



International Atomic Energy Agency

ANNUAL REPORT TO
THE ECONOMIC AND
SOCIAL COUNCIL OF
THE UNITED NATIONS
FOR 1967-68

**THE AGENCY'S ANNUAL REPORT TO THE ECONOMIC AND
SOCIAL COUNCIL OF THE UNITED NATIONS FOR 1967-1968**

The text of the Agency's annual report to the Economic and Social Council of the United Nations for 1967-68 is reproduced in this document for the information of all Members.

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LIST OF ABBREVIATIONS

ACABQ	Advisory Committee on Administrative and Budgetary Questions (of the General Assembly of the United Nations)
ACC	Administrative Committee on Co-ordination (of the United Nations)
Agency	International Atomic Energy Agency
ECOSOC	Economic and Social Council of the United Nations
ENEA	European Nuclear Energy Agency of OECD
FAO	Food and Agriculture Organization of the United Nations
IAEA	International Atomic Energy Agency
IANEC	Inter-American Nuclear Energy Commission of the OAS
ICSU	International Council of Scientific Unions
IHD	International Hydrological Decade
ILO	International Labour Organisation
IOC	International Oceanographic Commission
OAS	Organisation of American States
OAU	Organization of African Unity
OECD	Organization for Economic Co-operation and Development
UNDP/SF	United Nations Development Programme/Special Fund
UNDP/TA	United Nations Development Programme/Technical Assistance
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

NOTE

All sums of money are expressed in United States dollars.

ANNUAL REPORT BY THE INTERNATIONAL ATOMIC ENERGY AGENCY TO THE ECONOMIC AND SOCIAL COUNCIL FOR 1967-1968

(For the period 1 April 1967-31 March 1968)

INTRODUCTION

1. The annual report to the United Nations on all the Agency's activities is submitted to the General Assembly pursuant to Article III.B.4 of the Statute. The present report to ECOSOC, which covers the period 1 April 1967 to 31 March 1968, is therefore limited to those aspects of the Agency's work which are directly related to economic and social development.

2. Following previous practice, it is written as an analytical summary. The format follows last year's pattern, which was based on the request made by ECOSOC in Resolution 1172 (XLI), modified to take into account the terms of ECOSOC Resolution 1277.B (XLIII).

I. ACTIVITIES OF MAJOR ORGANS

3. From October 1966 to September 1967, the Board of Governors carried out a project of some interest to the Council, namely, a detailed review of the Agency's activities with a view to increasing its help to developing countries.

4. Thirty-eight Member States of the Agency submitted comments in writing. A special committee was established to consider these comments together with an analysis that the Secretariat had made of the extent to which the Agency's work had benefited developing countries. The analysis showed that about one-third of the \$86 000 000 worth of resources put at the Agency's disposal from 1958 through 1966 had been made available for direct aid to individual developing countries. A substantial proportion of the remainder had been spent on work in developing countries or of special interest to them.

5. The review showed that the developing countries are becoming increasingly aware of the benefits that atomic energy can offer them. Accordingly the Board recommended that the Agency should intensify its programmes that directly support economic development such as electric power and desalting, the applications of atomic energy in food and agriculture, the development of water resources, and the use of nuclear science in combating endemic and tropical diseases and malnutrition.

6. The Board felt that it was also important that the Agency should continue such activities as enable it to maintain a high level of technical competence and thus render effective service to all its Members. It was recognized that the Agency must also fulfil its statutory obligations which are requiring a rapid growth in its work designed to prevent the diversion of nuclear resources to military uses.

7. Although the review did not indicate that any major changes in the Agency's work were desirable, the Board made detailed recommendations to increase the effectiveness of each of the Agency's main programmes. It paid particular attention to technical assistance and other direct aid programmes.

8. The Board's main recommendations, and actions taken subsequently by the General Conference in September 1967, are referred to in other section of this report. Copies of the document containing the review (GC(XI)/362) will be made available to interested members of the Council.

II. DEVELOPMENTS IN MAJOR PROGRAMMES

9. In view of the importance the Board placed on the activities, referred to above, that directly support economic development, details of the following programmes are given below with the approximate amounts which were spent on them in 1967.

A.	Nuclear power (including desalting)	\$600 000
B.	Nuclear science in food and agriculture	\$900 000
C.	Use of nuclear techniques in water resources development	\$250 000
D.	Use of nuclear science to combat endemic and tropical diseases and malnutrition	\$580 000
E.	Oceanographic activities	\$147 000

This list leaves out some of the important work that the Agency is doing including most of its activities concerned with the promotion of the safe use of atomic energy through the exercise of its regulatory and standard-setting functions.

A. Nuclear power (including desalting)

10. During 1967 new orders for nuclear plants in all countries totalled 30 000 MWe. Thirty percent of all new generating capacity ordered throughout the world was nuclear. For plants larger than 300 MWe nuclear stations accounted for 60 % of all capacity ordered. It is estimated that installed nuclear capacity throughout the world will be more than 30 000 MWe (2.7 % of total installed capacity) by the end of 1970, rising to 110 000 MWe (7 % of the total) by 1975 and to about 310 to 340 000 MWe (13-14 % of the total) by 1980. Such estimates have been rising steadily and the main limitation to nuclear power growth appears to be the ability of the manufacturers to supply the required plant.

