECIAL REFERENCE TO 1967

Report by the Director General

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## List of abbreviations

| | |
|---|---|
| Agency | International Atomic Energy Agency |
| ECLA | United Nations Economic Commission for Latin America |
| 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 |
| IANEC | Inter-American Nuclear Energy Commission (of the Organization of American States) |
| 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 |

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|---|---|
| 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 |

## 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 in reviewing the provision of technical assistance by the Agency, with special reference to 1967; 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 and 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 Special Fund projects for which the Agency served either as executing agency or as sub-contractor in 1967 (see also Annex III).

3. The three major elements of technical assistance are expert services, equipment and fellowships. Their main purpose is to promote the transfer of skills and knowledge relating to the peaceful uses of atomic energy and, indirectly, to help recipient countries to become aware of the need to make provision for facilities and staff so that the knowledge acquired can continue to be applied after projects have been completed. When this purpose is achieved, technical assistance effectively contributes to technological advancement and economic and social development.

4. In 1967, 61 countries received technical assistance in one form or another from the Agency. All recipient countries are shown in Table 7 [ 2 ]. Approximately 64% of all assistance provided related to nuclear engineering and technology, the application of isotopes and radiation in agriculture and medicine, and nuclear physics.

5. The assistance, including grants of equipment and assistance "in kind", was provided through the services of 172 experts or visiting professors, the supply of equipment to a value of about $519 500, and 413 fellowship awards for individual studies, training courses, research work and scientific visits.

6. The resources allocated for carrying out the Agency's 1967 technical assistance programme amounted to $3 059 000 (Table 1), whereas the total value of the technical assistance actually provided in 1967 was about $2 350 000 (Table 7). This includes payments against 1967 and prior years' obligations and assistance "in kind" and represents a decrease of only 2½% compared with the sum of $2 407 000 provided in 1966, the second year of the 1965-66 biennial period (Table 4).

7. As in the report on the provision of technical assistance by the Agency with special reference to 1966 [ 3 ], details are given below regarding some of the technical assistance activities in which Member States have shown special interest in 1967, followed by information concerning integrated programming and the new programming procedures relating to technical assistance under UNDP, beginning with the 1969 programme.

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

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

[ 3 ] GC(XI)/INF/93.

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

8. An analysis of the technical assistance provided during 1967 indicates that nuclear engineering and technology continue to be of primary interest, followed closely by agriculture, nuclear physics and medicine.

9. Recipient countries have, however, shown particular interest in the review of the Agency's activities carried out by the Board in 1967 [4]. Governments are interested in knowing how they can profit most from the activities of international organizations and whether, through a change in the emphasis in, or intensification of, existing programmes, they can expect to receive more assistance.

10. In this connection, the Board noted during the review that the provision of technical assistance and other forms of direct aid constituted the main activity through which the Agency helps developing countries. It recommended several ways in which the resources available might be increased. Many of these recommendations have been acted upon; for example, requests which cannot be met for lack of funds have been brought to the attention of technically advanced Member States with the request that they consider the possibility of meeting them on a bilateral basis by gift, loan or otherwise. The Director General constantly urges, both in writing and on the occasion of visits to Member States, that those which do not make voluntary contributions to the General Fund should do so, and that those which do so should contribute in amounts that were at least the same percentages of the target for each year as their assessed contributions to the Regular Budget.

11. The possibility of receiving assistance from UNDP/SF has been drawn to the attention of Member States by Agency staff members, including field experts. Furthermore, the possibility of obtaining assistance from UNDP/TA has been and is being brought to the attention of the authorities by the follow-up missions which visit developing Member States approximately every two years. In addition, Agency field experts and scientific staff from Headquarters advise and assist Governments in the preparation of requests for assistance; this will undoubtedly prove increasingly beneficial under the new procedures described in section C below.

12. On all suitable occasions, such as at meetings of the United Nations regional comissions and subsidiary bodies, Agency representatives draw attention to the possible uses of atomic energy to provide economic and social development and in this way, provide a wide audience with information on the services and assistance available from and through the Agency.

13. With regard to the management and administration of technical assistance and other direct aid programmes, the General Conference, in recalling at its eleventh regular session the special character of the Agency's operations, requested that particular attention be given to requests for the supply of equipment without necessarily requiring any formal relationship between the provision of equipment and the provision of expert services. [5] The Board's Technical Assistance Committee noted that there had been occasions when the provision of equipment not in conjunction with the services of an expert had been approved and, in considering the 1968 programme at the end of 1967, it recommended the provision of equipment independently of the services of an expert in respect of several projects.

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[4] See documents GC(XI)/362 and Add. 1 and 2.

[5] GC(XI)/RES/230.

14. In connection with recommendations made during the review of the Agency's activities [ 6 ], it should be noted that technical assistance experts, including Headquarters staff, have made, and continue to make, as required, a series of relatively short visits over a period of years rather than undertaking a single, long assignment. During 1967, eight Agency scientific staff members served as experts on technical assistance assignments. Job descriptions covering vacant posts were circulated to 46 recruitment centres in both developed and developing Member States; the number of experts from developing countries is shown in Table 3 and Fig. 4. Particular care has been exercised to ensure that experts do not undertake an assignment until it is known that the associated equipment is either in the country or that its arrival is imminent and, under the system of integrated programming, care is also taken to see that counterparts and any fellows that have been trained in the subject-matter of the project are available to the expert.

15. In connection with training activities, the desirability of providing more cost-free fellowships is drawn to the attention of Member States at the same time as the request for increased voluntary contributions is made. A study has been made of the causes of delays in placing fellows in host countries, and it is now proposed to submit applications for the placement of a fellow to more than one host country when there is reason to believe that the response may be delayed. Efforts are constantly being made to streamline procedures and reduce delays to the minimum.

16. Helping to establish "sister laboratory" agreements, while not strictly speaking a technical assistance activity, is considered to be a very useful function of the Agency. In this connection the Agency has assisted in making arrangements for co-operation between laboratories in Member States which may be engaged in similar work.

17. The Board concluded that the Agency's technical assistance programme was carried out very satisfactorily and that it did not wish to propose any major changes in that connection. Since Governments, through the submission of detailed project requests, exert the main influence on the Agency's technical assistance programme and virtually predetermine its structure, they are naturally in favour of intensifying and expanding that programme.

B. Integrated programming

18. The limited resources made available for the provision of technical assistance by organizations of a multilateral character constitute a fraction of a small fraction of the resources developing countries themselves mobilize to carry out national development plans.

19. Thus, technical assistance provided by such organizations cannot serve as the main means of support for individual sectors within national development programmes, but can only help in a small way in the implementation of useful projects which will contribute to progress in such sectors.

20. This type of assistance should have a catalytic or "pump priming" effect. The periodic provision of advisory services (involving the transfer of skill and know-how), opportunities for specialized study abroad and, when appropriate, the equipment necessary for training in advanced techniques should play a vital part in bringing about the concentration of more extensive national resources for the achievement of a specific goal, or at least serve to facilitate the more effective use of such resources.

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[ 6 ] See document GC(XI)/362, paras 18-22.

21. When technical assistance of the type mentioned is used in this way, it is taken into consideration in the drawing up, revision and modification of national development plans. To be effective, this planning process - known as "integrated programming" - must also take into account the other assistance of a multilateral (international and regional) and bilateral character which is available and ensure that all the parties concerned are provided with up-to-date information on the progress made.

22. Usually, it is the responsibility of the national planning authority to ensure that the best use is made of the technical assistance available to the country, that is, that the assistance is integrated into development plans. In the case of relatively new technological applications, for example the peaceful uses of atomic energy, national planners often rely on the advice and judgement of experts (usually the staff of the national atomic energy commission) in compiling data in respect of short- and long-term budgetary requirements and in forecasting the impact which progress will have on the economy, existing training programmes and other activities.

23. Thus in the case of nuclear energy, it is the planning of national atomic energy commissions that will determine to a large extent the ultimate success of technical assistance obtained from international organizations. Although the Agency is willing to help Member States, through its advisory services, in formulating, reviewing or revising those parts of national development plans dealing with the peaceful uses of atomic energy, it is at the national level that advance planning of fellowships, followed up by visits of experts and visiting professors (once trained counterparts are available), is done. On the other hand, close co-operation between the requesting authorities and the Agency is necessary to ensure that the elements of technically sound projects are properly co-ordinated with regard to subject and scheduling.

24. Integrated programming does not end with the approval of projects by the Agency's Board of Governors and UNDP's Governing Council. Extensive planning by the requesting country is also necessary at an early stage in the programming cycle and, once a project is approved and in the process of being implemented, a considerable amount of follow-up action must be taken by the recipient country if the assistance is to have a lasting effect. For example, provision should be made for at least one counterpart to work with the expert and to continue the project after his departure.

25. Requests in respect of projects which are not adequately planned give rise to difficulties. Experience has shown, however, that if a request is well prepared and substantiated, it will have the approval of the national planning authority and warrant that body's support in securing the required counterpart staff and facilities. Such requests are given high priority by Governments and, accordingly, by the Agency and UNDP.

26. Member States long ago became aware of the importance of a national programme to exploit the benefits derivable from atomic energy in support of economic and social development. Interesting changes in the programming procedures under UNDP/TA relating to the provision of assistance in 1969 and later years open up new avenues for the even more effective use of integrated programming and, thus, for accelerated progress in the applications of nuclear energy. It would perhaps seem desirable, in future, to initiate projects under the Agency's regular programme, and, on the basis of an assessment of such projects, identify those which would qualify for greater governmental support, complete their preparation and submit them as medium-sized projects requiring 2-4 years' assistance under UNDP/TA. Projects of this type could well warrant the provision of all three of the traditional elements of assistance: expert services, fellowships and equipment. Some projects of this kind might merit further, so-called "pre-investment" assistance under UNDP/SF. Depending on the complexity of the work involved and the resources the requesting country is able to make available, UNDP/SF assistance for a project can range in value from $100 000 to $3 500 000 over a period of 1-5 years.

27. The foregoing considerations show how the effective co-ordination of national efforts with assistance received from sources of a bilateral and multilateral character can make a major contribution to economic and social development, while equipping the national atomic energy establishment to fulfil its growing role in the scientific community.

C. New programming procedures under the Technical Assistance Component of the United Nations Development Programme

28. The formal inception of the technical assistance programme common to all organizations in the United Nations family took place in 1949, but did not become operational until 1950. It was partly based on earlier and much more modest programmes of technical assistance - mainly consisting of the provision of advisory services in certain limited fields - within the United Nations itself.

29. The legislative basis of this programme was the well-known Resolution 222 (IX) adopted by ECOSOC in 1949 and the corresponding Resolution 304 (IV) of the General Assembly, resulting in the establishment of EPTA which served as the major source of technical assistance until the establishment of the United Nations Special Fund in 1958 by General Assembly Resolution 1240 (XIII).

30. EPTA continued for fifteen years. In January 1966, however, the provision of technical assistance underwent a major change, when UNDP came into being following the adoption of General Assembly Resolution 2029 (XX) in November 1965. Pursuant to this resolution, EPTA was merged with the United Nations Special Fund, which was concerned only with the provision of pre-investment assistance, and up to that time, had been an independent body with its own inter-governmental Governing Council, corresponding to the Technical Assistance Committee of ECOSOC which performed comparable functions in respect of EPTA.

31. This change some fifteen years after the inception of EPTA was probably the most significant development in the provision of assistance by United Nations organizations. It was now possible to co-ordinate the technical assistance formerly provided under EPTA more closely with the pre-investment assistance provided under the Special Fund. This was particularly desirable since technical assistance is sometimes provided in advance of a Special Fund project and sometimes consists of follow-up assistance for such a project. The merging of the two programmes had also, of course, other consequential advantages in the form of administrative and financial economies.

32. As the technical assistance programme of the United Nations developed from its small beginnings in 1950, much thought had been given to making it as flexible as possible. Until 1954, however, this flexibility was to some extent limited by the practice whereby financial resources for field programmes were divided among the organizations concerned on the basis of fixed percentages. While this had the advantage of permitting some degree of stability in the administrative mechanisms of the participating organizations, it was of course somewhat unresponsive in meeting the constantly changing needs and priorities of recipient countries. It was for this reason that the concept of "country programming" was introduced in 1954, as a consequence of which Governments had much greater freedom to adjust their requests in the light of their national requirements.

33. It became increasingly evident that annual programming itself had some disadvantages, since there was inevitably some delay in implementing projects approved in a given year and those concerned with programming were already devoting their attention to requests in respect of the following year's programme. As a consequence, two-year programming was introduced for the biennial period 1961/62. Under this system Governments made their requests for assistance over a two-year period, with the necessary statutory provision for

them to make changes in the light of the current needs of their economic and social development plans, and although financing was - and for that matter, still is - on an annual basis, it proved to be easier for participating organizations to provide the assistance requested.

34. A further development took place in 1963 when project programming was introduced. This arrangement permitted assistance for "long-term" projects to be approved for a maximum duration of four years, although the actual financial resources were still only made available on an annual basis.

35. While all these measures had enabled the United Nations organizations to meet Governments' requirements for technical assistance to a progressively increasing extent, a number of Governments still thought that a way must be found to permit resources earmarked for approved projects whose implementation was delayed for some reason to be used to meet other pressing needs. This wish led to the most recent procedural innovations in UNDP, known as "continuous programming".

36. The new procedures, which were approved by the Governing Council of UNDP at its fourth session in June 1967, were endorsed by ECOSOC by Resolution 1250 (XLIII) and adopted by the General Assembly by Resolution 2279 (XXII).

37. As in all previous years, the programming procedure is still based on a "country target" recommended by the Administrator of UNDP, and approved by its Governing Council in the preceding year. The target for 1969 will also be the provisional target for 1970, 1971, and 1972, and this target will be revised each year for the following three-year period.

38. Instead of having to programme the entire target [ 7 ] in advance for the programme year concerned, Governments will now be able to submit requests through the UNDP Resident Representatives, as and when the need occurs, to cover the proposed project for its planned duration, up to a maximum of four years. It will not be necessary for Governments to have requests approved up to the full level of the target by the end of the programme year. The portion of the target remaining unprogrammed at the end of the year may be added to the target figure for the following year, subject to a maximum carry-over of 50% of the original target. In addition, to the extent that assistance is approved but not delivered during the operational year, the Government may request that the resultant "savings" revert to the unprogrammed part of the target figure available for use in meeting new requests. The long-standing right of Governments to modify or cancel a project already approved by the Administrator is maintained under the new procedure; the UNDP Secretariat has taken steps to reduce the administrative work involved in making such changes, and the special arrangements for "contingency" allocations by the Administrator, outside the normal planning procedures, for projects necessitated by unforeseeable emergency situations continue.

39. These new procedures do not come into force fully until 1969; 1968 is a transitional year which, being the final year of the last biennial period under the old two-year programming procedure, is also the year in which initial steps will be taken to prepare the 1969 programme, which will largely consist of current operational projects expected to continue into 1969.

40. Under these procedures considerable responsibility is placed on UNDP Resident Representatives to advise Governments on how country targets can be used most effectively in carrying out national plans for economic and social development. The extent to which Governments will request assistance in respect of the activities with which the Agency is

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[ 7 ] The process of programming the target involves the submission by the Government of requests for technical assistance in the form of experts, equipment and fellowships up to the maximum target figure fixed by the UNDP Governing Council for the year in question. Experts and fellowships are costed at a notional figure agreed upon in advance for each year.

concerned will, in future, depend not only on the existence of a well formulated long-term programme for atomic energy development, but also on the extent to which this programme forms an integral and accepted part of the national plan for economic and social development of the country concerned.

41. When approving these new procedures, ECOSOC expressed the belief that "project budgeting with continuous programming should facilitate effective planning and implementation of technical assistance projects, while providing added flexibility in operations". It may also be hoped that requesting countries will avail themselves of these procedures to ensure closer co-ordination between their requests for technical assistance and pre-investment assistance, particularly in preparing the ground for new Special Fund projects and in providing certain specialized post-project support for completed Special Fund projects.

D. Other developments

42. As far as the implementation of current technical assistance projects was concerned, no new difficulties were encountered. With regard to a new procedure introduced last year whereby the assignment of an expert was to be considered as acceptable if no reply had been received from the recipient country within three weeks of the submission of the expert's candidature [ 8 ], the period was subsequently revised to six weeks.

43. Discussions were conducted with Government officials in Moscow on the use of the Soviet Union's voluntary contribution to the General Fund and its offer of Type II fellowships in support of the 1967 regular programme. Purchase orders for equipment and materials to the value of almost the entire sum in question were placed and information to facilitate future purchases was obtained. Other items discussed were a study tour on radiation protection and a training course on nuclear medicine planned for 1968, the organization of other training courses under the UNDP/TA and the availability of scientists from the Soviet Union to serve as experts. Soviet officials felt that co-operation in all of these matters was possible.

44. To enable more accurate reporting on the Agency's technical assistance, the processing of data is being mechanized, and records relating to the provision of experts and equipment in the past have already been processed. On the other hand, much remains to be done in order to permit a more extensive analysis and evaluation of the fellowship programme. A system has been formulated for computer processing of the large volume of significant information being accumulated, and during 1967 the preparation of the required input data was completed for the years 1964-1967, so that selected data for that period can be extracted. Input data for the preceding years, 1958-1963, will be prepared during 1968. It will then be possible to obtain compilations of fellowship awards classified according to such factors as field of training, prior experience, degree or certificate obtained, duration of award, host country, nominating country, etc.

45. Pursuant to the General Conference's Resolution on education and training (GC(X)/RES/215) close ties have been established with UNESCO, ILO, United Nations regional commissions and WHO, in addition to the maintenance of continuous co-operation with FAO through the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture. The most important examples of co-operation in respect of training and education in 1967 are set out below:

(a) A co-director was provided by the Agency for the UNESCO-sponsored Regional Training Course on Modern Methods of Geological Prospection, in Kabul, and arrangements were completed for the organization of a joint IAEA/UNESCO panel on nuclear science teaching, to be held in 1968 in connection with the UNESCO pilot project for chemistry teaching in Asia, in Bangkok;

[ 8 ] GC(XI)/INF/93, para. 25.