11. This massive acceptance of nuclear power shows clearly that under normal conditions of large power systems, nuclear power is a standard alternative in the competitive bidding for a new power plant. Continued improvements in the nuclear fuel cycle are expected to decrease further the costs of nuclear power.

12. Almost all the nuclear plants ordered in 1967 will be built in technically advanced countries. However, more than half the developing countries in South East Asia and the Far East have previously embarked on, or are seriously studying, nuclear power programmes. One Latin American country is likely to order a nuclear plant in the near future, while other countries in this area and also Mediterranean countries are studying nuclear power and desalting projects. Many of the more industrialized developing countries will reach the point in the next decade where their total power consumption will justify large nuclear power plants.

13. The spate of nuclear power plant orders has led to growing concern about the world's resources of low cost uranium, a concern which also reflects the poor fuel utilization of most current types of reactor. Uranium prospecting is thus reviving and substantial new reserves may be discovered. More support is being given to research that would reduce the cost of extracting uranium from low grade ores. However, the fundamental solution to the problem of fuel supplies will be in the development of new reactor types such as the advanced converter and breeder reactors, which will not only have lower generating costs than the current plants but will also permit full economic utilization of all uranium and thorium mined and even of extremely low grade ores.

14. The technically advanced countries are experimenting with a number of designs of advanced converter reactors, many of which would be able to use thorium as a fuel (thorium is not used in any of the present generation of power reactors). Some of these types of plants are likely to come into full-scale operation in the early 1970s.

15. Fast breeder reactors are likely to follow a few years later. Prototypes are expected to be in operation in six industrial countries [1] before 1975, and large-scale economically competitive plants may be in operation in the late 1970s.

16. It is already clear that nuclear energy can provide large dual-purpose electric power and desalting plants. The cost of electricity from these plants is no greater than that of smaller single purpose nuclear power units, while the water cost compares favourably with that of water delivered through long aqueducts.

[1] France, Federal Republic of Germany, Japan, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland and United States of America.

17. The Soviet Union and the United States are each building a large dual-purpose plant, the United Kingdom has announced manufacturing capability, while Brazil, Greece, Israel, Mexico, Spain and the United Arab Republic have taken steps ranging from feasibility studies to more detailed plans for using nuclear power for this purpose.

18. Water cheap enough for use in agriculture would not be available from the present generation of nuclear, or from other types of desalting plants. To make agricultural use feasible, advantage must be taken of the economics of scale that will come from larger plants and which, in time, will favour the use of new types of reactors (breeder and advanced converter) having very low operating costs. Ways must be found of making the best use of the high quality (distilled) water that desalting produces.

19. The next step — the energy centre — would represent the culmination of efforts to exploit nuclear energy to the fullest extent. The concept is that of a very large nuclear power reactor centre around which would be clustered numerous energy-intensive industries including, for instance, desalination, fertilizer production, food processing and metallurgical manufacturing and chemical plants. Certain industries that now use direct heat would thus turn to electricity as their energy source.

20. While the capital cost of such energy centres would be very large they would open the possibility of reproducing in many parts of the world the same integrated development of resources and industry that has hitherto been possible only around vast hydro-electric plants, such as the Tennessee Valley Authority in the United States, the large dams in the Soviet Union and the Aswan dam in the United Arab Republic. Such "agro-industrial complexes" might be built on the arid coasts of the world and would support crops specially developed to thrive under the conditions created.

21. The work of the Agency during 1967-68 includes aspects of most of the subjects referred to above. Much of it consists of collecting, analysing and promoting the exchange of information needed by engineers, scientists, economists and power planners. This exchange helps to co-ordinate and catalyze national research and development. The Agency also serves as an economic, safety and occasionally as an engineering consultant, chiefly to developing countries. It also arranges for the supply of fuel on request.

(a) Nuclear resources

22. The Agency and ENEA are attempting to keep up-to-date estimates of the world-wide availability of nuclear fuels. In October 1967 a joint meeting of most main or potentially significant producing countries prepared revised estimates of uranium resources available in different cost ranges, which were published by OECD in December 1967 [2]. The Agency has also begun work to encourage research and development for the more economic recovery of the very large amounts of uranium contained in low concentrations in rocks processed for other applications.

(b) Exchange of information

23. Four types of activity are devoted to this field of work; directories, expert meetings, working groups and symposia.

24. For several years the Agency has published a **Directory of Reactors** for the use particularly of countries that wish to compare their own prospects and experience with those of established users of nuclear power. The Agency will also shortly publish its first **Directory of Nuclear Processing Plants**. The rapid expansion of nuclear power has increased the demand for such directory services.

25. During the year, meetings of experts were convened to consider specific problems of reactor design and construction, such as the design of reactors for earthquake-prone areas, methods of detecting failed fuel elements and methods for predicting fuel burn-up. The purpose of these meetings is to review the "state of the art" as seen by leading experts and to obtain the best opinion as to the priority for future development activities.