(b) Four WHO fellows from Asia and the Far East and a WHO lecturer participated in the Agency's Regional Training Course on Planning for the Handling of Radiation Accidents, in Manila;

(c) Three ECLA economists and a staff member from IANEC attended and presented papers at the Agency's Regional Survey Course on Prospects and Problems of Nuclear Power Applications in Developing Countries, in Santiago;

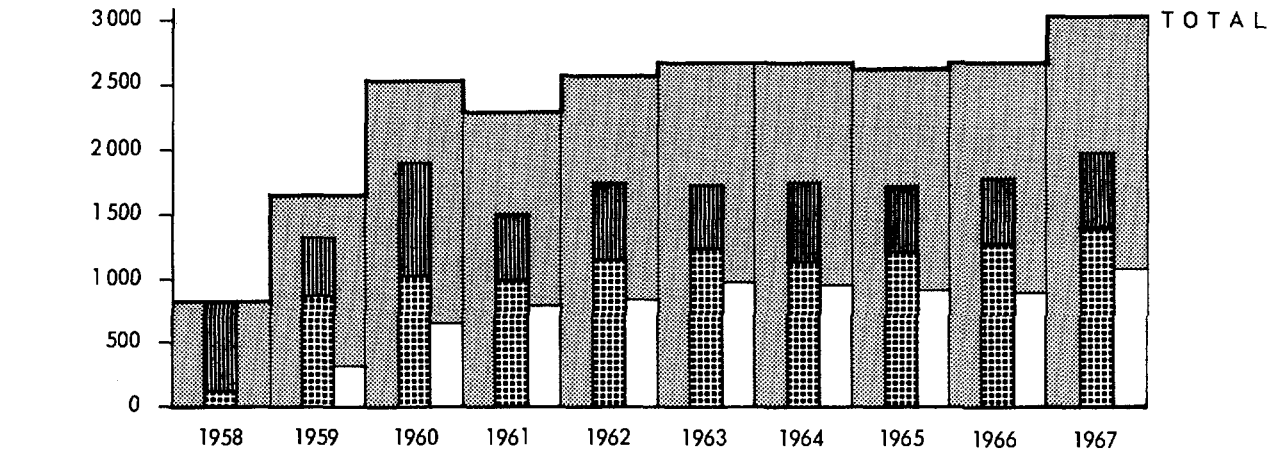
(d) An agreement was concluded to use the ILO Centre for Advanced Technical and Vocational Training in Turin, Italy, for an inter-regional training course on the maintenance of nucleonic equipment in 1968; and

(e) Two training courses were organized at the request of the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture; however, as the cost of attendance of the 26 non-local participants, as well as that of the demonstration equipment and the expenditures in respect of the eight lecturers were financed out of FAO funds, these data are not included in the financial and other statistics on technical assistance provided by the Agency in 1967.

**FIGURE 1**

RESOURCES AVAILABLE FOR THE AGENCY'S TECHNICAL ASSISTANCE PROGRAMME (1958 - 1967)

(in thousands of dollars)




| | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 |
|---|---|---|---|---|---|---|---|---|---|---|
| Agency monetary | 125 | 875 | 1 008 | 981 | 1 146 | 1 230 | 1 115 | 1 200 | 1 263 | 1 380 |
| Agency in kind | 689 | 449 | 885 | 519 | 588 | 484 | 617 | 509 | 516 | 603 |
| EPTA and UNDP/TA | – | 304 | 639 | 786 | 828 | 954 | 946 | 901 | 893 | 1 076 |
| TOTAL | 814 | 1628 | 2532 | 2286 | 2562 | 2668 | 2678 | 2610 | 2672 | 3059 |

Agency monetary

Agency in kind

EPTA and UNDP/TA

## Part II. ANALYSIS OF THE ASSISTANCE PROVIDED

### A. Resources available

#### 1. General

46. In 1967 the resources available to the Agency for the provision of technical assistance exceeded $3 000 000 for the first time (see Fig. 1 and Table 1). The sum available ($3 059 000) represents an increase of about 14% over the figure for 1966 ($2 672 000) and is made up as follows:

(a) UNDP/TA, $1 076 000 in cash;

(b) Income to Operating Fund II, including voluntary contributions of Member States transferred from the General Fund, $1 380 000 in cash; and

(c) Gifts in kind (services of cost-free and partly cost-free experts, Type II fellowships and offers and donations of equipment in support of approved technical assistance projects) valued at $603 000.

The funds shown in (a) and (b) above are the largest on record for a single year, which is an encouraging development having regard to the decline in monetary resources since 1963.

#### 2. UNDP/TA

47. The funds available for the implementation of the UNDP/TA 1967 field programme, the first year in the biennial period 1967-68, included $205 000 for regional and interregional projects; the balance was allocated for country programme projects.

#### 3. Agency's regular programme

48. As at 31 December 1967, the pledges of voluntary contributions to the General Fund for 1967 had reached 72% of the target figure, the highest since 1959, when pledges equivalent to 79% of the target were made. Thus, although the admittedly low target was not reached, the funds available for technical assistance in 1967 from this source ($1 380 000) was the highest amount available so far for the implementation of a given year's programme, representing a 9% increase over the sum for 1966 ($1 263 000). It will be seen from Table 2, last line, that $5 365 000 in cash was available over the programme's first six years, 1958-1963; for 1963 the amount was $1 230 000, which means that the sum available for each of the preceding five years averaged only $827 000. The reduction in the monetary resources placed at the Agency's disposal in 1964 was followed by gradual increases in such resources during the period 1965-67. It is hoped that this upward trend will be maintained in 1968 and subsequent years.

#### 4. Gifts in kind

49. As mentioned in paragraphs 3 and 4 in the introductory notes to Annex I, a change has been made in the presentation of the financial statistics relating to assistance in kind. The estimated value of this assistance in 1967 was $603 000, which is about 17% higher than the figure for 1966 ($516 000). This rise is due solely to the significant increase in the value of Type II fellowship offers in respect of the 1967 programme ($538 500, as compared with $418 800 in 1966); the estimated value of experts' services provided cost-free in 1967 was only $4900, as compared with $19 400 in 1966, and the value of the offers of equipment fell from $77 500 in 1966 to $60 000 in 1967.

#### 5. Other resources available

50. In 1967 the Agency received allocations of $580 300 for projects financed by UNDP/SF.

51. Under funds-in-trust arrangements the Agency carried out two projects in 1967, which involved cash disbursements of $20 800 and $800 respectively.

6. Use of resources

52. As mentioned above, 1967 was the first year in the current UNDP/TA biennial period. Although the programme is scheduled to begin on 1 January, it is often impossible to start work on projects until six to nine months later, since personnel with the necessary academic qualifications may not be available before the start of the university recess in June or July or a number of fellowship candidates cannot be placed in time to allow their studies to commence before September or October. This is clearly reflected in the UNDP/TA country programme expenditure, which amounted to $629 500 (of which only $318 200 was in respect of 1967 projects, the balance being for the liquidation of prior commitments) as compared with the $1 354 600 available for this purpose in 1967. The level of implementation of the programme attained half way through the first year of the biennial period is usually maintained throughout the second year, so that a high level is achieved in respect of the entire period.

B. Distribution of assistance

1. Fields of assistance

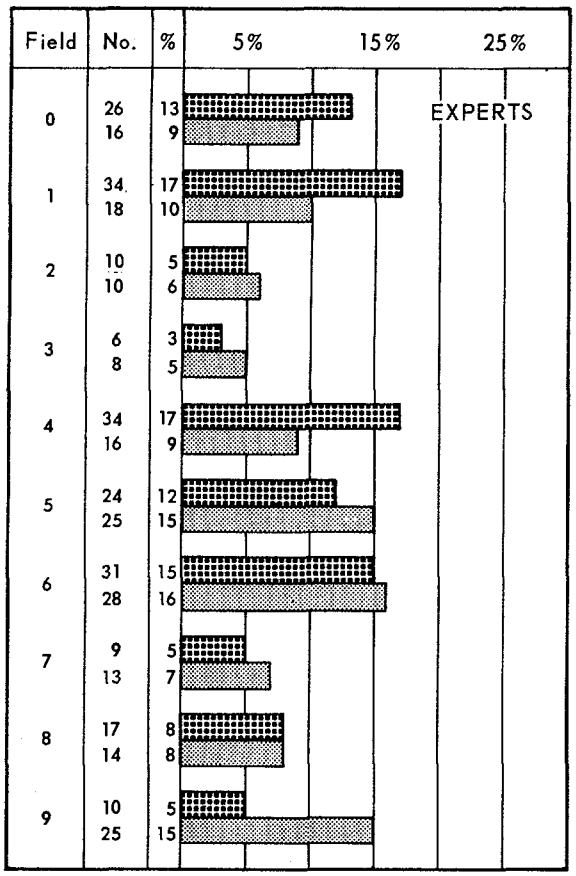
53. To permit a comparison in monetary terms of the technical assistance relating to the four main fields of activity which was provided by the Agency in 1966 and 1967, it was necessary to adjust the data given for 1966 in last year's report to reflect the assistance "in kind" actually provided in that year. This comparison is given below, the fields of activity being listed in descending order. The distribution of assistance by field of activity given in Table 5 is also shown in Fig. 2, where a comparison between 1966 and 1967 can be made.

Assistance by field of activity and element: 1966 and 1967
(in thousands of dollars)

| Field | Year | Experts | Equipment | Fellowships | Share of total programme | |
|---|---|---|---|---|---|---|
| | | $ | $ | $ | $ | % |
| Nuclear engineering and technology | 1966 | 168.4 | 86.2 | 236.7 | 491.3 | 20.4 |
| | 1967 | 163.8 | 57.3 | 242.7 | 463.8 | 19.7 |
| Nuclear physics | 1966 | 161.1 | 30.3 | 248.4 | 439.8 | 18.3 |
| | 1967 | 92.5 | 47.6 | 207.3 | 347.4 | 14.8 |
| Application of isotopes and radiation in medicine | 1966 | 158.3 | 73.5 | 141.5 | 373.3 | 15.5 |
| | 1967 | 149.7 | 72.4 | 84.1 | 306.2 | 13.0 |
| Application of isotopes and radiation in agriculture | 1966 | 191.1 | 52.7 | 114.9 | 358.7 | 14.9 |
| | 1967 | 170.3 | 68.4 | 140.7 | 379.4 | 16.1 |
| Total | 1966 | 678.9 | 242.7 | 741.5 | 1663.1 | 69.1 |
| | 1967 | 576.3 | 245.7 | 674.8 | 1496.8 | 63.6 |
| Total assistance | 1966 | 939.3 | 380.8 | 1086.8 | 2407.1 | |
| | 1967 | 870.8 | 519.5 | 959.5 | 2349.8 | |

## FIGURE 2

DISTRIBUTION OF TECHNICAL ASSISTANCE BY FIELD OF ACTIVITY (1966 AND 1967)

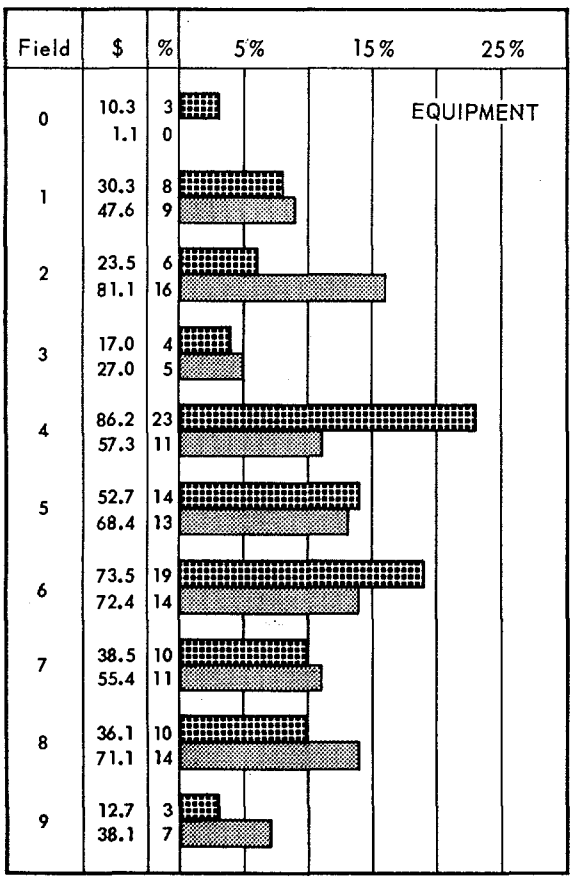


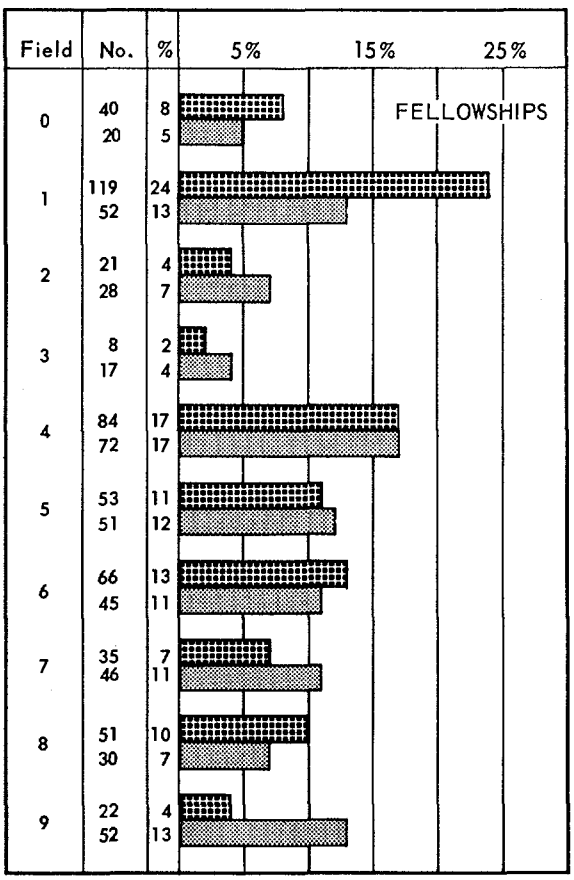

1966

1967

| 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.



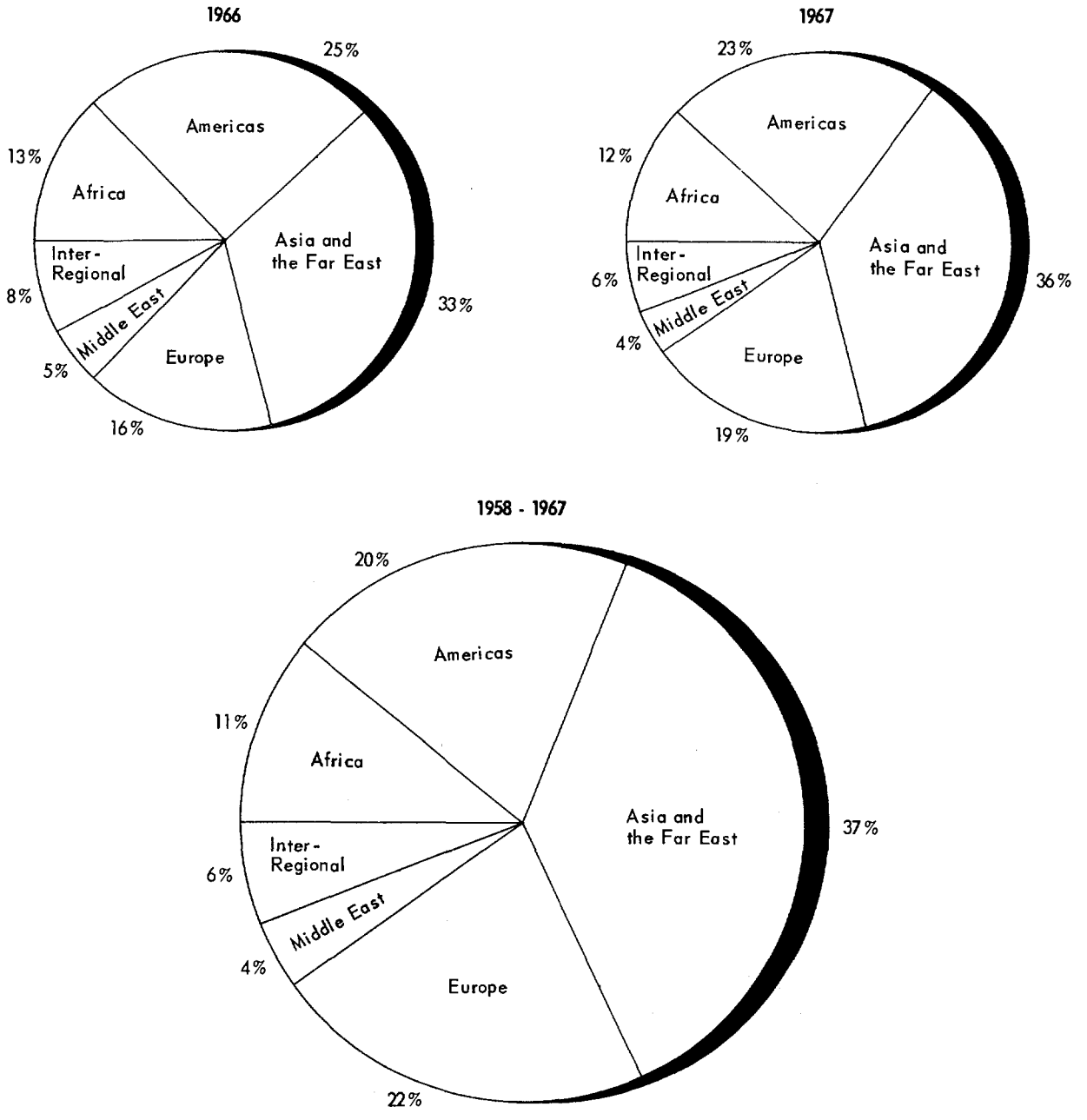
2. Geographical distribution of assistance

(a) Distribution by region

54. Fig. 3 shows that the distribution of technical assistance by region did not vary by more than 3% as between 1966 and 1967. Accordingly, in order to facilitate a comparison, more detailed data are given, by region and field of activity, for the three main elements of assistance: experts, equipment and fellowships, in the tables following Fig. 3.

**FIGURE 3**

**DISTRIBUTION OF TECHNICAL ASSISTANCE BY REGION**
**(1966, 1967 and 1958 - 1967)**



## 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 | 1966 | - | - | 1 | 2 | 1 | 2 | 1 | 9 | - | - | 23 | 3 | 26 | 16 | 12.3 | 2.7 |
| | 1967 | - | - | 15 | 10 | - | - | - | - | 1 | 2 | - | - | 16 | 12 | 9.1 | 2.4 |
| Nuclear physics | 1966 | 5 | 17 | 5 | 19 | 9 | 37 | 6 | 22 | 1 | 6 | 8 | 2 | 34 | 103 | 16.1 | 17.8 |
| | 1967 | - | - | 5 | 18 | 9 | 27 | 4 | 10 | - | - | - | - | 18 | 55 | 10.2 | 11.0 |
| Nuclear chemistry | 1966 | - | - | 2 | 17 | 3 | 7 | 4 | 10 | 1 | 6 | - | - | 10 | 40 | 4.7 | 6.9 |
| | 1967 | 2 | 12 | 2 | 16 | 4 | 17 | 3 | 6 | - | - | - | - | 11 | 51 | 6.3 | 10.2 |
| Prospecting, mining and processing of nuclear materials | 1966 | 3 | 13 | 4 | 8 | - | - | - | - | - | - | - | - | 7 | 21 | 3.3 | 3.6 |
| | 1967 | 2 | 15 | 5 | 18 | 1 | 1 | - | - | - | - | - | - | 8 | 34 | 4.5 | 6.8 |
| Nuclear engineering and technology | 1966 | 1 | 2 | 13 | 57 | 9 | 19 | 12 | 30 | 1 | 8 | - | - | 36 | 116 | 17.1 | 20.0 |
| | 1967 | 1 | 4 | 4 | 15 | 8 | 42 | 4 | 30 | - | - | - | - | 17 | 91 | 9.7 | 18.2 |
| Application of isotopes and radiation in agriculture | 1966 | 8 | 34 | 3 | 23 | 8 | 49 | 1 | 8 | - | - | 4 | 3 | 24 | 117 | 11.4 | 20.2 |
| | 1967 | 2 | 18 | 4 | 18 | 9 | 39 | 9 | 19 | - | - | 1 | 1 | 25 | 95 | 14.2 | 19.0 |
| Application of isotopes and radiation in medicine | 1966 | 4 | 18 | 4 | 9 | 12 | 47 | 1 | 3 | 1 | 12 | 11 | 3 | 35 | 92 | 16.6 | 15.9 |
| | 1967 | 3 | 23 | 13 | 8 | 9 | 54 | 1 | 3 | 1 | 2 | 1 | 1 | 28 | 91 | 15.9 | 18.2 |
| Application of isotopes and radiation in biology | 1966 | - | - | 4 | 8 | - | - | 1 | 1 | 1 | 1 | 4 | 1 | 10 | 11 | 4.7 | 1.9 |
| | 1967 | - | - | 8 | 9 | - | - | 1 | 1 | - | - | 4 | 1 | 13 | 11 | 7.4 | 2.2 |
| Other fields of application of isotopes and radiation | 1966 | 2 | 4 | 8 | 10 | 1 | 5 | - | - | - | - | 10 | 7 | 17 | 25 | 8.1 | 4.3 |
| | 1967 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | - | - | 11 | 3 | 15 | 8 | 8.5 | 1.6 |
| Safety in nuclear energy | 1966 | 2 | 10 | 6 | 26 | 2 | 2 | - | - | - | - | - | - | 12 | 39 | 5.7 | 6.7 |
| | 1967 | 3 | 7 | 6 | 25 | 6 | 2 | 1 | 3 | 1 | 12 | 8 | 3 | 25 | 52 | 14.2 | 10.4 |
| TOTAL | 1966 | 25 | 98 | 50 | 179 | 45 | 168 | 26 | 83 | 5 | 33 | 60 | 19 | 211 | 580 | 100.0 | 100.0 |
| | 1967 | 14 | 80 | 63 | 139 | 47 | 183 | 24 | 73 | 3 | 16 | 25 | 9 | 176 | 500 | 100.0 | 100.0 |

(1) Number of experts and visiting professors.

(2) Number of man-months served.

## 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 | 1966 | - | - | 8.2 | 2.0 | - | 0.1 | 10.3 | 2.7 |
| | 1967 | - | - | 1.1 | - | - | - | 1.1 | 0.2 |
| Nuclear physics | 1966 | 2.7 | 4.8 | 21.9 | - | - | 0.9 | 30.3 | 8.0 |
| | 1967 | - | 13.8 | 14.5 | 19.3 | - | - | 47.6 | 9.2 |
| Nuclear chemistry | 1966 | - | - | 16.8 | - | 6.7 | - | 23.5 | 6.2 |
| | 1967 | 8.0 | 3.4 | 52.5 | 5.2 | 12.0 | - | 81.1 | 15.6 |
| Prospecting, mining and processing of nuclear materials | 1966 | 9.3 | 7.7 | - | - | - | - | 17.0 | 4.5 |
| | 1967 | 4.0 | 3.4 | - | 19.6 | - | - | 27.0 | 5.2 |
| Nuclear engineering and technology | 1966 | - | 62.8 | 11.1 | 12.3 | - | - | 86.2 | 22.6 |
| | 1967 | 1.6 | 21.9 | 30.4 | 3.4 | - | - | 57.3 | 11.0 |
| Application of isotopes and radiation in agriculture | 1966 | 22.2 | 1.9 | 28.0 | - | - | 0.6 | 52.7 | 13.8 |
| | 1967 | 25.4 | 7.4 | 28.6 | 0.2 | 4.3 | 2.5 | 68.4 | 13.2 |
| Application of isotopes and radiation in medicine | 1966 | 8.5 | 7.5 | 38.0 | 18.0 | - | 1.5 | 73.5 | 19.3 |
| | 1967 | 20.7 | 14.2 | 33.1 | 4.2 | - | 0.2 | 72.4 | 13.9 |
| Application of isotopes and radiation in biology | 1966 | - | 21.8 | - | 12.7 | 0.4 | 3.6 | 38.5 | 10.1 |
| | 1967 | - | 28.2 | - | 21.3 | - | 5.9 | 55.4 | 10.7 |
| Other fields of application of isotopes and radiation | 1966 | 0.8 | 26.9 | 3.3 | - | - | 5.1 | 36.1 | 9.5 |
| | 1967 | 12.1 | 20.4 | - | 8.1 | 14.9 | 15.6 | 71.1 | 13.7 |
| Safety in nuclear energy | 1966 | 8.7 | 1.9 | 1.7 | - | 0.4 | - | 12.7 | 3.3 |
| | 1967 | 9.8 | 20.8 | 1.6 | - | 2.9 | 3.0 | 38.1 | 7.3 |
| TOTAL | 1966 | 52.2 | 135.3 | 129.0 | 45.0 | 7.5 | 11.8 | 380.8 | 100.0 |
| | 1967 | 81.6 | 133.5 | 161.8 | 81.3 | 34.1 | 27.2 | 519.5 | 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 | 1966 | - | - | 1 | 6 | - | - | 1 | 2 | - | - | 38 | 19 | 40 | 27 | 8.0 | 0.9 |
| | 1967 | 3 | 18 | 14 | 2 | - | - | 3 | 19 | - | - | - | - | 20 | 39 | 4.8 | 1.4 |
| Nuclear physics | 1966 | 11 | 85 | 15 | 126 | 19 | 191 | 32 | 290 | 2 | 14 | 40 | 20 | 119 | 726 | 23.9 | 23.6 |
| | 1967 | 4 | 36 | 8 | 74 | 13 | 146 | 25 | 240 | 2 | 18 | - | - | 52 | 514 | 12.6 | 18.5 |
| Nuclear chemistry | 1966 | 3 | 25 | 3 | 34 | 5 | 39 | 10 | 77 | - | - | - | - | 21 | 175 | 4.2 | 5.7 |
| | 1967 | 2 | 23 | 4 | 48 | 9 | 95 | 12 | 120 | 1 | 10 | - | - | 28 | 296 | 6.8 | 10.7 |
| Prospecting, mining and processing of nuclear materials | 1966 | 3 | 16 | 1 | 8 | 2 | 24 | 2 | 22 | - | - | - | - | 8 | 70 | 1.6 | 2.3 |
| | 1967 | 6 | 37 | 3 | 34 | 2 | 16 | 6 | 53 | - | - | - | - | 17 | 140 | 4.1 | 5.0 |
| Nuclear engineering and technology | 1966 | 13 | 182 | 16 | 95 | 31 | 394 | 20 | 175 | 4 | 16 | - | - | 84 | 862 | 16.9 | 28.1 |
| | 1967 | 5 | 51 | 8 | 86 | 32 | 322 | 25 | 201 | 2 | 24 | - | - | 72 | 684 | 17.4 | 24.6 |
| Application of isotopes and radiation in agriculture | 1966 | 2 | 13 | 7 | 67 | 25 | 155 | 7 | 67 | 1 | 12 | 11 | 20 | 53 | 334 | 10.6 | 10.9 |
| | 1967 | 2 | 22 | 2 | 24 | 16 | 156 | 11 | 97 | 1 | 1 | 19 | 38 | 51 | 338 | 12.4 | 12.2 |
| Application of isotopes and radiation in medicine | 1966 | 3 | 21 | 8 | 80 | 8 | 88 | 6 | 51 | 3 | 30 | 38 | 67 | 66 | 337 | 13.2 | 11.0 |
| | 1967 | 2 | 24 | 17 | 57 | 17 | 153 | 8 | 64 | 1 | 1 | - | - | 45 | 299 | 10.9 | 10.8 |
| Application of isotopes and radiation in biology | 1966 | 1 | 10 | 5 | 56 | 3 | 34 | 8 | 86 | - | - | 18 | 36 | 35 | 222 | 7.0 | 7.2 |
| | 1967 | - | - | 12 | 27 | 3 | 36 | 11 | 109 | - | - | 20 | 10 | 46 | 182 | 11.1 | 6.5 |
| Other fields of application of isotopes and radiation | 1966 | 12 | 9 | 14 | 33 | 5 | 28 | 5 | 32 | - | - | 15 | 45 | 51 | 147 | 10.2 | 4.8 |
| | 1967 | - | - | 2 | 7 | 4 | 43 | 2 | 14 | - | - | 22 | 58 | 30 | 122 | 7.3 | 4.4 |
| Safety in nuclear energy | 1966 | 1 | 10 | 1 | 12 | 12 | 107 | - | - | 4 | 34 | 4 | 8 | 22 | 171 | 4.4 | 5.5 |
| | 1967 | 3 | 18 | 6 | 42 | 14 | 48 | 21 | 2 | 2 | 22 | 25 | 13 | 52 | 164 | 12.6 | 5.9 |
| TOTAL | 1966 | 49 | 371 | 71 | 517 | 110 | 1060 | 91 | 802 | 14 | 106 | 164 | 215 | 499 | 3071 | 100.0 | 100.0 |
| | 1967 | 27 | 229 | 76 | 401 | 110 | 1015 | 105 | 938 | 9 | 76 | 86 | 119 | 413 | 2778 | 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.

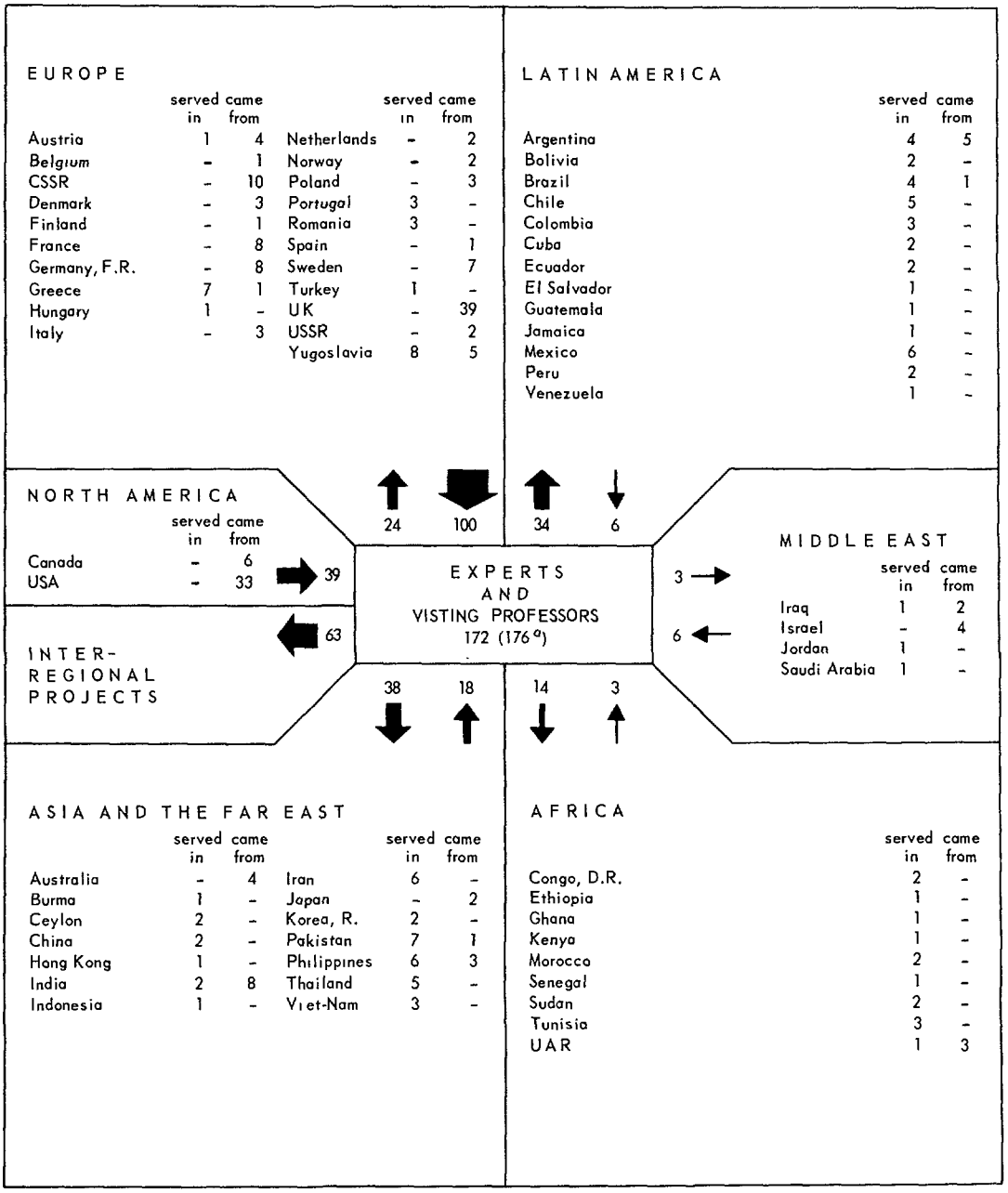
(2) Number of man-months.

### (b) Distribution by country

55. In all, 61 countries received technical assistance in 1967, as compared with 64 in 1966. The number of countries which both received and provided assistance declined from 22 to 17, not counting three additional recipient countries which served as hosts for Agency training courses in 1966 and 1967. As in 1966, there were 14 countries which provided, but did not receive, technical assistance; 44 countries, two more than in 1966, were recipients only. After correcting the data given for 1966 in respect of assistance "in kind", it was found that 32 countries were in receipt of assistance to a value of more than $20 000; the corresponding number for 1967 was 33. Figs. 4 and 5 and Table 3 indicate the extent to which skills and knowledge were exchanged between countries in 1967.

**FIGURE 4**

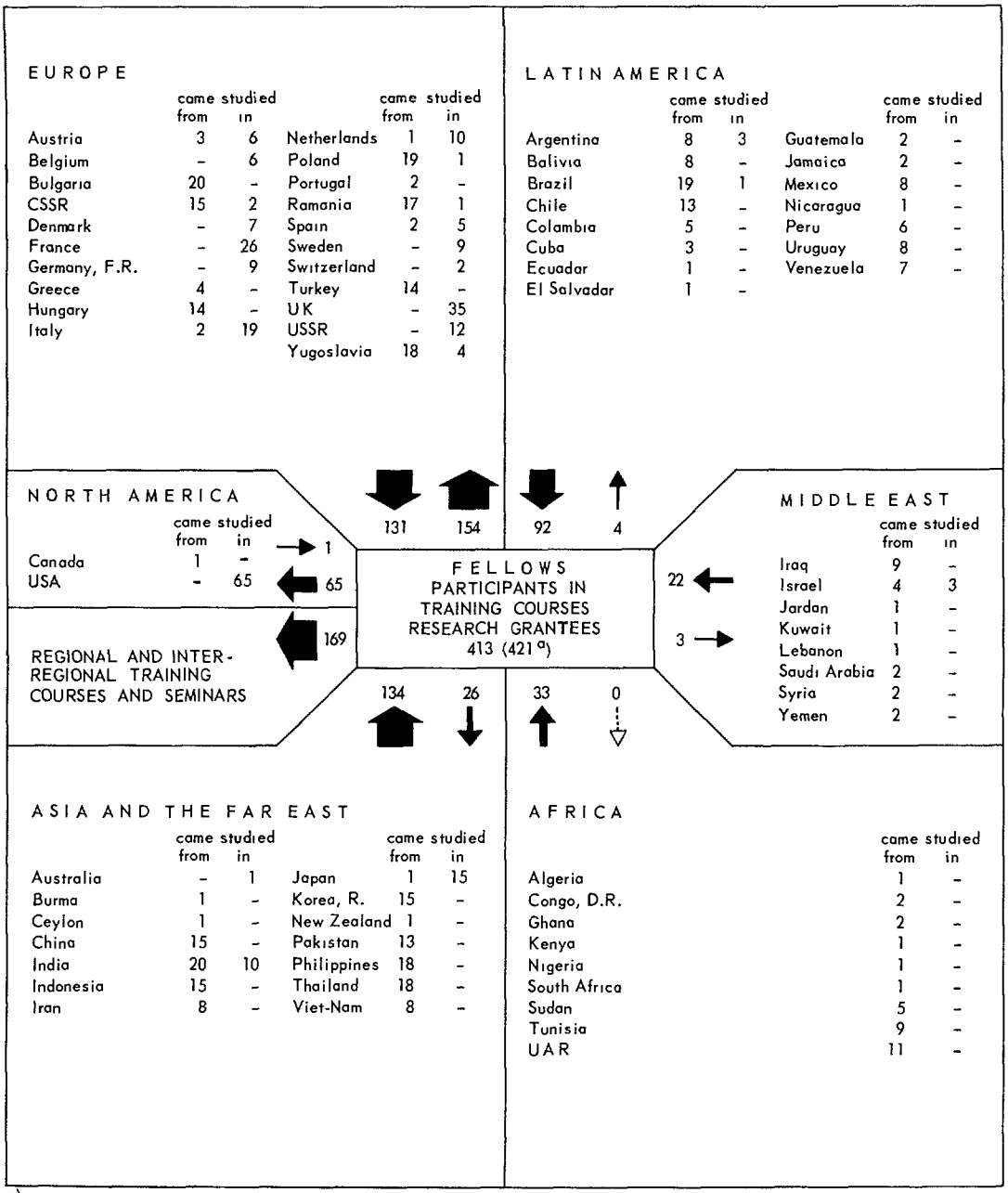
**DISTRIBUTION OF TECHNICAL ASSISTANCE EXPERTS BY REGION: 1967**




a) The difference between the number of assignments (176) and the actual number of experts (172) is due to the fact that four experts were each assigned to two different countries.

**FIGURE 5**

**DISTRIBUTION OF TECHNICAL ASSISTANCE FELLOWSHIPS BY REGION: 1967**




a) The difference between the number of fellows (413) and the number of places of study (421) is due to the fact that three fellows studied in two different countries, whereas two holders of an award for scientific visits went to two and five different countries respectively.