26. Working groups are more permanent associations of experts set up to review, by meetings, correspondence, or both, matters of interest to reactor development. Thus, in 1967, the Agency set up an international working group on fast reactors, drawing experts from the six countries that have large fast reactor programmes. This group will promote and co-ordinate research and conferences in this field.

[2] "Uranium Resources", Revised Estimates, a joint report by ENEA and the Agency.

27. Another working group, also established in 1967, deals with the problems of measuring the amount of neutron irradiation in reactors, which among other effects, is the chief cause of irradiation embrittlement. Still in the planning stage are working groups on plutonium and thorium utilization. A third group deals with the problems that arise in reactor pressure vessels as a result of steel becoming brittle after long irradiation.

28. Symposia serve as a larger forum (usually 200-250 participants) for important subjects and particularly for exchanging the results of the latest research. The main symposia held in 1967 dealt with:

(i) **The problem of containment and siting of nuclear power plants.**

The conventional character that nuclear power has achieved brings the incentive to locate nuclear plants closer to the urban or industrial complex which uses most of the electricity produced. Several countries interested in nuclear power have special siting problems due to the prevalence of earthquakes;

(ii) **Heavy-water reactors.**

This reactor is one of the three main types at present in use and it has certain technical advantages. The symposium showed that one of the barriers to its more widespread acceptance is the existence of a number of differing heavy-water reactor types, none of which has shown a clear advantage over others in the same family. The consensus seemed to be that efforts should be concentrated on fewer types;

(iii) **Fast reactor physics and related safety problems.**

Participants discussed methods of dealing with the special safety problems that must be faced in designing this new type of plant. The symposium also showed that while most fast reactors now being run or built are cooled by liquid metal, there is growing interest in a steam-cooled variant; and

(iv) **International extrapolation and comparison of nuclear power costs.**

The papers presented dealt with the general problems of estimating and comparing nuclear power costs when the nuclear plants are operating outside the country of origin. The symposium brought to light several new and ingenious techniques of economic analysis but showed that any attempt to draw up general rules for the extrapolation of costs from one country to another would still be fraught with very great difficulties.

(c) **Nuclear power for developing countries**

29. The Agency runs a programme of lecture courses to acquaint engineers and economists of developing countries with the realities of nuclear power and in 1967 a survey course on prospects and problems of nuclear power applications was held in Santiago, Chile.

30. The Secretariat of the Agency has made a study of the prospects of reducing the generation costs and thereby widening the use of smaller nuclear power plants. Reaching this goal, which is of special importance to developing countries, will depend chiefly on reducing the costs of nuclear fuel elements by mass production, and on lowering capital costs by using equipment mass produced for other purposes.

31. Several developing countries are now actively considering use of nuclear power in the near future, and will require trained manpower for building and operating their nuclear power facilities. The Agency is expecting an increasing number of requests for advice and assistance in planning and implementing suitable training programmes to support nuclear power projects.

(d) **Nuclear desalting and energy centres**

32. The Agency continued to take part in the joint study with Mexico and the United States of the technical and economic feasibility of building a large dual-purpose plant near the head of the Gulf of California [3]. This study, which began in 1965, will be completed in June 1968. It will then be for

³ This plant will serve the areas of Baja California and Sonora in Mexico, and Arizona and California in the United States.

the Governments concerned to decide on the next steps. The Secretariat has also been briefed on the status of the joint Greece/United States and Israel/United States projects.

33. The Agency has arranged, through research contracts, for detailed studies of desalting costs, and cost extrapolations, as functions of water and power outputs, reactor type, financing arrangements, etc. These studies enable future desalting planners to determine quickly the general feasibility of nuclear desalting in a particular environment. The results were published in December 1967 [4].

34. It seems probable that industrial and agricultural users of water will be prepared to pay more for the high-quality water produced in desalting plants — which could for instance be mixed with otherwise unusable brackish water — than they will for ordinary water. This question is of great importance for the design of nuclear plants, since it determines the target costs for producing water for agriculture. An Agency meeting in late 1967 represented the beginning of the study of this subject. One conclusion was that nuclear desalting offers the first major opportunity to increase the energy input into food production on a general scale.

35. The Agency's work on the study of nuclear energy centres[5] has just begun. The Agency was represented by an observer on a team at the United States Oak Ridge National Laboratory which will publish this year a study of the technical and economical feasibility of such centres. The Agency is also compiling information on the energy requirements and plans of Member States so that those countries that are most likely to provide the conditions propitious for such centres can be brought into the next round of studies.

B. Nuclear science in food and agriculture

36. The work of the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture encourages the application of nuclear techniques in research to produce more and better food and to prevent food losses from insects and pests.