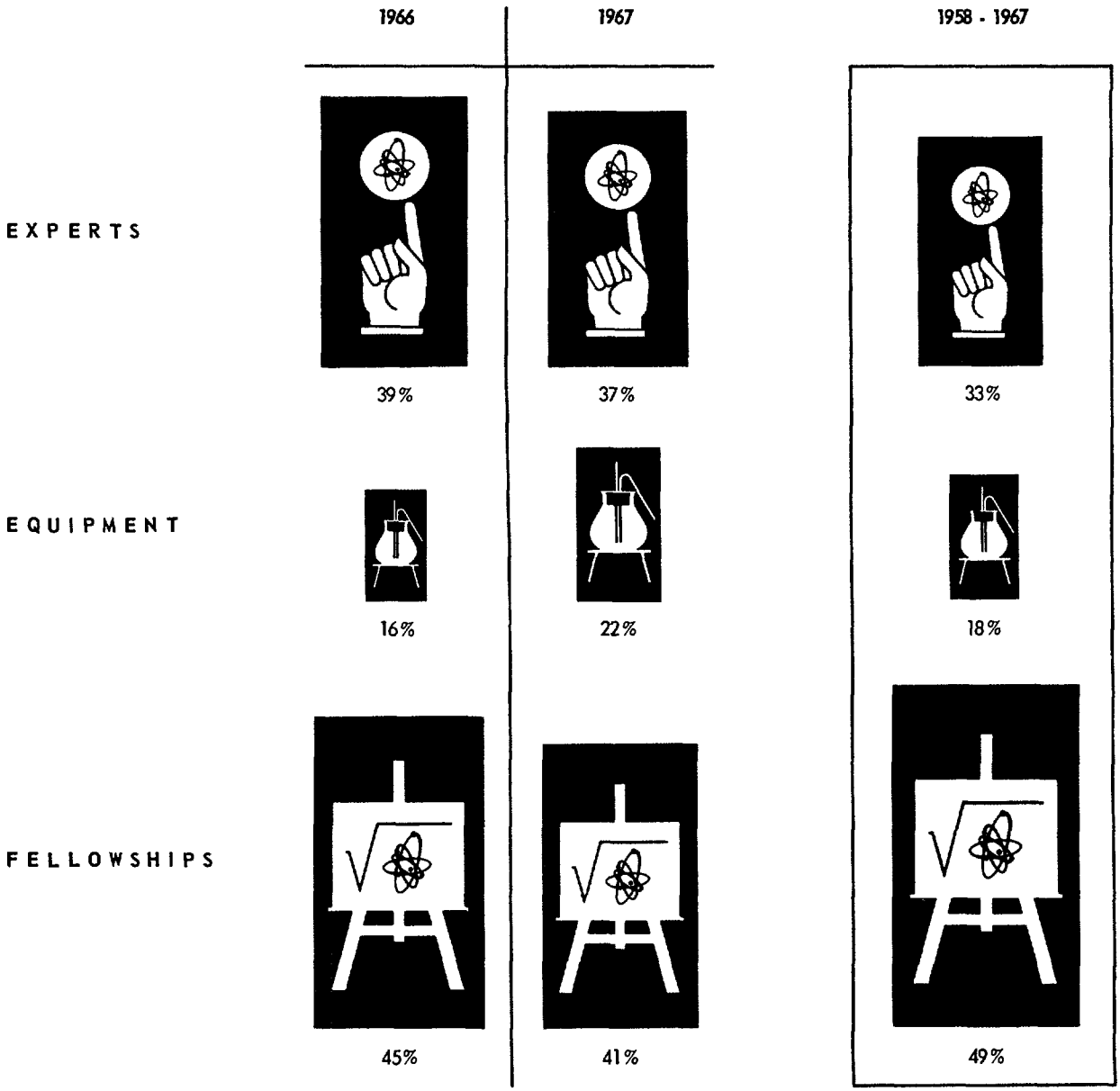
## 3. Types of assistance

56. The distribution of the total assistance provided in 1966 and 1967, shown in Fig. 6, was:

| | 1966 | 1967 |
|---|---|---|
| Experts | 39% | 37% |
| Equipment | 16% | 22% |
| Fellowships | 45% | 41% |

FIGURE 6

DISTRIBUTION OF TECHNICAL ASSISTANCE BY TYPE OF ASSISTANCE
(1966, 1967 and 1958 - 1967)




Note: Fellowships include participants at training courses and special projects.

(a) Experts and visiting professors

57. In 1967, 172 experts from 29 countries served a total of 500 man-months at a cost of $870 800; in addition, unliquidated obligations at the end of the year amounted to $267 900. Each of four experts served in two countries and 105 experts were each assigned to one country - in all, 44 countries were provided with expert services in 1967 - and an additional 63 were engaged in 12 regional and inter-regional projects (one partly cost-free and four cost-free experts were provided in 1967, as compared with 19 cost-free experts in 1966). The total cost of providing experts' services in 1967 was about 7% less than in 1966, but nearly 14% fewer man-months were served. The increase of 7.5% in the average cost per man-month in 1967 is primarily attributable to the higher cost per man-month, including travel expenses, of providing short-term experts for regional and inter-regional projects (in 1966 the average duration of assignment of such experts was three weeks, whereas in 1967 it was only two weeks); it is understood that this accounts for more than half of the 7.5% increase in 1967, the balance being required to meet higher salary costs.

(b) Equipment

58. Including the value of grants of equipment made during 1967, 42 countries and nine international projects were provided with equipment to a value of $519 500 in that year which represents an increase of 36% over 1966. In addition, equipment valued at $359 500 had not yet been provided by the end of the year; this amount is included in the figures given in columns (9) and (10) of Table 4.

59. The equipment provided in 1967 was supplied by 19 countries as a result of the Agency's efforts to spread purchases over a large number of countries, while bearing in mind the need to meet the special requirements of requesting countries, buy at a reasonable price and utilize, to the extent possible, all the currencies available.

(c) Fellowships

60. From Fig. 5 and Tables 3 and 6 it can be seen that 413 fellows from 58 countries participated in the training programme in 1967; the total duration of study for these fellowships was 2778 man-months. The decrease from $1 086 800 in 1966 to $959 500 in 1967 in the total value of fellowship training actually provided is mainly due to lower expenditures on training courses and the fact that a number of holders of Type I and Type II fellowships started their training late in the year; as a result, the estimated value of training which had not yet been provided by the end of the year amounted to $953 300.

61. A comparison of the nominations and awards for country programme fellowships in 1966 and 1967 and of all awards made during those two years is shown below.

| | 1966 | | 1967 | |
|---|---|---|---|---|
| Country programme awards: | | | | |
| Nominations received | | 426 | | 387 |
| Effective awards [9] | | | | |
| Individual projects | 238 | | 235 | |
| International projects | 45 | 283 | 34 | 269 |
| Percentage of nominations which led to effective awards | | 66.4% | | 69.5% |
| Other international training awards: | | | | |
| Research grants and scientific visits | 10 | | 11 | |
| Short-term training courses | 206 | | 133 | |
| Total number of fellowships | 499 | | 413 | |

(d) Regional and inter-regional activities

62. (i) Regional advisers

One expert on rice production served as a regional adviser under UNDP/TA in 1967 in Asia and the Far East.

(ii) Training courses

63. Including two courses financed entirely out of FAO funds, and carried out for the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture, the Agency conducted 12 regional and inter-regional training courses in 1967, which were held in 11 different countries and attended by nearly 300 participants from 62 countries, the cost of attendance by nationals of 52 countries being paid either by the Agency or FAO. Seven courses were financed under UNDP/TA: one each in Argentina, Chile, Philippines, Turkey, the United Kingdom, Uruguay, and one at the Middle Eastern Regional Radioisotope Centre for the Arab Countries in Cairo. Three courses were financed under the Agency's regular programme: one each in Austria (at the Agency's Laboratory in Seibersdorf), in Israel and in the USA; one FAO course was held in Czechoslovakia and the other in the USA. For the organization and conduct of these courses the Agency provided 63 lecturers (22 from its own staff), and others were made available by host countries. Eight courses were devoted to the applications of isotopes and radiation (three in agriculture, two in medicine, one in hydrology, one in radiobiology and one on general applications); the subjects of the other four courses were the economics of nuclear power, the handling of radiation accidents, bio-assay methods and radioactive waste management.

64. As mentioned in paragraph 61 above, 133 fellowships were awarded for participation in ten Agency training courses. In addition to the 50 recipient countries represented at Agency courses, the nationals of two other recipient countries took part in the FAO/IAEA training courses which were attended by 26 fellows. In addition, more than 80 local participants, plus those for whom the cost of participation was borne by another organization or by the candidate's Government, more than doubled the official Agency figures given in the financial statistics.

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

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

65. As mentioned above, a training course was held at the Centre during 1967; the subject was the general applications of isotopes and radiation. There were ten participants from the region (two from Iraq, one each from Jordan and Kuwait, three from the Sudan, two from Syria and one from Yemen). In 1967 under the UNDT/TA programme, $12 900 was provided in support of the Centre's work: $1300 for experts, $3900 for equipment, and $7700 for training awards, excluding unliquidated obligations at the end of the year.

(iv) Follow-up missions

66. No Agency missions of this kind were sent out in 1967; information concerning the missions to be dispatched in 1968 will be included in the report for that year.

C. Special Fund activities

67. Work on the project in Central America on the eradication of the Mediterranean fruit fly by the use of the sterile male technique has been intensified. The weekly production of fruit fly pupae has now reached 50 000 000 and the large-scale aerial release of flies, which was started at the beginning of 1967, has been steadily increased. The releases have taken place in the major experimental area in Nicaragua; in Panama the release of sterile flies from ground stations is being tried out for the purpose of comparison. Although fly-trapping and identification techniques need further refinement to increase the accuracy of the statistical predictions of the efficiency of the release programme, a ratio of sterile to wild flies of about 50 to 1 achieved in August is very promising. Following the continuation and expansion of the release programme in the early part of 1968, it is expected that it will be possible to predict with some degree of accuracy whether an extension of the current activities with a view to the complete eradication of the fly in all infested areas in Central America would be successful.

68. During the year, a total of seven experts served in connection with Special Fund projects for which the Agency acts as executing agency, and some $180 000 was obligated for equipment.

69. The annual review of the Agency's participation in UNDP was carried out with UNDP officials in December 1967. As is customary during this review, there was an extensive discussion of possible Special Fund projects for which the Agency might serve as executing agency in the future. A major new project is expected to be approved by the Governing Council of UNDP in January 1968, and several other promising projects will be discussed with the Governments concerned during the coming year, which may lead to the submission of formal requests for UNDP/SF assistance at a later date.

70. During 1967, the services provided in connection with Special Fund projects by the Agency, as sub-contractor to other organizations in the United Nations family, showed a further increase. Assistance, largely in the form of water analyses, but also involving short-term advisory services, in a number of cases, was provided for six projects in five countries and one regional project in Africa at a total cost of almost $17 000. A list of the projects concerned is given in Annex III. The executing agency was FAO in all except one instance, where it was the United Nations. This form of participation in Special Fund projects can be expected to increase in the coming years as the Agency is called upon to provide various specialized technical services for other executing agencies.

## D. Evaluation of the technical assistance programme

### 1. General

71. Since 1964, ECOSOC has expressed continuing interest in evaluation of the overall impact of United Nations technical assistance programmes on economic and social development. Through a series of evaluation missions sent to different countries by the Secretary-General of the United Nations, an attempt was made to assess this impact in terms of performance and the results achieved. The major conclusions of the first three missions where reports were submitted to ECOSOC in 1967 were: that the main responsibility for co-ordination of various types of assistance lies with the recipient Governments; that great advantage would be derived from an increased flow of information between and among all sources of assistance; that provision for built-in project evaluation should be made or strengthened as a regular part of project and programme management; and that the evaluation process should also be applied at the planning stage - including, so far as practicable, joint analyses of project proposals by Governments and agencies concerned. Although the impact evaluations undertaken so far were of limited scope, the experience gained had had a healthy effect on the planning and implementation of new activities. At least two further missions will be dispatched during 1968, and it is expected that, with their revised terms of reference and the longer time they will be allowed for their work, they will be able to make a more appropriate assessment, both in qualitative and quantitative terms, of the impact of assistance received from sources of a multilateral character.

72. ECOSOC requested the Inter-Agency Study Group, on which the Agency is respresented, to undertake, inter alia, further studies of measures to improve the use of reports from experts, technical advisers, etc. and, in particular, to render such reports more useful for the elaboration of new projects or new programmes. It further requested the Group to consider methods for improving operating procedures as well as other matters concerned with programme management. This Group serves as a useful clearing house for the exchange of information on evaluation procedures.

73. The Agency has followed its established procedure of continuous evaluation through detailed study of initial requests when received, followed, where necessary, by individual consultations with Government representatives, and through visits of Headquarters staff to the country concerned; due account is also taken of experts' periodic and final reports. This procedure is common to all organizations and recognizes the responsibility of both the recipient Government and the assisting organization to ensure the optimum use of scarce resources.

74. Although there is no specific reference to the Agency in the recommendations of the evaluation missions, they are certainly relevant to Agency practices in several countries. In several instances, for example, the need to ensure co-ordination between international organizations, Government departments and bilateral and other sources of assistance and the need for integrated machinery for the planning and follow-up of projects are quite obvious. Action has been or is being taken in line with the missions' recommendations.

75. The nature of the Agency's work is such that individual projects involving the provision of an expert and some equipment and possibly a fellowship have a bearing on more than one field of activity and consequently the work of more than one Government ministry may be concerned. It is therefore essential to ensure that there is co-ordination at a higher level between institutes, Government departments and so on. Furthermore, major projects being assisted by the Agency, in which several experts with considerable amounts of equipment such as research reactor complexes are involved, will need to be integrated into the national scientific programme of the Government. In one country, the authorities responsible for a reactor complex realized that its impact on economic and social development would be strengthened if its activities were co-ordinated with the Government's programmes concerned with both fundamental and applied research. It is hoped that in the future, with Agency assistance, this reactor facility will be more closely integrated with the Government's programmes through the guidance given by Agency experts and through increased contacts with the central planning authorities.

76. In another case, the integration of part of the national atomic energy commission's programme into the educational system was achieved by an expert who established a joint nuclear chemistry course for Ph.D. students in conjunction with the university. In many developing countries which either do not have or do not intend to construct research reactors, most of the assistance provided by the Agency for individual projects relates to agriculture, medicine, industry and education. Thus, such projects automatically form part of a larger project and the benefits resulting from the assistance cannot be assessed without taking into account the impact of the latter scheme. Although Agency experts may nominally be assigned to atomic energy commissions or their equivalent, agricultural, medical and industrial specialists maintain close contact throughout their assignments with the Ministries of Agriculture, Health and Industry, thereby ensuring the co-ordination of their activities with national programmes.

77. At the planning stage care is exercised at Government level to ensure, through visits of Agency staff members and field experts, the co-ordination of Agency assistance with assistance received from other agencies and under bilateral programmes. In one country, in which WHO trained nurses, radiologists and other staff for a radioisotope centre, the Agency provided the services of the hospital physicist, the equipment was supplied under a large bilateral programme and the Government provided the new building in the hospital compound. In another country, in which the radiodiagnostic service in a hospital had been discontinued, an Agency expert, during a short visit, arranged for the resumption of the service; in addition, equipment will be provided by the Agency, and some assistance will be provided by WHO. Many projects are jointly implemented by Agency and FAO experts; in hydrological studies for groundwater determinations, several Governments have obtained Agency assistance through sub-contractual work carried out for FAO and WHO. Co-sponsorship of training projects with ILO, FAO, UNESCO and WHO ensure close co-ordination between the organizations in the United Nations family

78. The lack of information on bilateral programmes and the services which it is intended to provide under them is still a major problem. This is a matter which is being tackled at the inter-agency level and the Agency is lending its full support to the elaboration of some procedures which will enable the United Nations organizations to be informed at the planning stage of projects likely to be of direct concern to their own programmes of assistance to recipient Governments.

2. Evaluation of Agency programmes and projects

79. In their reports Government authorities and UNDP Resident Representatives continue to comment favourably on the work of Agency experts. They point out that fewer experts had difficulties in adapting to their new environment, many were able to act as catalysts, and generally the programme in each country was completed satisfactorily and effectively. Whilst recognizing that the majority of expert assignments cannot be reviewed in isolation from larger projects with broader implications of which they form a part, the Agency has noted in several countries the successful completion in 1967 of that part of the project which was concerned with the applications of atomic energy. The impact of the Agency's technical assistance programme on certain applications of atomic energy in its Member States is described below.

(a) Medical applications of radioisotopes

80. Laboratories and clinics for medical radioisotope work have been established in the major medical centres in most developing countries, especially in the centres associated with a university medical school. Requests for technical assistance for these centres are thus mainly concerned with the further development of existing facilities and the introduction of new and more advanced instruments and techniques. In such requests, many of which relate to a specific instrument or technique, the equipment component is often of major importance, an expert being required for only a short time to supervise its installation and train local personnel in its use.

81. Radioisotope scanning as a method for determining the distribution of radioactivity in organs or regions of the human body is undoubtedly the most important single technique now in use in the diagnostic applications of radioisotopes. The rapid development of instruments and techniques for this purpose has led to many recent requests for scanning equipment and expert assistance in their use. Studies relating to dynamic functions involving the use of radioisotopes, which require multiprobe equipment for the simultaneous measurement of radioactivity in different parts of the human body, constitute another group of important diagnostic techniques. Some recent requests related to equipment and expert assistance for such studies. In a number of instances, assistance in the introduction of these more advanced techniques has been provided as a direct follow-up to an earlier project concerned with the setting-up of facilities for simple routine applications of radioisotopes.

82. Once a medical radioisotope laboratory is working at a fairly advanced level in a given country, it can usually provide basic training and assistance to personnel from neighbouring medical institutions wishing to set up similar facilities. There may then be little further need for technical assistance of the type required to set up and operate such laboratories. There are a number of countries, however, where laboratories of this kind are only now being set up and where such assistance is still needed. The emphasis in requests for this assistance is less on the equipment and more on the expert, who is usually needed for a long period.

83. It must be emphasized that the successful introduction of medical radioisotope work in any country depends primarily on the general level of development of its medical and scientific services. In one country where basic facilities for such work were set up under a technical assistance project, they have been maintained only through the continued services of the expert, who is in his third year there. In another country, where similar facilities were set up, they ceased to be used on the departure of the expert after two years of service and are now being brought into use again with some difficulty by a new expert.

84. The recruitment of short-term experts to assist in the introduction of specific techniques in medical radioisotope work presents no serious problem. On the other hand, the recruitment of long-term experts for such work becomes increasingly difficult. This is largely attributable to the lack of an established cadre of field workers such as may be found in other branches of medicine and science. Recruitment must thus be effected mainly from the staffs of hospitals and medical institutions in the advanced countries, and it is often difficult to obtain a long-term leave of absence for such persons.

85. The growing interest in more advanced techniques in medical radioisotope work is also reflected in the Agency's training programme. It is considered that adequate facilities for basic training in this subject are now available in most advanced and many developing countries. Accordingly, the Agency concentrates instead on advanced courses designed to acquaint medical radioisotope workers with the latest developments in instrumentation and techniques. Of course, basic training in this, as in other fields, can be provided by the Agency through its fellowship programme.

(b) Health and safety

86. When a country embarks on the development of atomic energy or on the use of radioisotopes in, for example, medicine or agriculture, it will naturally wish to ensure that the programme will be carried out safely and that a sufficient number of competent health physicists, or other trained persons, are available to supervise the safety measures adopted. Since the Agency's programme of technical assistance began, requests have been received each year for experts and demonstration equipment in the field of health and safety. The total number of such requests for experts received each year increased fairly sharply and reached its maximum during the years 1962-64; since then it has tended to decrease, partly because fellows have returned to their home countries and routine techniques which are common to many applications of atomic energy are firmly established. In the early years of the programme most requests came from countries in Asia and the Far East; in later years a large number of requests came from Latin American countries, and a growing number of requests is now being received from countries in the Middle East and Africa.

87. Expert assignments are mainly concerned with personnel monitoring services, radiation protection in hospitals, the management of radioactive wastes, and radiation protection legislation. This pattern again follows the expected trend of development. In the earliest stages of any programme, it is necessary to train local staff in the setting up of an effective personnel monitoring system, usually in the form of a film badge service, which can be made use of by all persons working with radiation sources. The medical applications of radioisotopes are often amongst the first to be introduced, and hospital work clearly involves the risk of over-exposure if adequate control is not established and enforced. The management of radioactive wastes and the drawing up of national legislation for the control of radiation exposure are topics on which specialist advice has been given.

88. With the increased development of nuclear energy programmes and the wider introduction of other applications of radioisotopes, it is to be expected that other health and safety topics will be given greater prominence in the work of the experts. Governments have reported that Agency experts have worked well and, in general, their work has been continued and developed after they have left. This may to some extent be due to the fact that the topics on which advice is sought, for example, the setting up of a film badge service, are of a type which can be clearly defined and are of obvious benefit. In at least six cases, Governments have asked for an expert's services to be extended, and about 12 Governments have repeated their requests more than once for additional expert assistance after the expert's assignment has ended.

89. Difficulties have occasionally arisen over the late arrival of equipment, but in such cases the experts have usually been able to use their time profitably in discussing problems with their counterparts and instructing local staff in general matters of radiation protection. Some have also been able to adapt, and make good use of locally available supplies pending the arrival of the equipment: for example, an expert waiting for the manufacture of film badge holders improvised a badge using a thin lead sheet over half the film and putting the unit in a small plastic bag; in another case, where the water supply was not sufficiently clean to be used for film processing, the expert, along with his counterpart, constructed a large inlet filter which produced the degree of cleanliness required.

(c) Plant production and protection

90. The fact that nuclear techniques play an important role in research and development leading to increased food production and protection of food in the field and in storage is demonstrated in the volume of requests received for assistance in this area. However, since their application requires a certain degree of sophistication and often specialized skills and equipment, the use of these techniques has only recently been introduced in some of the developing countries.

91. In the effort to increase world food supplies, the Agency has been requested to provide assistance in carrying out three major tasks: the improvement of crop plants to give higher yields; the raising of the level of soil fertility; and the reduction of losses in the field and in storage due to diseases, spoilage, insects and other pests.

92. In the early years of the technical assistance programme, the use of radiation for plant improvement was still in the experimental stage. With the coming on the market of a number of important radiation-bred crop varieties, emphasis was slowly shifted to the granting of assistance to selected breeding projects in developing countries, starting with rice. In addition to supporting research projects, experts were sent in 1963 to develop rice breeding projects in Thailand and later a regional expert advised a number of Governments in South-East Asia when he participated in the uniform field trials of radiation-induced rice mutants which had been organized in most of the countries of the region. The application of radiation in rice breeding is also one of the subjects of a Special Fund project which was developed during 1967 and recently approved for implementation in India.

93. Technical assistance is now being given to promote radiation breeding of wheat and further expansion is expected. The Agency was first requested to organize field tests of radiation-induced wheat varieties in a number of countries in the Near and Middle East, North Africa and Southern Europe. When their superior performance was ascertained, projects were approved for four of those countries, and in all cases close technical co-operation has been ensured through fellowship training (on occasion in the Agency's Laboratory) and research work. Many wheat- and rice-producing countries are now importing vast quantities of high-yielding varieties produced by two central institutes. Lower-yielding local varieties, which possess valuable and unique characteristics with regard to grain quality, resistance to certain local diseases and adaptability to the varied local climatic and growing conditions, are being replaced and discarded. It is, however, proposed to use radiation breeding to raise the productivity of these local varieties.

94. Another activity devoted to increasing food production is plant protection; here, concurrently with the use of techniques to increase yields, insecticide studies and radiation entomology work were undertaken to prevent losses. With the expansion of insecticide applications, several developing countries sought aid in assessing residues and their toxicity. At the same time, considerable advances were made in the applications of the sterile male technique of insect control. The first Agency-assisted project on this subject started in 1963; since then three training courses have been held, 55 participants were trained, and the technique has been applied since 1965 on a regional scale in Central America to determine, in a pilot operation, the feasibility of eradicating the Mediterranean fruit fly.

(d) Research reactor utilization

95. In this and previous reports attention has been drawn to the use of Agency assistance at various stages during the construction and operation of research reactor facilities and their ancillary laboratories. Many of these reactors are now in operation and others are expected to become critical in the near future. The range of Agency activity under its technical assistance programme is well illustrated in one country, which concluded bilateral agreements with a supplying Government covering a period of ten years from the late 1950's for the construction of a research reactor in an existing nuclear research centre. These agreements became the basis of the Agency's assistance programme in that country. The first requirement was to train scientists in the major principles of the nuclear sciences and technologies for the purpose of forming an adequate complement of counterpart personnel. In the first two years 25 fellowships were awarded, of which about ten were for work relating to reactors. A reactor construction adviser was assigned during the initial construction stage, during which some difficulties were encountered, but these were overcome when responsibility for the project was assigned to a Government body with inter-departmental responsibilities. This body accorded top priority to the project and another adviser on reactor construction completed his assignment in half the time originally scheduled. Advisory services on the health and safety aspects of the reactor were provided at the appropriate time, and electronic engineering and instrumentation experts assisted during the course of construction. With the concentration of services in the reactor centre, experts in the applications of radioisotopes produced in the reactor have been or will be assigned to the centre. This pattern has been repeated in several other countries.

96. The increasing number of experts provided for work connected with activation analysis reflects its growing use in analytical chemistry, biology, metallography, etc. In addition to the provision of this assistance to reactor centres, neutron sources have been provided in many instances and neutron physics groups established. This has led, inter alia, to studies in crystallography and research programmes in which several universities have participated. National training courses have also been held in reactor centres and these have later developed into regional courses. This has enabled the training of essential engineers to be undertaken within the country or region. It is expected that nuclear power will be introduced into several developing countries in the 1970's, and the availability of trained engineering and other scientific staff will be a basic requirement. Thus, the research reactor centres are expected to play an important role in the development of nuclear power programmes in the developing countries.

97. The setting up of a research reactor and the establishment of nuclear centres ultimately leads to improvements in national facilities for work on research theses and to increases in the budgets of universities and other institutes of advanced learning. Such centres, which promote scientific progress, have been established in many places and, provided Governments integrate their activities into the overall scientific programme, they can eliminate the "brain-drain" and make a scientific contribution to the economic and social development of the country.

(e) Industrial applications of radioisotopes

98. An increasing awareness of the benefits resulting from the industrial applications of radioisotopes is reflected in the increased number of requests for assistance for this purpose. As developing countries become industrialized, they are better able to utilize well-proven techniques which result not only in economies, but also in improved quality control, perhaps the most important advantage since it helps to raise living standards.

99. Assistance has so far been given to some ten countries. In two cases, this resulted in the establishment of industrial radiography services for quality control. In other instances assistance was provided to set up general radioisotope advisory services for industry, and those services still continue. Current examples of industrial applications of radioisotopes include assistance in gamma radiography in two countries and in the use of nuclear techniques in mineral exploration, which is becoming increasingly important at the national level. For many years nuclear techniques have been used in road construction and the Agency is providing assistance in one country to train local staff in the use of these techniques. In another country, assistance will be given in promoting and demonstrating the effectiveness of radioisotope instruments for process control in chemical and manufacturing plants.

## Part III. CONCLUSIONS

### A. General trends

100. A review of requests received over the past two to three years reveals a broadening in the scope of the assistance which the Agency is requested to provide. Many developing countries are now in a position to carry out scientific work of a high standard but require assistance in technological matters, that is, in the use and development of existing scientific knowledge to achieve specific objectives which are economically justified. Certain processes in the fabrication of fuel elements, production of special alloys, fabrication of boiler linings, and other processes concerned with nuclear power programmes, including the use of computers, have all been the subject of requests in very recent years. At the other end of the scale are those countries, just embarking on an atomic energy programme, which are in need of expert services for long periods, but require only a minimum of demonstration equipment initially.

101. Advice on the development of an overall atomic energy programme and assistance in respect of projects concerned with soil moisture measurements in basic agricultural development and land resettlement schemes, the introduction of simple radiodiagnostic techniques in hospitals and prospecting for radioactive minerals as part of all natural resources surveys are in continuous demand.

102. Mention should also be made of the provision of assistance to institutes of higher learning and technology. The demand for visiting professors and lecturers continues to expand as more and more universities and other advanced schools are established and the desire, as well as the opportunity to be trained, and to teach, in the home country increases. This contribution to an awareness of science and the way it can benefit developing countries, together with the creation of scientific institutes and nuclear facilities attached to existing research establishments help to eliminate the "brain drain".

103. Much of the assistance which is now being requested is related to research reactors which are being integrated into the scientific programme of the recipient country. This helps to promote economic and social development through the use of radioisotopes produced in the reactors and the research being performed in the laboratories attached to the reactor centres. It is expected that assistance for such research and its applications will continue to increase.

104. Furthermore, as radioisotopes are used more and more to solve practical problems relating to agricultural and industrial development, their applications in dealing with specific problems in the developing countries will also become more numerous. This is already reflected in requests received for the continuation of Agency assistance over several years through the provision of experts in different disciplines, but basically for the same project. It is estimated, for example, that more than half the requests for assistance in 1967 and 1968 related, in fact, to the continuation of projects, which resulted in a consolidation and integration of national atomic energy activities in the economic and scientific development programmes of the countries concerned.

### B. Available resources

105. The inadequate financial resources available to the Agency for the provision of technical assistance have been noted in the reports covering recent years' activities. The target figure for voluntary contributions has remained at $2 million since 1962; on average, about 69% of the target has been reached, and in 1967 a slight increase, bringing that year's figure to 72%, was recorded. A study of a comparable situation in the United Nations regular programme of technical assistance showed that, based on costs incurred in 1967, an increase of at least 21.6% in the level of resources would be necessary if the

Secretary-General were to be able to provide the same number of units of assistance, that is, equipment and man-months of expert services and fellowship training, as in 1962.[10]

106. The Administrator of UNDP is now engaged in a study of the future needs for technical and pre-investment assistance under that programme, and while this study is only at a preliminary stage, some interesting figures have already emerged. A conservative prediction for the three-year period 1968-70 shows, for example, that $1456 million - or, on an annual basis, rather more than two and a half times the volume of contributions actually pledged to UNDP for 1968 - would be needed to meet the total requirements of Governments for assistance of a multilateral character. Making certain assumptions on the basis of prior experience, the Agency has estimated - in connection with this study - that the cost of meeting requests within its field of competence which it might expect to receive during the same period would be almost $3.9 million under the Technical Assistance component and about $2.7 million under the Special Fund component.

107. The unfortunate effects of the combination of inadequate resources and constantly rising demands for assistance briefly mentioned above can hardly be over-estimated. The substantial increase in the volume of requests received and the cost of meeting them has inevitably resulted in a reduction in the man-months of expert services and the amount of equipment which can be provided. In 1962, for example, the cost of meeting the total requests for expert services and equipment alone under the regular programme was estimated at $1 530 000, of which only 49.5% could be provided. On the other hand, the cost to the Agency of meeting such requests in 1968 would be about $3.6 million, but it is likely that little more than 25% of that sum will be available.

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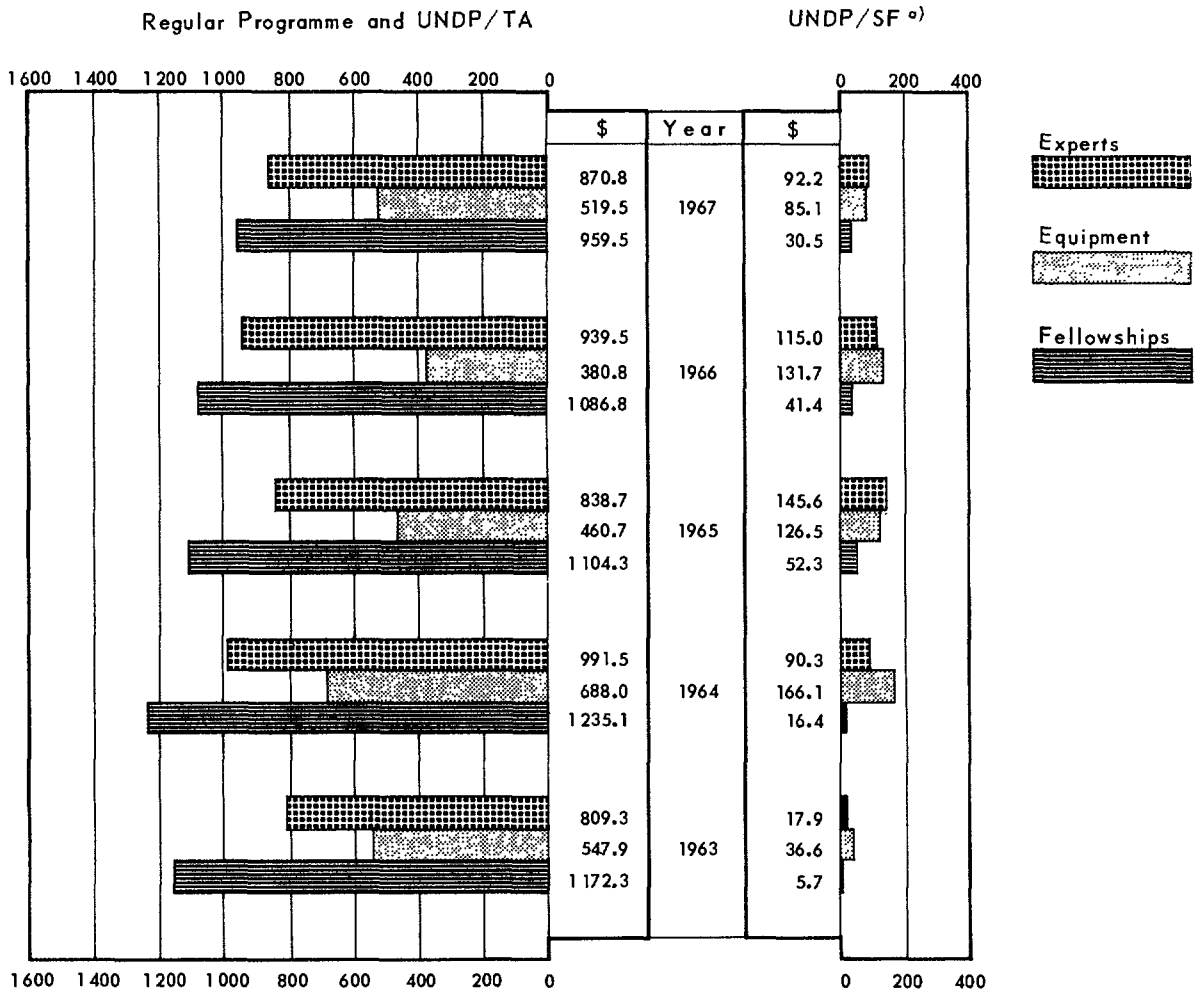
[10] UNDP document DP/RP/4.

## FIGURE 7

TRENDS IN THE TECHNICAL CO-OPERATION 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, $372 100 in 1965-66 and $129 300 in 1967.

# ANNEX I

## STATISTICAL TABLES

### Introductory Notes

#### General

1. Beginning with the report on the technical assistance provided by the Agency in 1964 [1], an attempt to make the Agency's technical assistance programme easier to review was made by providing financial data on unliquidated obligations at the end of each year, itemized by source (EPTA or UNDP/TA and Agency funds) and recipient (individual countries and international projects); a clearer picture was thus given of the funds spent, those committed and those still available.

2. Some further refinements have now been made in the presentation of the financial statistics in order to reflect more accurately the actual situation, as explained in paragraphs 3, 6 and 7 below.

#### Resources

3. Fig. 1 and Table 1 now show only the resources made available for approved field programmes of technical assistance, and no longer include EPTA and UNDP/TA overhead cost allocations. In addition, data in respect of offers of assistance "in kind" have been up-dated to 31 December 1967, and the estimated value of Type II fellowship offers has been changed to reflect the resources that were available when the fellowships were awarded and the fellows were placed. Thus, the estimated value of all offers of assistance "in kind" in support of a given year's technical assistance programme - shown in column (3) of Table 1 - represents the total available from this source.

4. All monetary values appearing under the headings "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 the offer made by the donor Government (at the later, "assistance provided" stage, however, the value to the recipient country is based on the costs incurred); and

(c) Fellowships. The value of Type II fellowships is estimated on the basis of the monthly rate 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.

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

Assistance provided

5. In the statistical tables in this Annex the assistance provided by the Agency (experts, equipment and fellowships) includes actual cash payments against 1967 and prior years' obligations, regardless of the time when funds were made available or obligated, plus the total value of assistance in kind, shown according to the year in which it was provided. The unpaid balance of funds obligated in 1967 is not included in the figures specifically relating to assistance provided, but is shown separately in Table 4, column (9), by budget year; the total cumulative unpaid balance of funds obligated in 1967 and prior years is given at the bottom of this column in Tables 4, 7 and 8.

6. Assistance "in kind" has been separated into two parts. The first part consists of assistance that has been provided, for example, fellowship training already provided, expressed in terms of estimated cash expenditures. The second part is made up of assistance which is in the process of being provided - for example, fellowship training not yet completed - which is equivalent to unliquidated obligations (see column (10) in Tables 4, 7 and 8). The provision of expert services and equipment in kind has been shown in the same way.