37. Food irradiation holds out growing promise as a means to help preserve the world's food supplies. It can be used to disinfect stored grain, rid food of micro-organisms and parasites and extend the shelf or market life of food. At present no commercial food irradiation plants are in operation and therefore, present cost estimates can only be based upon experience with pilot plants. The decline in cost of radiation sources together with changes in design and methods of operation resulting from pilot plant experience promises to make the irradiation technique more competitive. The Agency is helping Turkey to build one such pilot plant under a UNDP project. During the year Agency/FAO missions visited several Member States to advise on the possibility of setting up such plants.

38. One of the main problems that the application of this technique faces is to satisfy the authorities concerned that irradiated food is acceptable for human consumption. The Agency is working together with other organizations to compile record of legislation on food irradiation, to prepare a World Register of Food Irradiation Facilities and to collect wholesomeness data that can be used in seeking official permission for the sale of irradiated food. The Agency is participating in a project at Seibersdorf near Vienna, where basic research on food irradiation and on "wholesomeness testing" is being undertaken. At present fruit and fruit juices are being used as model substances in this project, financed chiefly by the Austrian Government. The Agency is also supporting this work through research contracts and helping to develop standards and methods for testing irradiated food.

39. To meet the need for training scientists and technicians in this subject, particularly in the developing countries, the Agency and FAO held an eight-week international training course for 20 students on food irradiation technology and techniques at East Lansing, Michigan, United States, from June to August 1967.

40. During the year, the Agency completed two large-scale programmes involving laboratories in many developing countries which used radioisotopes to find the best ways — place, depth in the soil, time of application, fertilizer source — of applying fertilizers to rice and maize for the most efficient utilization. This research was not only valuable in its own right, but has also been useful in showing the unique potentiality of isotope techniques for evaluating quantitative differences in fertilizer uptake. The Agency

[4] "Guide to the Costing of Water from Nuclear Desalination Plants", Technical Reports Series, No. 80.

[5] A description of these centres is given in paras 19 and 20 above.

has now begun a similar programme to study the nutritional requirements of tree crops, in particular, coconut, oil palm, coffee, cocoa, olive and citrus trees.

41. Using the neutron moisture meter for determining soil moisture, the Agency has promoted in nine countries a series of projects with the object of improving water use efficiency. Soil water has obvious importance for the growth of crops but also affects the extent to which a crop makes use of fertilizers placed in the soil.

42. Trials in North Africa and the Middle East have shown that some of the mutant wheats produced by radiation can give higher yields than any local or common variety of wheat. In 1967 the Agency and FAO continued the tests on the wheat mutants in 12 countries, and have started studies in Africa and Latin America on means of increasing resistance of wheat to diseases, and particularly to wheat blight caused by septoria. A mutant rice produced under an Agency research programme has a larger yield, a stronger straw and a better response to fertilizers than existing varieties; it is now being put on sale in Japan. The importance of statistical analysis to compare characteristics of new mutants with common varieties is obvious. To this end, the Agency is co-operating with FAO in setting up a system for computer recording of data on crop varieties and plant mutants.

43. The radiation-induced sterile male technique continues to be a promising method for the control and eradication of insect pests. The project that the Agency is carrying out in Central America for the Special Fund, to demonstrate the feasibility of eradicating the Mediterranean fruit fly, is now in full operation. Seven countries in the area are co-operating in this project. About 50 million flies are now being "produced" each week and preliminary experiments have given very encouraging results.

44. The method has also been successfully demonstrated in Capri, Italy. After eradicating the fly from the island, the experimenters continued releases of sterile flies on one half of the island only. The untreated half was soon reinfested from the mainland, while the treated half continued to remain free of fruit fly. The artificial rearing of the olive fly continues to be difficult but certain artificial media are now proving successful in producing quite a large number of flies, though much less effectively than the Mediterranean fruit fly. The use of the sterile male technique as a means of eliminating tsetse flies will be a long-term project because of the inherent difficulties, among them the artificial rearing of this insect. The Agency is supporting studies on the use of artificial media instead of the living animal as a rearing medium.

C. Use of nuclear techniques in water resources development

45. During the current year applications of isotope techniques in water resources development and especially in hydrology continued to extend to cover every phase of the hydrologic cycle. The emphasis has been on the use of environmental isotopes which label on a wide scale precipitation, surface and groundwaters. Further, radioisotope techniques are now used as a matter of routine in measuring the movement of sand in rivers and estuaries, and in measuring soil moisture and density.

46. In 1967 the Agency sent advisory missions to Chad, Greece, Iran and Niger, and helped Brazil and Chile to establish environmental isotope laboratories. An Agency expert went to Kenya to investigate the possible use of tritium in streamflow measurements.

47. The Agency continued to support research in several countries, including Argentina, Hungary, the Republic of Korea, Spain and Turkey and awarded new research contracts to institutes in Hungary and Romania. The new contracts deal mainly with the application of environmental isotopes for the study of groundwater movement.

48. The Agency also continued to co-operate with national institutes in IHD projects in Austria, the Czechoslovak Socialist Republic and Hungary where the isotope techniques are applied to a variety of hydrologic problems including snow hydrology, glaciology and groundwater movement and limnology (the study of physical phenomena of lakes).

49. The work of the Agency as a sub-contractor to the UNDP Special Fund project in Jamaica, Jordan, Niger and Spain has continued with useful results.