7. The previous procedure, that is showing against recipient countries at the end of the year the full estimated value, for example, of Type II fellowships awarded during the year, even though the fellow might not yet have started his training, made it difficult for recipient countries to use the data for purposes of comparison. Some corrections have also been made in the financial statistics which take into account, for example, those candidates who were withdrawn subsequent to the award of Type II fellowships, that is, after 31 December of a given year; in a number of cases the provision of assistance in kind shown for individual countries was too high because corrections of this kind had not been made.

Types of assistance

8. (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 and international projects; 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

9. In the broadest sense, this heading covers regional projects with an expert component only (e.g. the regional adviser on rice production), 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, 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".

10. In 1967, 14 fellowships were awarded for study at the Theoretical Physics Centre; the total cost of fellowship training at the Centre amounted to $48 900; 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.

Special Fund activities and funds-in-trust arrangements

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

Figures and percentages

12. 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: 1958-1967

(in thousands of dollars)

| Year | UNDP/TA | Agency | | Sub-totals | | Total |
|---|---|---|---|---|---|---|
| | (1) | Monetary (2) | In kind[a/] (3) | Monetary (1) + (2) | Agency (2) + (3) | (1) + (2) + (3) |
| 1958 | - | 125 | 689 | 125 | 814 | 814 |
| 1959 | 304 | 875 | 449 | 1179 | 1324 | 1628 |
| 1960 | 639 | 1008 | 885 | 1647 | 1893 | 2532 |
| 1961 | 786 | 981 | 519 | 1767 | 1500 | 2286 |
| 1962 | 828 | 1146 | 588 | 1974 | 1734 | 2562 |
| 1963 | 954 | 1230 | 484 | 2184 | 1714 | 2668 |
| 1964 | 946 | 1115 | 617 | 2061 | 1732 | 2678 |
| 1965 | 901 | 1200 | 509 | 2101 | 1709 | 2610 |
| 1966 | 893 | 1263 | 516 | 2156 | 1779 | 2672 |
| 1967 | 1076 | 1380 | 603 | 2456 | 1983 | 3059 |
| 1958-1967 | 7327 | 10323 | 5859 | 17650 | 16182 | 23509 |

a/ Estimated - see Introductory Notes, paras 3 and 4 to this Annex.

Table 2

Agency funds for technical assistance 1958-1967

(in thousands of dollars)

| Item | 1958-1963 | 1964 | 1965 | 1966 | 1967 | 1958-1967 |
|---|---|---|---|---|---|---|
| Target for voluntary contributions to the General Fund[a/] | 9050 | 2000 | 2000 | 2000 | 2000 | 17050 |
| Budgeted for technical assistance | 7502 | 1680 | 1749 | 1777 | 1876 | 14584 |
| Amount pledged[a/] | 6387 | 1374 | 1331 | 1277 | 1441 | 11810 |
| Actually made available for technical assistance from the General Fund and Operating Fund II | 5365 | 1115 | 1200 | 1263 | 1380 | 10323 |

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, the Theoretical Physics Centre and, up to 1967, research contracts.

Table 3

## Number of experts classified by nationality and fellowships classified by place of study: 1967

| 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 | Paid | Free | | | Type I | Type II | |
| Country programmes | | | | | | | | | |
| Argentina | 3 | - | 2 | - | 5 | - | - | 3 | 3 |
| Australia | 1 | - | 3 | - | 4 | - | 1 | - | 1 |
| Austria | 4 | - | - | - | 4 | - | 3 | 2 | 5 |
| Belgium | 1 | - | - | - | 1 | - | 3 | 3 | 6 |
| Brazil | 1 | - | - | - | 1 | - | - | 1 | 1 |
| Canada | 2 | - | 4 | - | 6 | - | - | - | - |
| CSSR | 4 | - | 6 | - | 10 | - | - | 2 | 2 |
| Denmark | 2 | - | 1 | - | 3 | - | 3 | 4 | 7 |
| Finland | 1 | - | - | - | 1 | - | - | - | - |
| France | 5 | - | 3 | - | 8 | 2 | 22 | - | 24 |
| Germany, F.R. | 3 | - | 5 | - | 8 | - | 4 | 3 | 7 |
| Greece | - | - | 1 | - | 1 | - | - | - | - |
| India | 3 | - | 5 | - | 8 | - | - | 9 | 9 |
| Iraq | 1 | - | 1 | - | 2 | - | - | - | - |
| Israel | 2 | - | 2 | - | 4 | - | 1 | 2 | 3 |
| Italy | 2 | - | 1 | - | 3 | 1 | - | 17 | 18 |
| Japan | 2 | - | - | - | 2 | 2 | 3 | 10 | 15 |
| Netherlands | 1 | - | 1 | - | 2 | 1 | - | 8 | 9 |
| Norway | 1 | - | 1 | - | 2 | - | - | - | - |
| Pakistan | 1 | - | - | - | 1 | - | - | - | - |
| Philippines | 1 | - | 2 | - | 3 | - | - | - | - |
| Poland | 2 | - | 1 | - | 3 | - | 1 | - | 1 |
| Romania | - | - | - | - | - | - | - | 1 | 1 |
| Spain | 1 | - | - | - | 1 | - | - | 4 | 4 |
| Sweden | 4 | - | 3 | - | 7 | 3 | 4 | 2 | 9 |
| Switzerland | - | - | - | - | - | - | 2 | - | 2 |
| UAR | 3 | - | - | - | 3 | - | - | - | - |
| United Kingdom | 24 | - | 15 | - | 39 | 6 | 28 | - | 34 |
| USA | 17 | 4 | 11 | 1 | 33 | 2 | 7 | 52 | 61 |
| USSR | 2 | - | - | - | 2 | - | - | 11 | 11 |
| Yugoslavia | 2 | - | 3 | - | 5 | - | - | 3 | 3 |
| International projects | | | | | | | | | |
| Theoretical Physics Centre | | | | | | - | 14 | - | 14 |
| IAEA, Austria | | | | | | - | 8 | - | 8 |
| Neutron Crystal Spectrometer, Philippines | | | | | | - | 3 | - | 3 |
| NPY (NORA) Project: Norway, Poland, Yugoslavia | | | | | | 1 | 1 | - | 2 |
| SGAE/ENEA/IAEA Irradiation of Fruit/Fruit Juices, Austria | | | | | | - | 6 | - | 6 |
| Uppsala International Seminar, Sweden | | | | | | - | 2 | - | 2 |
| Joint Institute for Nuclear Research, Dubna, USSR | | | | | | - | - | 1 | 1 |
| Short-term training courses [a] | | | | | | 84 | 49 | - | 133 |
| Research grants and scientific visits [b] | | | | | | - | 11 | - | 11 |
| TOTAL | 96 | 4 | 71 | 1 | 172 | 102 | 176 | 138 | 416 [c] |

a/ Seven regional and inter-regional courses were financed under UNDP/TA and were held in Argentina, Chile, the Philippines, Turkey, the UAR, the United Kingdom and in Uruguay. Three inter-regional courses were financed from the Agency's monetary resources and were held in Israel, the USA, and the Agency's Laboratory in Seibersdorf.

b/ The 11 holders of research grants and awards for scientific visits studied in 16 countries.

c/ The difference between the number of fellows (413) 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: 1958-1967[a/]

(in thousands of dollars)

| YEAR<br>Type of resource | Experts | | Visiting professors | | Equipment | | Fellowships | | Research fellowships | | Training courses | | Mobile radioisotope laboratory | | TOTAL | | Assistance outstanding | | TOTAL (8)+(9)+(10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | Unliquidated obligations | In kind balance[b/] | |
| | | | | | | | | | | | | | | | | | at 31 December 1967 | | |
| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | | (8) | | (8) | | (9) | (10) | (11) |
| | $ | % | $ | % | $ | % | $ | % | $ | % | $ | % | $ | % | $ | % | $ | $ | $ |
| 1958-1963 | | | | | | | | | | | | | | | | | | | |
| EPTA | 1103.7 | 45.1 | - | - | 353.8 | 14.4 | 775.4 | 31.7 | - | - | 212.7 | 8.7 | 2.2 | 0.1 | 2447.8 | 100.0 | - | - | 2447.8 |
| Agency monetary | 978.3 | 25.6 | 373.5 | 9.8 | 448.7 | 11.8 | 1659.1 | 43.5 | 73.5 | 1.9 | 188.5 | 4.9 | 96.7 | 2.5 | 3818.3 | 100.0 | 9.5 | - | 3827.8 |
| Agency in kind[b/] | 83.6 | 3.0 | - | - | 377.1 | 13.6 | 2306.8 | 82.9 | - | - | - | - | 13.8 | 0.5 | 2781.3 | 100.0 | - | 52.3 | 2833.6 |
| TOTAL | 2165.6 | 23.9 | 373.5 | 4.1 | 1179.6 | 13.1 | 4741.3 | 52.4 | 73.5 | 0.8 | 401.2 | 4.4 | 112.7 | 1.3 | 9047.4 | 100.0 | 9.5 | 52.3 | 9109.2 |
| 1964 | | | | | | | | | | | | | | | | | | | |
| EPTA | 359.2 | 32.1 | - | - | 265.1 | 23.7 | 170.5 | 15.3 | - | - | 323.1 | 28.9 | - | - | 1117.9 | 100.0 | - | - | 1117.9 |
| 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 | 1294.2 | 100.0 | 18.1 | - | 1312.3 |
| Agency in kind[b/] | 14.0 | 2.8 | - | - | 49.2 | 9.8 | 437.2 | 87.0 | - | - | 2.1 | 0.4 | - | - | 502.5 | 100.0 | - | 14.1 | 516.6 |
| TOTAL | 797.9 | 27.4 | 79.6 | 2.7 | 597.5 | 20.5 | 1001.0 | 34.4 | 11.8 | 0.4 | 423.1 | 14.5 | 3.7 | 0.1 | 2914.6 | 100.0 | 18.1 | 14.1 | 2946.8 |
| 1965 | | | | | | | | | | | | | | | | | | | |
| EPTA | 272.0 | 41.9 | - | - | 150.6 | 23.2 | 91.4 | 14.1 | - | - | 135.1 | 20.8 | - | - | 649.1 | 100.0 | 12.5 | - | 661.6 |
| 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 | 1205.9 | 100.0 | 36.3 | - | 1242.2 |
| Agency in kind[b/] | 23.5 | 4.3 | - | - | 39.9 | 7.3 | 485.3 | 88.4 | - | - | - | - | - | - | 548.7 | 100.0 | - | 38.1 | 586.8 |
| TOTAL | 641.1 | 26.6 | 117.3 | 4.9 | 398.4 | 16.6 | 975.3 | 40.6 | 31.1 | 1.3 | 219.2 | 9.1 | 21.3 | 0.9 | 2403.7 | 100.0 | 48.8 | 38.1 | 2490.6 |
| 1966 | | | | | | | | | | | | | | | | | | | |
| UNDP/TA | 354.0 | 42.7 | - | - | 195.8 | 23.6 | 97.1 | 11.7 | - | - | 181.8 | 22.0 | - | - | 828.7 | 100.0 | 141.1 | - | 969.8 |
| 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 | 108.4 | - | 1105.0 |
| Agency in kind[b/] | 9.9 | 1.7 | - | - | 36.7 | 6.3 | 525.7 | 90.4 | - | - | 9.5 | 1.6 | - | - | 581.8 | 100.0 | - | 67.5 | 649.3 |
| TOTAL | 722.9 | 30.0 | 106.4 | 4.4 | 348.4 | 14.5 | 901.9 | 37.5 | 23.4 | 1.0 | 303.9 | 12.6 | 0.2 | 0.0 | 2407.1 | 100.0 | 249.5 | 67.5 | 2724.1 |
| 1967 | | | | | | | | | | | | | | | | | | | |
| UNDP/TA | 337.0 | 42.0 | - | - | 174.5 | 21.8 | 123.2 | 15.4 | - | - | 166.8 | 20.8 | - | - | 801.5 | 100.0 | 204.2 | - | 1005.7 |
| Agency monetary | 345.4 | 34.7 | 90.4 | 9.1 | 220.4 | 22.2 | 232.5 | 23.4 | 19.3 | 1.9 | 86.6 | 8.7 | - | - | 994.6 | 100.0 | 375.2 | - | 1369.8 |
| Agency in kind[b/] | 1.6 | 0.3 | - | - | 75.1 | 13.6 | 473.7 | 85.5 | - | - | 3.3 | 0.6 | - | - | 553.7 | 100.0 | - | 503.4 | 1057.1 |
| TOTAL | 684.0[c/] | 29.1 | 90.4 | 3.9 | 470.0 | 20.0 | 829.4 | 35.3 | 19.3 | 0.8 | 256.7 | 10.9 | - | - | 2349.8 | 100.0 | 579.4 | 503.4 | 3432.6 |
| 1958-1967 | | | | | | | | | | | | | | | | | | | |
| EPTA and UNDP/TA | 2425.9 | 41.5 | - | - | 1139.8 | 19.5 | 1257.6 | 21.5 | - | - | 1019.5 | 17.5 | 2.2 | 0.0 | 5845.0 | 100.0 | 357.8 | - | 6202.8 |
| Agency monetary | 2453.0 | 29.5 | 767.2 | 9.2 | 1276.1 | 15.4 | 2962.6 | 35.6 | 159.1 | 1.9 | 569.7 | 6.9 | 121.9 | 1.5 | 8309.6 | 100.0 | 547.5 | - | 8857.1 |
| Agency in kind[b/] | 132.6 | 2.7 | - | - | 578.0 | 11.6 | 4228.7 | 85.1 | - | - | 14.9 | 0.3 | 13.8 | 0.3 | 4968.0 | 100.0 | - | 675.4 | 5643.4 |
| TOTAL | 5011.5 | 26.2 | 767.2 | 4.0 | 2993.9 | 15.7 | 8448.9 | 44.2 | 159.1 | 0.8 | 1604.1 | 8.4 | 137.9 | 0.7 | 19 122.6 | 100.0 | 905.3 | 675.4 | 20 703.3 |

a/ Data as at 31 December 1967.

b/ Estimated - see Introductory Notes, paras 4 and 6 to this Annex.

c/ The 1967 figures for "Experts" include miscellaneous and bank charges amounting to $5200 under UNDP/TA and $5500 under "Agency monetary".

Table 5

Fields of activity of technical assistance: 1967

| Field | Number of experts | Cost of equipment (in thousands of dollars) | Number of fellowships[a/] |
|---|---|---|---|
| General atomic energy development | 16 | 1.1 | 20 |
| Nuclear physics | 18 | 47.6 | 52 |
| Nuclear chemistry | 10 | 81.1 | 28 |
| Prospecting, mining and processing of nuclear materials | 8 | 27.0 | 17 |
| Nuclear engineering and technology | 16 | 57.3 | 72 |
| Application of isotopes and radiation in agriculture | 25 | 68.4 | 51 |
| Application of isotopes and radiation in medicine | 28 | 72.4 | 45 |
| Application of isotopes and radiation in biology | 13 | 55.4 | 46 |
| Other fields of application of isotopes and radiation | 14 | 71.1 | 30 |
| Safety in nuclear energy | 25 | 38.1 | 52 |
| TOTAL | 173[b/] | 519.5 | 413 |

a/ These figures include 134 participants in 10 regional and inter-regional training courses and 11 research grantees and holders of awards for scientific visits.

b/ The difference in the total shown in Table 3 (172) is due to the fact that one expert worked in two fields.

Table 6

## Recipients of experts and fellowship awards: 1967

| 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 | | Paid | | Free | | | | | | Type I | | Type II | | | |
| | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) |
| Country programmes | | | | | | | | | | | | | | | | | | |
| Algeria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 12 | 1 | 12 |
| Argentina | 2 | 5 | - | - | 2 | 11 | - | - | 4 | 16 | - | - | 3 | 22 | 3 | 30 | 6 | 52 |
| Austria | - | - | - | - | 1 | 1 | - | - | 1 | 1 | - | - | 2 | 18 | - | - | 2 | 18 |
| Bolivia | - | - | - | - | 2 | 9 | - | - | 2 | 9 | - | - | - | - | 3 | 26 | 3 | 26 |
| Brazil | 3 | 10 | - | - | 1 | 3 | - | - | 4 | 13 | 2 | 24 | 3 | 36 | 5 | 58 | 10 | 118 |
| Bulgaria | - | - | - | - | - | - | - | - | - | - | 1 | 6 | 8 | 79 | 7 | 80 | 16 | 165 |
| Burma | 1 | 12 | - | - | - | - | - | - | 1 | 12 | - | - | - | - | 1 | 6 | 1 | 6 |
| Ceylon | 1 | 1 | - | - | 1 | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - | - |
| Chile | 1 | 2 | - | - | 4 | 14 | - | - | 5 | 16 | - | - | 2 | 10 | 3 | 36 | 5 | 46 |
| China | 1 | 1 | - | - | 1 | 3 | - | - | 2 | 4 | - | - | 4 | 39 | 8 | 77 | 12 | 116 |
| Colombia | 1 | 12 | - | - | 2 | 7 | - | - | 3 | 19 | - | - | a/ | 3 | 4 | 48 | 4 | 51 |
| Congo, D.R. | 1 | 4 | - | - | 1 | 6 | - | - | 2 | 10 | - | - | 1 | 12 | - | - | 1 | 12 |
| Cuba | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - | - | - | - | - | - | - | - |
| CSSR | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 18 | 96 | 10 | 96 |
| Ecuador | 1 | 1 | - | - | 1 | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - | - |
| El Salvador | - | - | - | - | 1 | 3 | - | - | 1 | 3 | - | - | - | - | - | - | - | - |
| Ethiopia | - | - | - | - | 1 | 6 | - | - | 1 | 6 | - | - | - | - | - | - | - | - |
| Ghana | 1 | 12 | - | - | - | - | - | - | 1 | 12 | - | - | 1 | 11 | 1 | 12 | 2 | 23 |
| Greece | 5 | 19 | - | - | 2 | 13 | - | - | 7 | 32 | - | - | 1 | 8 | 1 | 12 | 2 | 20 |
| Guatemala | - | - | - | - | 1 | 2 | - | - | 1 | 2 | - | - | - | - | 1 | 12 | 1 | 12 |
| Hong Kong | - | - | - | - | 1 | 10 | - | - | 1 | 10 | - | - | - | - | - | - | - | - |
| Hungary | - | - | - | - | 1 | 1 | - | - | 1 | 1 | - | - | 8 | 63 | 5 | 43 | 13 | 106 |
| India | - | - | - | - | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 12 | 3 | 32 | 8 | 84 | 12 | 128 |
| Indonesia | - | - | - | - | 1 | 6 | - | - | 1 | 6 | 2 | 12 | 3 | 30 | 7 | 79 | 12 | 121 |
| Iran | 4 | 42 | - | - | 2 | 13 | - | - | 6 | 55 | - | - | 2 | 20 | 5 | 57 | 7 | 77 |
| Iraq | 1 | 2 | - | - | - | - | - | - | 1 | 2 | - | - | 2 | 20 | 4 | 48 | 6 | 68 |
| Italy | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 12 | 1 | 12 |
| Jamaica | - | - | - | - | 1 | 1 | - | - | 1 | 1 | - | - | - | - | - | - | - | - |
| Jordan | 1 | 2 | - | - | - | - | - | - | 1 | 2 | - | - | - | - | - | - | - | - |
| Kenya | 1 | 1 | - | - | - | - | - | - | 1 | 1 | - | - | - | - | - | - | - | - |
| Korea, R. | - | - | - | - | 2 | 5 | - | - | 2 | 5 | 1 | 12 | 6 | 66 | 7 | 71 | 14 | 149 |
| Lebanon | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 6 | - | - | 1 | 6 |
| Mexico | 2 | 8 | - | - | 4 | 18 | - | - | 6 | 26 | - | - | 1 | 6 | 4 | 18 | 5 | 24 |
| Morocco | 2 | 12 | - | - | - | - | - | - | 2 | 12 | - | - | - | - | - | - | - | - |
| Nicaragua | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 5 | - | - | 1 | 5 |
| Nigeria | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 12 | - | - | 1 | 12 |
| Pakistan | 2 | 13 | - | - | 5 | 13 | - | - | 7 | 26 | - | - | 4 | 44 | 6 | 63 | 10 | 107 |
| Peru | 1 | 5 | - | - | 1 | 8 | - | - | 2 | 13 | - | - | - | - | - | - | - | - |
| Philippines | 4 | 12 | - | - | 2 | 10 | - | - | 6 | 22 | 2 | 24 | 5 | 31 | 7 | 81 | 14 | 136 |
| Poland | - | - | - | - | - | - | - | - | - | - | 2 | 12 | 7 | 66 | 6 | 48 | 15 | 126 |
| Portugal | - | - | - | - | 3 | 7 | - | - | 3 | 7 | - | - | - | - | - | - | - | - |
| Romania | - | - | - | - | 3 | 7 | - | - | 3 | 7 | 1 | 6 | 9 | 77 | 4 | 42 | 14 | 125 |
| Saudi Arabia | - | - | - | - | 1 | 12 | - | - | 1 | 12 | - | - | - | - | - | - | - | - |
| Senegal | - | - | - | - | 1 | 5 | - | - | 1 | 5 | - | - | - | - | - | - | - | - |
| South Africa | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 6 | 1 | 6 |
| Sudan | - | - | - | - | 2 | 18 | - | - | 2 | 18 | - | - | 2 | 24 | - | - | 2 | 24 |
| Thailand | 2 | 4 | - | - | 3 | 7 | - | - | 5 | 11 | - | - | 3 | 34 | 7 | 80 | 10 | 114 |
| Tunisia | - | - | - | - | 3 | 10 | - | - | 3 | 10 | 1 | 3 | 6 | 41 | 1 | 6 | 8 | 50 |
| Turkey | 1 | 12 | - | - | - | - | - | - | 1 | 12 | - | - | 8 | 71 | 3 | 32 | 11 | 103 |
| UAR | 1 | 6 | - | - | - | - | - | - | 1 | 6 | 2 | 10 | 2 | 15 | 6 | 64 | 10 | 89 |
| Uruguay | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 19 | - | - | 3 | 19 |
| Venezuela | - | - | - | - | 1 | 6 | - | - | 1 | 6 | - | - | - | - | 1 | 12 | 1 | 12 |
| Viet-Nam | 1 | 3 | - | - | 2 | 9 | - | - | 3 | 12 | - | - | 4 | 40 | 1 | 10 | 5 | 50 |
| Yugoslavia | 7 | 12 | - | - | 1 | 1 | - | - | 8 | 13 | 3 | 13 | 7 | 66 | 6 | 58 | 16 | 137 |
| Sub-total | 48 | 213 | - | - | 64 | 253 | 1 | 1 | 113 | 467 | 18 | 134 | 113 | 1026 | 138 | 1419 | 269 | 2579 |

| 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 | | Paid | | Free | | | | | | Type I | | Type II | | | |
| | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2) |
| International projects | | | | | | | | | | | | | | | | | | |
| Asia and the Far East | 2 | 11 | - | - | - | - | - | - | 2 | 11 | - | - | - | - | - | - | - | - |
| Short-term training courses | 49 | 18 | 4 | 1 | 8 | 3 | - | - | 61 | 22 | 84 | 106 | 49 | 54 | - | - | 133 | 160 |
| Research grants and scientific visits | - | - | - | - | - | - | - | - | - | - | - | - | 11 | 39 | - | - | 11 | 39 |
| Sub-total | 51 | 29 | 4 | 1 | 8 | 3 | - | - | 63 | 33 | 84 | 106 | 60 | 93 | - | - | 144 | 199 |
| GRAND TOTAL | 99 | 242 | 4 | 1 | 72 | 256 | 1 | 1 | 176[b/] | 500 | 102 | 240 | 173 | 1119 | 138 | 1419 | 413 | 2778 |

(1) Number.

(2) Number of man-months.

a/ One 15-month award was financed from two sources (12 man-months under Type II and 3 man-months under Type I fellowships); the award is shown under "Type II".

b/ The difference between the number of assignments (176) and the actual number of experts (172) is due to the fact that four experts were each assigned to two different countries.

Table 7

## Financial summary: 1967

(in thousands of dollars)

| RECIPIENT | Expenditures and assistance provided in kind[a] | | | | | | | | | Assistance outstanding | | TOTAL (8) + (9) + (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | | | | Source | | | | | Unliquidated obligations | In kind balance[a] | |
| | | | | | UNDP/TA | | Agency | | | | | |
| | Experts | Equipment | Fellowships | TOTAL | Monetary | In kind[a] | Monetary | In kind[a] | TOTAL | at 31 December 1967 | | |
| | (1) | (2) | (3) | (4) | (5a) | (5b) | (6) | (7) | (8) | (9) | (10) | (11) |
| Country programmes | | | | | | | | | | | | |
| Afghanistan | 4.2 | 1.1 | 3.0 | 8.3 | 4.2 | - | 1.1 | 3.0 | 8.3 | 0.3 | 6.1 | 14.7 |
| Albania | - | - | 1.5 | 1.5 | - | - | - | 1.5 | 1.5 | - | 5.4 | 6.9 |
| Algeria | - | - | 2.7 | 2.7 | - | - | 0.1 | 2.6 | 2.7 | - | 4.1 | 6.8 |
| Argentina | 30.7 | 16.1 | 20.9 | 67.7 | 26.3 | - | 27.1 | 14.3 | 67.7 | 37.3 | 22.0 | 127.0 |
| Austria | 1.1 | - | 4.4 | 5.5 | - | - | 3.8 | 1.7 | 5.5 | 6.2 | - | 11.7 |
| Bolivia | 15.2 | 16.4 | 4.4 | 36.0 | 16.4 | - | 15.2 | 4.4 | 36.0 | 2.6 | 6.1 | 44.7 |
| Brazil | 18.7 | 39.1 | 41.8 | 99.6 | 53.1 | - | 19.8 | 26.7 | 99.6 | 29.2 | 56.8 | 185.6 |
| Bulgaria | - | 5.2 | 14.6 | 19.8 | - | - | 9.3 | 10.5 | 19.8 | 23.5 | 22.6 | 65.9 |
| Burma | 21.6 | 16.4 | 2.9 | 40.9 | 35.8 | - | 3.4 | 1.7 | 40.9 | 7.9 | - | 48.8 |
| Cambodia | 1.4 | 0.1 | - | 1.5 | - | - | 1.5 | - | 1.5 | - | - | 1.5 |
| Cameroon | - | 1.6 | - | 1.6 | 1.6 | - | - | - | 1.6 | - | - | 1.6 |
| Ceylon | 5.9 | 3.0 | 3.3 | 12.2 | 1.5 | - | 10.7 | - | 12.2 | 12.6 | - | 24.8 |
| Chile | 23.4 | 7.0 | 17.6 | 48.0 | 2.7 | - | 24.0 | 21.3 | 48.0 | 8.1 | 31.0 | 87.1 |
| China | 7.6 | 9.9 | 58.4 | 75.9 | 21.0 | - | 20.9 | 34.0 | 75.9 | 26.2 | 24.7 | 126.8 |
| Colombia | 25.4 | 11.1 | 17.6 | 54.1 | 18.3 | - | 12.0 | 23.8 | 54.1 | 11.0 | 18.1 | 83.2 |
| Congo, D.R. | 13.6 | 0.4 | 3.5 | 17.5 | 5.3 | - | 10.9 | 1.3 | 17.5 | 4.3 | 2.3 | 24.1 |
| Costa Rica | - | - | - | - | - | - | - | - | - | - | 8.0 | 8.0 |
| Cuba | 3.0 | 1.1 | - | 4.1 | - | - | 4.1 | - | 4.1 | 0.1 | - | 4.2 |
| CSSR | - | - | 27.6 | 27.6 | - | - | 20.3 | 7.3 | 27.6 | 2.4 | 21.9 | 51.9 |
| Ecuador | 8.5 | 1.4 | 1.8 | 11.7 | 1.0 | - | 8.9 | 1.8 | 11.7 | 3.5 | - | 15.2 |
| El Salvador | 4.8 | (4.0) | 1.5 | 2.3 | - | - | 0.8 | 1.5 | 2.3 | 0.1 | 2.0 | 4.4 |
| Ethiopia | 9.7 | - | - | 9.7 | - | - | 9.7 | - | 9.7 | - | - | 9.7 |
| Ghana | 17.4 | 3.4 | 12.8 | 33.6 | 19.1 | - | 4.3 | 10.2 | 33.6 | 6.1 | 9.8 | 49.5 |
| Greece | 54.1 | 2.3 | 12.1 | 68.5 | 32.3 | - | 32.3 | 3.9 | 68.5 | 27.6 | 8.4 | 104.5 |
| Guatemala | 4.1 | - | 3.6 | 7.7 | - | - | 4.8 | 2.9 | 7.7 | - | 5.9 | 13.6 |
| Hong Kong | 14.4 | 13.4 | - | 27.8 | - | - | 27.8 | - | 27.8 | 1.2 | - | 29.0 |
| Hungary | 2.9 | 26.6 | 23.6 | 53.1 | 21.3 | - | 24.1 | 7.7 | 53.1 | 32.1 | 13.8 | 99.0 |
| India | 6.7 | - | 53.0 | 59.7 | 17.4 | - | 7.1 | 35.2 | 59.7 | 25.1 | 52.9 | 137.7 |
| Indonesia | 12.4 | 7.5 | 37.0 | 56.9 | - | - | 27.7 | 29.2 | 56.9 | 41.1 | 49.3 | 147.3 |
| Iran | 81.5 | 14.3 | 14.6 | 110.4 | 75.1 | - | 26.6 | 8.7 | 110.4 | 24.6 | 17.2 | 152.2 |
| Iraq | 3.0 | - | 11.9 | 14.9 | 8.8 | - | 1.0 | 5.1 | 14.9 | 9.1 | 14.2 | 38.2 |
| Israel | 1.7 | 31.2 | 6.1 | 39.0 | 12.0 | - | 27.0 | - | 39.0 | 2.6 | - | 41.6 |
| Italy | - | - | 1.0 | 1.0 | - | - | 1.0 | - | 1.0 | - | 3.0 | 4.0 |
| Jamaica | 0.8 | - | - | 0.8 | - | - | 0.8 | - | 0.8 | 6.0 | - | 6.8 |
| Japan | - | - | 3.3 | 3.3 | - | - | 3.3 | - | 3.3 | 1.5 | - | 4.8 |
| Jordan | 6.1 | - | 7.5 | 13.6 | 13.6 | - | - | - | 13.6 | 5.5 | - | 19.1 |
| Kenya | 1.3 | 16.7 | - | 18.0 | 11.7 | - | 6.3 | - | 18.0 | 0.2 | - | 18.2 |
| Korea, R. | 7.3 | 6.2 | 46.2 | 59.7 | 1.0 | - | 23.6 | 35.1 | 59.7 | 37.0 | 32.6 | 129.3 |
| Mexico | 39.8 | 21.8 | 19.2 | 80.8 | 17.6 | - | 42.2 | 21.0 | 80.8 | 16.6 | 6.2 | 103.6 |
| Morocco | 17.7 | 8.1 | - | 25.8 | 17.7 | - | 8.1 | - | 25.8 | 2.4 | - | 28.2 |
| Nicaragua | - | - | 3.9 | 3.9 | - | - | 3.9 | - | 3.9 | - | - | 3.9 |
| Nigeria | - | 2.1 | 13.9 | 16.0 | 2.4 | - | 4.2 | 9.4 | 16.0 | 5.5 | 21.9 | 43.4 |
| Pakistan | 39.9 | 13.4 | 43.9 | 97.2 | 36.1 | - | 38.4 | 22.7 | 97.2 | 29.7 | 41.3 | 168.2 |
| Paraguay | - | - | 2.2 | 2.2 | - | - | - | 2.2 | 2.2 | - | 0.4 | 2.6 |
| Peru | 24.8 | 10.3 | 0.4 | 35.5 | 10.7 | - | 16.6 | 8.2 | 35.5 | 9.6 | - | 45.1 |
| Philippines | 32.7 | 29.8 | 39.9 | 102.4 | 34.2 | - | 39.5 | 28.7 | 102.4 | 30.2 | 34.6 | 167.2 |
| Poland | - | - | 39.6 | 39.6 | 15.9 | - | 16.0 | 7.7 | 39.6 | 69.0 | 14.1 | 122.7 |
| Portugal | 13.2 | - | 5.8 | 19.0 | - | - | 19.0 | - | 19.0 | 4.0 | - | 23.0 |
| Rhodesia | - | - | - | - | - | - | - | - | - | - | 7.2 | 7.2 |
| Romania | 11.3 | 10.4 | 36.7 | 58.4 | 8.5 | - | 43.0 | 6.9 | 58.4 | 28.8 | 14.3 | 101.5 |
| Saudi Arabia | 17.7 | 2.9 | - | 20.6 | - | - | 20.6 | - | 20.6 | 6.8 | - | 27.4 |
| Senegal | 8.8 | 5.0 | - | 13.8 | - | - | 13.8 | - | 13.8 | 32.8 | - | 46.6 |
| South Africa | - | - | - | - | - | - | - | - | - | - | 1.1 | 1.1 |
| Spain | - | - | 1.7 | 1.7 | - | - | 1.7 | - | 1.7 | - | - | 1.7 |
| Sudan | 25.6 | 15.4 | 0.6 | 41.6 | 0.7 | - | 33.6 | 7.3 | 41.6 | 10.9 | - | 52.5 |

| RECIPIENT | Expenditures and assistance provided in kind[a] | | | | | | | | | Assistance outstanding | | TOTAL (8) + (9) + (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | | | | Source | | | | | Unliquidated obligations | In kind balance[a] | |
| | | | | | UNDP/TA | | Agency | | TOTAL | | | |
| | Experts | Equipment | Fellowships | TOTAL | Monetary | In kind[a] | Monetary | In kind[a] | | at 31 December 1967 | | |
| | (1) | (2) | (3) | (4) | (5a) | (5b) | (6) | (7) | (8) | (9) | (10) | (11) |
| Thailand | 23.8 | 19.4 | 35.9 | 79.1 | 19.3 | - | 24.9 | 34.9 | 79.1 | 40.1 | 33.1 | 152.3 |
| Tunisia | 18.4 | 14.5 | 17.5 | 50.4 | 2.9 | - | 37.4 | 10.1 | 50.4 | 13.6 | 3.9 | 67.9 |
| Turkey | 18.7 | 17.0 | 28.9 | 64.6 | 19.8 | - | 22.8 | 22.0 | 64.6 | 29.1 | 11.3 | 105.0 |
| Uganda | - | 13.3 | - | 13.3 | - | - | 13.3 | - | 13.3 | 1.3 | - | 14.6 |
| UAR | 11.6 | 0.9 | 34.4 | 46.9 | 15.3 | - | 5.8 | 25.8 | 46.9 | 41.8 | 16.5 | 105.2 |
| Uruguay | - | 0.4 | 3.9 | 4.3 | - | - | 4.3 | - | 4.3 | 14.4 | 7.0 | 25.7 |
| Venezuela | 7.3 | - | 14.7 | 22.0 | - | - | 7.3 | 14.7 | 22.0 | 2.4 | 7.0 | 31.4 |
| Viet-Nam | 21.5 | 18.0 | 10.7 | 50.2 | 6.4 | - | 25.1 | 18.7 | 50.2 | 19.0 | 2.7 | 71.9 |
| Yugoslavia | 22.4 | 19.8 | 34.7 | 76.9 | 22.5 | - | 39.7 | 14.7 | 76.9 | 42.5 | 14.6 | 134.0 |
| Sub-total | 763.7 | 470.0 | 848.7 | 2082.4 | 629.5 | - | 902.5 | 550.4 | 2082.4 | 845.5 | 675.4 | 3603.3 |
| International projects | | | | | | | | | | | | |
| Africa | 0.7 | 0.2 | 3.0 | 3.9 | 3.9 | - | - | - | 3.9 | - | - | 3.9 |
| Americas | 35.3 | 12.8 | 7.5 | 55.6 | 52.3 | 3.3 | - | - | 55.6 | 18.2 | - | 73.8 |
| Asia and the Far East | 36.0 | 9.3 | 5.7 | 51.0 | 48.9 | - | 2.1 | - | 51.0 | 17.7 | - | 68.7 |
| Inter-regional projects | 24.4 | 27.2 | 59.6 | 111.2 | 61.7 | - | 49.5 | - | 111.2 | 23.9 | - | 135.1 |
| Theoretical Physics Centre | - | - | 35.0 | 35.0 | - | - | 35.0 | - | 35.0 | - | - | 35.0 |
| Sub-total | 96.4 | 49.5 | 110.8 | 256.7 | 166.8 | 3.3 | 86.6 | - | 256.7 | 59.8 | - | 316.5 |
| Miscellaneous | | | | | | | | | | | | |
| Bank charges | 10.7 | - | - | 10.7 | 5.2 | - | 5.5 | - | 10.7 | - | - | 10.7 |
| GRAND TOTAL | 870.8 | 519.5 | 959.5 | 2349.8 | 801.5 | 3.3 | 994.6 | 550.4 | 2349.8 | 905.3 | 675.4 | 3930.5 |

a/ Assistance "in kind" can only be estimated; see Introductory Notes, paras 4 and 6, to this Annex.