50. To review the latest developments in the technique of low-level counting which is also used extensively in groundwater studies, the Agency and ICSU held a symposium on radioactive dating and methods of low-level counting in Monaco in March 1967, in which 172 scientists participated.

IV. CO-ORDINATION AND RELATIONS WITH OTHER INTERNATIONAL ORGANIZATIONS

71. The review of the Agency's activities confirmed again the importance of close co-operation between the Agency and other members of the United Nations family in the light of the growing role of nuclear techniques in many other branches of science and industry.

72. The co-operation already achieved may be illustrated by a few examples. In applying nuclear techniques in food and agriculture, the Joint FAO/IAEA Division is now firmly established; its work is described in paragraphs 36-44 above.

73. In the field of energy and desalting, co-operation with the United Nations Department of Economic and Social Affairs has been taken further by the latter's decision to second a staff member to work in the Agency's Division of Nuclear Power and Reactors for a period of two years. This complements a reverse arrangement under which the Agency seconded a power economist to the United Nations from 1963-65.

74. Co-ordination between WHO and the Agency is greatly facilitated by the work of the Liaison Offices that each maintains at the other's headquarters. The Agency's Liaison Officer at WHO has also been charged with technical liaison responsibilities with other Geneva-based agencies.

75. To help meet the developing countries' needs for trained nuclear technicians, ILO has arranged for Agency trainees to work at the International Centre for Advanced Technical and Vocational Training in Turin, Italy, and the Agency will be holding a training course on the maintenance and repair of nuclear electronic equipment at that Centre from April to June 1968.

76. The Agency and UNESCO are co-operating in raising the levels of nuclear science teaching in developing countries and are holding a panel of experts on this subject in Bangkok in June 1968. Further contacts have been taken with UNESCO to investigate whether its collaboration in the operation of the International Centre for Theoretical Physics in Trieste can be increased. UNESCO is also taking part in the studies that the Agency is making for setting up a computer-based international nuclear information system. When this system is fully developed, UNESCO's help will be needed in training the personnel, especially in the developing countries, who will feed the information into the system and in setting up national, or regional, centres to distribute the system's services.

77. With the establishment of UNIDO in Vienna, the Agency expects to develop joint programmes for promoting the industrial uses of nuclear techniques in developing countries.

78. The Agency has continued to take its full part in multilateral activities to promote co-operation or co-ordination in the United Nations family, with bodies such as UNDP, ACABQ, ACC and its various sub-committees, IOC, and the United Nations Advisory Committee on Science and Technology.

79. While in many cases this participation brings the Agency and its Member States direct and tangible benefits, and in other cases participation is essential to enable the Agency to contribute to a joint programme or to maintain the Agency's rules and standards in line with the remainder of the United Nations family, the Council's attention is drawn to the growing volume and extent of non-technical reports and materials the Agency is being called upon to prepare. The Agency is required by its Statute to report annually to the General Assembly and to report to the Council on matters within its competence; by resolution this report has also become annual. Besides these statutory reports, however, the Secretariat of the Agency submitted some 20 reports for co-ordination or programme purposes to other members of the United Nations family or to inter-agency bodies during the year 1967. The Council itself, as well as ACC, has frequently expressed a desire to see a limitation and reduction in the amount of such work and this has again been reaffirmed by the recommendations of the Ad Hoc Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies. Such reporting places a significant burden on a relatively small and highly specialized organization such as the Agency. All relevant information about the Agency's activities is contained in the reports to the General Assembly and to the Council and any routine reports made to bodies such as UNDP, etc. Preparation of other reports, therefore, involves a re-casting or adaptation of such material to meet the particular needs of the requesting body. This involves work not only for the administrative branches but also for the technical departments of the Agency.

60. The most widely held view today is that coastal releases of low-level radioactivity under controlled conditions produce environmental reactions that are purely local in context. The chief control is to monitor water, biota and critical marine foods to ensure that safe conditions are maintained. Accurate records of disposals must be kept. In short, when a nuclear power station is built on the coast, the problem of marine pollution is one of many local environmental factors that must be taken into account in siting, designing and operating the plant.

61. The Agency has recently invited its Member States to report all sea disposals of radioactive waste, for preparation of an international register which would record all relevant details. An earlier effort in this direction was discontinued because not enough information was received.

62. In the field of research, the International Laboratory of Marine Radioactivity at Monaco has carried out fundamental studies on the uptake and dispersion of radioactivity in the sea. This work is designed to obtain the basic information that in due course will make it possible to predict with accuracy the distribution, circulation and possible effects of radioactivity in the sea. The Agency has awarded 18 research contracts in nine countries on subjects such as the uptake of radionuclides by marine organisms (some of which ultimately enter the food chain) and on the effects of turbulent dispersion on the disposal of radioactive wastes. The Agency has also sought to co-ordinate research done by oceanographic institutes. This programme started in the Mediterranean area and will involve co-operation of 24 institutes in various parts of the world. Research will be concentrated on the behaviour of radionuclides in marine biota and on the distribution and movement of these nuclides in the marine environment.

III. TECHNICAL CO-OPERATION ACTIVITIES

63. During 1967 under its technical co-operation programme, the Agency financed the assignments of 179 experts and visiting professors who served as advisers and lecturers in Member States; equipment to the value of over \$600 000 was supplied and 413 fellowships were awarded from gifts in kind and from monetary resources placed at its disposal; 12 inter-regional or regional training courses were held and attended by 159 participants (not including 70 local and 31 other participants whose attendance was at the expense of either the Government or of another United Nations organization). During 1967 obligations were incurred in the amount of approximately \$2 124 000 from Agency and UNDP resources as shown below:

Agency		\$1 035 700
UNDP/TA	\$783 200	
UNDP/SF	305 100	1 088 300
Total		\$2 124 000

In addition, offers of assistance in kind (equipment grants and Type II fellowships) amounted to about \$690 000.

64. The technical co-operation programme is financed from voluntary contributions of Member States to the Agency's General Fund, from UNDP/TA, UNDP/SF, and contributions in kind and donations of equipment made by Member States. The review of the Agency's activities conducted in 1967 revealed that, between 1958 and the end of 1966, over \$20 million had been spent on technical co-operation activities and that 872 experts had served in 60 countries, 2578 fellowships had been awarded, and over 3.5 million dollars worth of demonstration equipment had been provided.

65. Requests for experts and equipment to be funded from the Agency's own resources have risen from \$690 000 in 1959 to \$3.6 million in 1968 as is seen in the table below. The target figure for voluntary contributions has never been met; there was a slight improvement in 1967 with a rise to 72% of the target; this slight increase in funds, however, did not compensate for the rise in costs, and the percentage of the requests which can be met continues to fall.

The Agency's regular technical assistance programme

Assistance in the form of experts and equipment
(in thousands of dollars)

Year	Value of requests received	Value of assistance approved	Percentage of requests met
1959	690.0	619.4	89.6
1960	1150.0	599.2	52.1
1961	1277.6	513.1	40.4
1962	1530.0	757.6	49.5
1963	1750.0	856.7	48.9
1964	2400.0	804.6	33.3
1965	2500.0	874.0	35.0
1966	3000.0	902.0	30.0
1967	2600.0	975.0	37.5
1968	3600.0	977.0	27.1

66. The review of the Agency's activities led the Agency to confirm that its technical assistance programme should continue to have as its chief objective the transfer of knowledge and skills. By Resolution GC(XI)/RES/230 the General Conference in recalling "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."

67. In order to meet the serious lack of financial resources the Agency continued to use its own scientific staff, wherever possible, to carry out and follow up technical assistance projects. The review recommended that additional technical assistance be granted to developing Member States; but, unless the necessary financial resources are made available, it is clearly impossible to fulfil this recommendation.

68. The programme for 1967 showed that the reactors which had been established in the 1950's and early 1960's were now coming into operation, that an increasing number of projects formed part of larger Government development schemes revealing that the applications of atomic energy are becoming more and more integrated into economic and scientific development programmes at the national level. Increasing emphasis was therefore placed on co-ordinated programme planning and implementation, both of projects within national development plans and of segments within larger projects. Stress was laid on the need to ensure that appropriate counterpart personnel were made available to experts and, if necessary, the implementation of a project was postponed until fellowship training had been completed. Experts entered on assignment only when the necessary demonstration equipment had been delivered, and care was exercised to ensure that there was not duplication of effort with bilateral or other assistance being granted to the recipient Government. The ratio of expenditure between experts, equipment and training is changing; more funds are devoted to experts and equipment as trained fellows return to their country and participate in the development of their national plans.

69. The Agency continued to act as Executing Agency for the Special Fund project in Central America dealing with the eradication of the Mediterranean fruit fly, and the pilot project in Turkey for radiation disinfestation of stored grain [7].

70. The Agency also acted as sub-contractor to seven projects being executed by other United Nations agencies.

[7] See last year's report; document INFCIRC/93, para. 78.

IV. CO-ORDINATION AND RELATIONS WITH OTHER INTERNATIONAL ORGANIZATIONS

71. The review of the Agency's activities confirmed again the importance of close co-operation between the Agency and other members of the United Nations family in the light of the growing role of nuclear techniques in many other branches of science and industry.

72. The co-operation already achieved may be illustrated by a few examples. In applying nuclear techniques in food and agriculture, the Joint FAO/IAEA Division is now firmly established; its work is described in paragraphs 36-44 above.

73. In the field of energy and desalting, co-operation with the United Nations Department of Economic and Social Affairs has been taken further by the latter's decision to second a staff member to work in the Agency's Division of Nuclear Power and Reactors for a period of two years. This complements a reverse arrangement under which the Agency seconded a power economist to the United Nations from 1963-65.

74. Co-ordination between WHO and the Agency is greatly facilitated by the work of the Liaison Offices that each maintains at the other's headquarters. The Agency's Liaison Officer at WHO has also been charged with technical liaison responsibilities with other Geneva-based agencies.