## Table 8

## Financial summary: 1958-1967

(in thousands of dollars)

| RECIPIENT | Expenditures and assistance provided in kind[a] | | | | | | | | | Assistance outstanding | | TOTAL (8) + (9) + (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | | | | Source | | | | | Unliquidated obligations | In kind balance[a] | |
| | | | | | UNDP/TA | | Agency | | | | | |
| | Experts | Equipment | Fellowships | TOTAL | Monetary | In kind[a] | Monetary | In kind[a] | TOTAL | at 31 December 1967 | | |
| | (1) | (2) | (3) | (4) | (5a) | (5b) | (6) | (7) | (8) | (9) | (10) | (11) |
| Country programmes | | | | | | | | | | | | |
| Afghanistan | 74.9 | 78.9 | 50.1 | 203.9 | 70.1 | - | 86.8 | 47.0 | 203.9 | 0.3 | 6.1 | 210.3 |
| Albania | - | - | 4.9 | 4.9 | - | - | - | 4.9 | 4.9 | - | 5.4 | 10.3 |
| Algeria | - | - | 4.0 | 4.0 | - | - | 0.8 | 3.2 | 4.0 | - | 4.1 | 8.1 |
| Argentina | 382.9 | 214.9 | 346.1 | 943.9 | 325.9 | - | 383.3 | 234.7 | 943.9 | 37.3 | 22.0 | 1 003.2 |
| Austria | 62.0 | 13.8 | 102.8 | 178.6 | - | - | 119.1 | 59.5 | 178.6 | 6.2 | - | 184.8 |
| Bolivia | 60.4 | 29.8 | 25.1 | 115.3 | 16.4 | - | 87.4 | 11.5 | 115.3 | 2.6 | 6.1 | 124.0 |
| Brazil | 385.9 | 209.3 | 216.5 | 811.7 | 326.1 | - | 401.8 | 83.8 | 811.7 | 29.2 | 56.8 | 897.7 |
| Bulgaria | 4.0 | 14.6 | 154.8 | 173.4 | - | - | 120.3 | 53.1 | 173.4 | 23.5 | 22.6 | 219.5 |
| Burma | 184.3 | 110.5 | 71.0 | 365.8 | 266.3 | - | 47.2 | 52.3 | 365.8 | 7.9 | - | 373.7 |
| Cambodia | 37.8 | 16.9 | 1.7 | 56.4 | - | - | 49.1 | 7.3 | 56.4 | - | - | 56.4 |
| Cameroon | - | 1.6 | - | 1.6 | 1.6 | - | - | - | 1.6 | - | - | 1.6 |
| Ceylon | 160.1 | 73.2 | 26.3 | 259.6 | 90.3 | - | 132.4 | 36.9 | 259.6 | 12.6 | - | 272.2 |
| Chile | 119.0 | 75.0 | 99.5 | 293.5 | 98.6 | - | 116.4 | 78.5 | 293.5 | 8.1 | 31.0 | 332.6 |
| China | 132.4 | 67.5 | 346.7 | 546.6 | 157.7 | - | 140.4 | 248.5 | 546.6 | 26.2 | 24.7 | 597.5 |
| Colombia | 113.2 | 39.6 | 89.0 | 241.8 | 85.0 | - | 84.5 | 72.3 | 241.8 | 11.0 | 18.1 | 270.9 |
| Congo, D.R. | 32.5 | 28.8 | 7.1 | 68.4 | 9.6 | - | 49.1 | 9.7 | 68.4 | 4.3 | 2.3 | 75.0 |
| Costa Rica | - | - | - | - | - | - | - | - | - | - | 8.0 | 8.0 |
| Cuba | 15.3 | 1.2 | 6.8 | 23.3 | - | - | 21.1 | 2.2 | 23.3 | 0.1 | - | 23.4 |
| CSSR | - | - | 193.6 | 193.6 | - | - | 144.0 | 49.6 | 193.6 | 2.4 | 21.9 | 217.9 |
| Denmark | 12.9 | - | 31.3 | 44.2 | - | - | 31.2 | 13.0 | 44.2 | - | - | 44.2 |
| Ecuador | 18.2 | 14.7 | 58.7 | 91.6 | 17.8 | - | 38.7 | 35.1 | 91.6 | 3.5 | - | 95.1 |
| El Salvador | 22.7 | 4.0 | 6.5 | 33.2 | 14.1 | - | 11.7 | 7.4 | 33.2 | 0.1 | 2.0 | 35.3 |
| Ethiopia | 9.7 | 8.6 | - | 18.3 | - | - | 18.3 | - | 18.3 | - | - | 18.3 |
| Finland | 0.5 | - | 39.4 | 39.9 | 1.8 | - | 7.2 | 30.9 | 39.9 | - | - | 39.9 |
| France | - | - | 15.9 | 15.9 | - | - | 2.4 | 13.5 | 15.9 | - | - | 15.9 |
| Germany, F.R. | - | 1.6 | 1.4 | 3.0 | - | - | 3.0 | - | 3.0 | - | - | 3.0 |
| Ghana | 159.0 | 39.2 | 56.9 | 255.1 | 72.5 | - | 157.1 | 25.5 | 255.1 | 6.1 | 9.8 | 271.0 |
| Greece | 374.5 | 53.0 | 202.1 | 629.6 | 224.3 | - | 256.4 | 148.9 | 629.6 | 27.6 | 8.4 | 665.6 |
| Guatemala | 13.9 | 27.5 | 19.2 | 60.6 | 29.1 | - | 22.3 | 9.2 | 60.6 | - | 5.9 | 66.5 |
| Hong Kong | 19.7 | 20.6 | - | 40.3 | - | - | 40.3 | - | 40.3 | 1.2 | - | 41.5 |
| Hungary | 2.9 | 39.3 | 227.3 | 269.5 | 21.3 | - | 194.6 | 53.6 | 269.5 | 32.1 | 13.8 | 315.4 |
| Iceland | 19.7 | 62.8 | 13.0 | 95.5 | - | - | 43.1 | 52.4 | 95.5 | - | - | 95.5 |
| India | 9.5 | 30.5 | 440.1 | 480.1 | 117.1 | - | 102.6 | 260.4 | 480.1 | 25.1 | 52.9 | 558.1 |
| Indonesia | 173.8 | 43.2 | 435.1 | 652.1 | 134.9 | - | 202.3 | 314.9 | 652.1 | 41.1 | 49.3 | 742.5 |
| Iran | 305.9 | 19.9 | 276.2 | 602.0 | 245.0 | - | 201.4 | 155.6 | 602.0 | 24.6 | 17.2 | 643.8 |
| Iraq | 108.9 | 20.8 | 176.1 | 305.8 | 60.9 | - | 138.6 | 106.3 | 305.8 | 9.1 | 14.2 | 329.1 |
| Israel | 131.5 | 130.3 | 94.6 | 356.4 | 108.6 | - | 162.2 | 85.6 | 356.4 | 2.6 | - | 359.0 |
| Italy | 9.0 | - | 160.1 | 169.1 | - | - | 95.6 | 73.5 | 169.1 | - | 3.0 | 172.1 |
| Ivory Coast | 6.0 | 4.3 | 2.9 | 13.2 | 10.3 | - | 2.9 | - | 13.2 | - | - | 13.2 |
| Jamaica | 0.8 | - | - | 0.8 | - | - | 0.8 | - | 0.8 | 6.0 | - | 6.8 |
| Japan | 50.1 | - | 320.8 | 370.9 | 49.8 | - | 127.9 | 193.2 | 370.9 | 1.5 | - | 372.4 |
| Jordan | 27.6 | - | 7.5 | 35.1 | 35.1 | - | - | - | 35.1 | 5.5 | - | 40.6 |
| Kenya | 12.9 | 49.4 | - | 62.3 | 13.9 | - | 48.4 | - | 62.3 | 0.2 | - | 62.5 |
| Korea, R. | 169.6 | 57.3 | 464.0 | 690.9 | 112.4 | - | 293.4 | 285.1 | 690.9 | 37.0 | 32.6 | 760.5 |
| Lebanon | 29.5 | 9.5 | 13.0 | 52.0 | - | - | 45.0 | 7.0 | 52.0 | - | - | 52.0 |
| Madagascar | - | - | 1.9 | 1.9 | - | - | 1.9 | - | 1.9 | - | - | 1.9 |
| Mali | 2.1 | - | - | 2.1 | 2.1 | - | - | - | 2.1 | - | - | 2.1 |
| Mexico | 239.7 | 103.8 | 156.4 | 499.9 | 168.3 | - | 222.0 | 109.6 | 499.9 | 16.6 | 6.2 | 522.7 |
| Monaco | - | - | 4.2 | 4.2 | - | - | 4.2 | - | 4.2 | - | - | 4.2 |
| Morocco | 59.3 | 46.0 | 39.5 | 144.8 | 42.0 | - | 79.1 | 23.7 | 144.8 | 2.4 | - | 147.2 |
| Netherlands | - | - | 17.8 | 17.8 | - | - | 10.8 | 7.0 | 17.8 | - | - | 17.8 |
| New Zealand | - | - | 37.2 | 37.2 | - | - | 26.2 | 11.0 | 37.2 | - | - | 37.2 |
| Nicaragua | - | - | 20.1 | 20.1 | - | - | 20.1 | - | 20.1 | - | - | 20.1 |
| Nigeria | 8.2 | 23.6 | 16.5 | 48.3 | 6.2 | - | 14.7 | 27.4 | 48.3 | 5.5 | 21.9 | 75.7 |
| Norway | - | - | 9.6 | 9.6 | - | - | 5.3 | 4.3 | 9.6 | - | - | 9.6 |
| Pakistan | 286.8 | 160.3 | 265.0 | 712.1 | 222.5 | - | 326.9 | 162.7 | 712.1 | 29.7 | 41.3 | 783.1 |
| Panama | 4.1 | - | - | 4.1 | 4.1 | - | - | - | 4.1 | - | - | 4.1 |
| Paraguay | 10.3 | 4.6 | 23.0 | 37.9 | - | - | 31.3 | 6.6 | 37.9 | - | 0.4 | 38.3 |
| Peru | 69.5 | 32.0 | 35.0 | 136.5 | 55.3 | - | 59.0 | 22.2 | 136.5 | 9.6 | - | 146.1 |
| Philippines | 211.9 | 213.0 | 406.3 | 831.2 | 313.3 | - | 250.5 | 267.4 | 831.2 | 30.2 | 34.6 | 896.0 |

| RECIPIENT | Expenditures and assistance provided in kind[a] | | | | | | | | | Assistance outstanding | | TOTAL (8) + (9) + (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type | | | | Source | | | | | | | |
| | | | | | UNDP/TA | | Agency | | | | | |
| | Experts | Equipment | Fellowships | TOTAL | Monetary | In kind[a] | Monetary | In kind[a] | TOTAL | Unliquidated obligations | In kind balance[a] | |
| | | | | | | | | | | at 31 December 1967 | | |
| | (1) | (2) | (3) | (4) | (5a) | (5b) | (6) | (7) | (8) | (9) | (10) | (11) |
| Poland | 0.8 | 54.6 | 412.5 | 467.9 | 86.0 | - | 262.5 | 119.4 | 467.9 | 69.0 | 14.1 | 551.0 |
| Portugal | 55.0 | 45.9 | 37.7 | 138.6 | - | - | 86.4 | 52.2 | 138.6 | 4.0 | - | 142.6 |
| Rhodesia | 2.2 | 17.8 | 7.6 | 27.6 | 25.4 | - | 2.2 | - | 27.6 | - | 7.2 | 34.8 |
| Romania | 12.8 | 19.2 | 122.0 | 154.0 | 9.4 | - | 99.5 | 45.1 | 154.0 | 28.8 | 14.3 | 197.1 |
| Saudi Arabia | 17.7 | 2.9 | 3.5 | 24.1 | - | - | 24.1 | - | 24.1 | 6.8 | - | 30.9 |
| Senegal | 45.7 | 49.6 | 8.9 | 104.2 | 53.2 | - | 50.2 | 0.8 | 104.2 | 32.8 | - | 137.0 |
| Singapore | 3.7 | 4.8 | - | 8.5 | - | - | 4.8 | 3.7 | 8.5 | - | - | 8.5 |
| South Africa | - | - | 106.7 | 106.7 | - | - | 42.1 | 64.6 | 106.7 | - | 1.1 | 107.8 |
| Spain | - | - | 49.7 | 49.7 | - | - | 31.0 | 18.7 | 49.7 | - | - | 49.7 |
| Sudan | 59.1 | 37.9 | 18.0 | 115.0 | 15.9 | - | 91.0 | 8.1 | 115.0 | 10.9 | - | 125.9 |
| Sweden | - | - | 8.8 | 8.8 | - | - | 8.8 | - | 8.8 | - | - | 8.8 |
| Switzerland | - | - | 12.6 | 12.6 | - | - | 5.6 | 7.0 | 12.6 | - | - | 12.6 |
| Thailand | 413.1 | 99.5 | 423.5 | 936.1 | 323.9 | - | 391.6 | 220.6 | 936.1 | 40.1 | 33.1 | 1 009.3 |
| Tunisia | 118.9 | 64.5 | 101.0 | 284.4 | 87.2 | - | 168.8 | 28.4 | 284.4 | 13.6 | 3.9 | 301.9 |
| Turkey | 304.0 | 145.8 | 323.0 | 772.8 | 159.6 | - | 385.7 | 227.5 | 772.8 | 29.1 | 11.3 | 813.2 |
| Uganda | 16.7 | 31.5 | 5.3 | 53.5 | 40.2 | - | 13.3 | - | 53.5 | 1.3 | - | 54.8 |
| UAR | 164.8 | 158.9 | 415.9 | 739.6 | 170.7 | - | 289.9 | 279.0 | 739.6 | 41.8 | 16.5 | 797.9 |
| USA | - | - | 2.6 | 2.6 | - | - | 2.6 | - | 2.6 | - | - | 2.6 |
| Uruguay | 27.4 | 7.6 | 15.7 | 50.7 | 13.3 | - | 33.0 | 4.4 | 50.7 | 14.4 | 7.0 | 72.1 |
| Venezuela | 36.7 | 30.7 | 125.7 | 193.1 | 14.0 | - | 73.7 | 105.4 | 193.1 | 2.4 | 7.0 | 202.5 |
| Viet-Nam | 41.5 | 45.5 | 53.3 | 140.3 | 24.6 | - | 69.3 | 46.4 | 140.3 | 19.0 | 2.7 | 162.0 |
| Yugoslavia | 91.8 | 90.1 | 513.4 | 695.3 | 254.2 | - | 287.3 | 153.8 | 695.3 | 42.5 | 14.6 | 752.4 |
| Sub-total | 5757.3 | 3102.2 | 8608.0 | 17 467.5 | 4807.9 | - | 7706.5 | 4953.1 | 17 467.5 | 845.5 | 675.4 | 18 988.4 |
| International projects | | | | | | | | | | | | |
| Africa | 18.7 | 20.7 | 9.2 | 48.6 | 48.6 | - | - | - | 48.6 | - | - | 48.6 |
| Americas | 84.6 | 52.8 | 43.0 | 180.4 | 176.5 | 3.3 | - | 0.6 | 180.4 | 18.2 | - | 198.6 |
| Asia and the Far East | 149.2 | 46.2 | 23.7 | 219.1 | 215.5 | - | 2.1 | 1.5 | 219.1 | 17.7 | - | 236.8 |
| 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 | 236.8 | 139.8 | 570.2 | 946.8 | 509.7 | - | 427.6 | 9.5 | 946.8 | 23.9 | - | 970.7 |
| Theoretical Physics Centre | - | - | 140.0 | 140.0 | - | - | 140.0 | - | 140.0 | - | - | 140.0 |
| Sub-total | 516.1 | 279.3 | 808.7 | 1 604.1 | 1019.5 | 3.3 | 569.7 | 11.6 | 1 604.1 | 59.8 | - | 1 663.9 |
| Miscellaneous | | | | | | | | | | | | |
| Bank charges | 44.5 | - | - | 44.5 | 17.6 | - | 26.9 | - | 44.5 | - | - | 44.5 |
| Mobile laboratories storage | - | 6.5 | - | 6.5 | - | - | 6.5 | - | 6.5 | - | - | 6.5 |
| GRAND TOTAL | 6317.9 | 3388.0 | 9416.7 | 19 122.6 | 5845.0 | 3.3 | 8309.6 | 4964.7 | 19 122.6 | 905.3 | 675.4 | 20 703.3 |

a/ Assistance "in kind" can only be estimated; see Introductory Notes, paras 4, 6 and 7, to this Annex.

# ANNEX II

## REGIONAL AND INTER-REGIONAL PROJECTS: 1967

### A. UNDP/TA

1. Training course on applications of radioisotopes;
   Cairo, UAR, 1 April-31 July.

2. Inter-regional training course on the application of radioisotopes in hydrology;
   Ankara, Turkey, 18 April-26 May.

3. Regional training course on radiation immunology;
   Buenos Aires, Argentina, 4 September-27 October.

4. Advanced training course on radioactive waste management;
   Oxford, United Kingdom, 11-22 September.

5. Regional training course on planning for the handling of radiation accidents;
   Manila, Philippines, 2-13 October.

6. Regional advanced training course on the medical applications of radioisotopes;
   Montevideo, Uruguay, 6 November-1 December.

7. Regional survey course on prospects and problems of nuclear power applications of developing countries;
   Santiago, Chile, 4-8 December.

8. Regional adviser on rice production;
   Bangkok, Thailand.

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

### B. AGENCY'S REGULAR PROGRAMME

1. International training course on radiation biology, including haematological and cytological methods for assaying radiation damage in man;
   Javna, Israel, 22 May-7 June.

2. International training course on food irradiation technology and techniques;
   Michigan, USA, 19 June-11 August.

3. International advanced training course on bio-assay methods;
   Seibersdorf, Austria, 30 October-17 November.

C. FAO REGULAR PROGRAMME

1. International training course on the use of radioisotopes and radiation in entomology;

   Florida, USA, 2 October-24 November.

2. Inter-regional training course on the use of radioisotopes and radiation in animal science and veterinary medicine;

   Brno, CSSR, 2 October-11 November.

## ANNEX III

## IAEA HYDROLOGICAL SERVICES: SUB-CONTRACTS IN 1967[1/]

| Country and project number | Title | Cost of services provided |
|---|---|---|
| Jamaica JAM-3 | Groundwater survey in two areas of the interior (FAO) | $ 3 480 |
| Jordan JOR-9 | Investigation of the sandstone aquifers of East Jordan (FAO) | 7 100 |
| Niger NER-7 | Development of animal production and water resources in Eastern Niger (FAO) | 1 900 |
| Niger NER-8 | Surveys for the agricultural development of the Dallol Maouri (FAO) | 740 |
| Spain SPA-9 | Hydrogeological investigations in the Guadalquivir River Basin (FAO) | 2 710 |
| Uganda UGA-5 | Karamoja groundwater survey (United Nations) | 870 |
| Africa Regional REG-79 | Survey of the water resources of the Chad Basin for development purposes (FAO) | 480 |
| | TOTAL | $16 780 |

1/ In 1967 all such sub-contracted services were provided to the United Nations and FAO in connection with UNDP/SF projects.