75. To help meet the developing countries' needs for trained nuclear technicians, ILO has arranged for Agency trainees to work at the International Centre for Advanced Technical and Vocational Training in Turin, Italy, and the Agency will be holding a training course on the maintenance and repair of nuclear electronic equipment at that Centre from April to June 1968.

76. The Agency and UNESCO are co-operating in raising the levels of nuclear science teaching in developing countries and are holding a panel of experts on this subject in Bangkok in June 1968. Further contacts have been taken with UNESCO to investigate whether its collaboration in the operation of the International Centre for Theoretical Physics in Trieste can be increased. UNESCO is also taking part in the studies that the Agency is making for setting up a computer-based international nuclear information system. When this system is fully developed, UNESCO's help will be needed in training the personnel, especially in the developing countries, who will feed the information into the system and in setting up national, or regional, centres to distribute the system's services.

77. With the establishment of UNIDO in Vienna, the Agency expects to develop joint programmes for promoting the industrial uses of nuclear techniques in developing countries.

78. The Agency has continued to take its full part in multilateral activities to promote co-operation or co-ordination in the United Nations family, with bodies such as UNDP, ACABQ, ACC and its various sub-committees, IOC, and the United Nations Advisory Committee on Science and Technology.

79. While in many cases this participation brings the Agency and its Member States direct and tangible benefits, and in other cases participation is essential to enable the Agency to contribute to a joint programme or to maintain the Agency's rules and standards in line with the remainder of the United Nations family, the Council's attention is drawn to the growing volume and extent of non-technical reports and materials the Agency is being called upon to prepare. The Agency is required by its Statute to report annually to the General Assembly and to report to the Council on matters within its competence; by resolution this report has also become annual. Besides these statutory reports, however, the Secretariat of the Agency submitted some 20 reports for co-ordination or programme purposes to other members of the United Nations family or to inter-agency bodies during the year 1967. The Council itself, as well as ACC, has frequently expressed a desire to see a limitation and reduction in the amount of such work and this has again been reaffirmed by the recommendations of the Ad Hoc Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies. Such reporting places a significant burden on a relatively small and highly specialized organization such as the Agency. All relevant information about the Agency's activities is contained in the reports to the General Assembly and to the Council and any routine reports made to bodies such as UNDP, etc. Preparation of other reports, therefore, involves a re-casting or adaptation of such material to meet the particular needs of the requesting body. This involves work not only for the administrative branches but also for the technical departments of the Agency.

80. The Board devoted some attention to this matter at its meetings in February, when the hope was expressed that, in future, information needed by such bodies would be taken by them from the Agency's statutory or other routine reports to the greatest extent possible. In the course of the same meetings, the view was put forward that in projects that the Agency carries out jointly with interested specialized agencies, an undue proportion of the cost is being borne by the Agency, and that substantially larger contributions should be sought from the partners in such enterprises. The Council's concern about the problem of co-ordination of policy at the national level is evident by the terms of Resolution 1281 (XLIII). This problem has arisen particularly in cases where it has been decided that a demonstrably worthwhile undertaking should be continued on a joint basis, but where there is an obvious tendency to shift responsibility for financing from one governing body to the other.

81. In February the Board also approved a draft co-operation agreement with OAU. Subject to the approval of the General Conference in September 1968, this will be the third such agreement concluded with an organization outside the United Nations framework. As previously reported, the agreements with ENEA and IANEC came into force in 1960.

V. ADMINISTRATIVE AND BUDGETARY QUESTIONS

82. In 1967 the Agency's Regular Budget amounted to \$9491500, of which \$9174000 represented assessed contributions from Member States. The Regular Budget for 1968 has been set at \$10477000, of which \$130000 may be utilized only with the Board's special authorization, for contingent extraordinary expenditure (i.e. a post adjustment for professional staff which may become due in 1968). \$10163500 represents assessed contributions.

83. The Agency's Operational Budget amounted to \$2408000 in 1967 and has been set at \$2430000 for 1968. Of these amounts \$2 million represent the target set for voluntary contributions from Member States for each year; the balance in each case is to be obtained from special contributions for specific purposes and from minor miscellaneous income. By 31 March 1968 pledges of voluntary contributions for 1967 amounted to 72.05% and for 1968 to 67.28% of the targets.

84. In connection with the recommendations of the Ad Hoc Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies [8], the Board, at its meeting in June 1967, adopted a resolution expressing the opinion

"that it is desirable for the Agency to begin as quickly as possible to give effect to all those recommendations of the Ad Hoc Committee which are not already being implemented, to the extent that their implementation can be achieved without amendment of the Statute"

and requested the Director General

"to continue to take part in the consultation of United Nations co-ordination groups on those recommendations which require concerted action

85. The Agency will, accordingly, prepare a six-year programme for the period 1969-1974 and simultaneously present to its governing bodies cost estimates covering the two years 1969-1970 and proposals for budgetary appropriations for 1969 [9]. Further, by way of reporting on budgetary performances, the Agency's accounts for 1967 will indicate in some detail the actual expenditure also within each appropriation section compared with the original 1967 budget estimate, and the reasons for any major differences will be explained. This will constitute an evaluation of the way in which the programme has been carried out and the extent to which it differs from the approved programme and budget. In this way the evaluations already made of the technical assistance and other sectors of the Agency's programme will be supplemented.

[8] Second Report of the Ad Hoc Committee, United Nations document A/6343.

[9] The Agency's Statute provides for annual budget estimates.

86. As a matter of routine the Agency co-ordinates its technical meetings and conferences with those of the United Nations and specialized agencies with a view to avoiding duplication of subject matters. It seeks their co-operation when the subject matter is of substantial interest to them. Since the establishment of UNIDO in Vienna, efforts are being made to co-ordinate the scheduling of meetings and conferences in this city so as to make full use of the available language, interpretation and conference servicing staff of the two agencies.

87. As the Agency has no permanent field staff it is its practice to inform United Nations Resident Representatives of the Agency's projects in their respective countries and to solicit their help in solving any problems that arise in carrying out those projects.

88. The Ad Hoc Committee's recommendation that those agencies whose legislative bodies now meet on an annual basis should consider the possibilities of biennial sessions has been examined by the Board. An amendment to the Statute would be necessary to implement this recommendation. The Board considers that the holding of an annual session of the General Conference remains desirable.

89. Since the beginning the Agency's budget has included a separate appropriation section for seminars, symposia and conferences and another section for panels and committees; the Ad Hoc Committee's recommendation in this respect, therefore, requires no change in the Agency's practice. The Committee's suggestion that an additional annex should be prepared to set forth the total expenditure pertaining indirectly as well as directly to such activities does not appear to be necessary in the case of the Agency, since relatively few indirect costs can be attributed to such activities. Careful control of the number of such meetings is assured by the fact that the programmes of seminars, symposia and conferences is reviewed each year by the Agency's Scientific Advisory Committee as well as by the Board and is included in the budget examined and approved by the General Conference. The total number has tended to remain the same for several years.

ANNEX

VOLUNTARY CONTRIBUTIONS BY MEMBER STATES TO THE
AGENCY'S GENERAL FUND FOR 1967 AND 1968

Member	Contribution pledged (equivalent in United States dollars at UNDP rates)		Paid	
	1967	1968	\$	\$
Argentina	16 600	16 600	-	-
Australia	20 000	28 400	20 000	20 000
Austria	9 600	9 600	9 600	9 600
Belgium	10 000	-	10 000	-
Bolivia	800	-	-	-
Brazil	17 200	17 000	-	-
Bulgaria	2 500	2 500	2 500	-
Burma	1 000	1 000	1 000	-
Cambodia	800	800	-	-
Canada	57 000	57 000	57 000	-
Ceylon	2 100	2 100	2 100	-
Chile	5 000	5 000	5 000	-
China	5 000	10 000	5 000	-
Colombia	1 500	-	-	-
Congo, Democratic Republic of	1 000	1 000	1 000	-
Cyprus	-	280	-	-
Czechoslovak Socialist Republic	13 889	20 833	13 889	-
Denmark	11 200	11 200	11 200	11 200
Ecuador	1 000	-	-	-
Finland	7 800	12 000	7 800	12 000 ^{a)}
France	30 612	30 612	30 612	30 612
Germany, Federal Republic of	133 400	133 400	133 400	66 700
Ghana	1 400	1 400	1 400	-
Greece	4 600	4 400	-	-
Guatemala	1 000	-	500	-
Holy See	2 000	2 000	2 000	2 000
Hungary	4 259	4 259	4 259	-
Iceland	800	-	800	-
India	35 000	35 000	35 000	35 000
Indonesia	2 000	3 000	2 000	3 000
Iran	-	2 000	-	-
Iraq	1 400	1 400	1 400	-
Israel	3 000	3 000	3 000	-
Italy	45 800	-	-	-
Ivory Coast	-	803	-	803
Japan	49 800	49 800	49 800	-
Korea, Republic of	2 400	2 400	2 400	-
Kuwait	-	1 500	-	1 000
Lebanon	1 000	-	1 000	-
Madagascar	800	800	800	-

Member	Contribution pledged (equivalent in United States dollars at UNDP rates)		Paid	
			\$	\$
	1967	1968	1967	1968
Mexico	14 600	16 500	-	-
Monaco	2 000	2 000	2 000	2 000
Morocco	2 000	2 000	2 000	-
Netherlands	20 000	20 000	20 000	-
New Zealand	5 000	6 800	5 000	-
Norway	8 000	8 000	8 000	8 000
Pakistan	6 000	6 000	6 000	6 000
Philippines	6 200	6 200	6 200	-
Poland	4 167	6 250	-	-
Portugal	3 600	3 600	3 600	3 600
Romania	6 200	6 200	6 200	-
Saudi Arabia	1 200	1 200	1 200	1 200
Singapore	-	800	-	800
South Africa	9 400	9 400	9 400	-
Spain	10 000	10 000	-	-
Sweden	22 600	22 600	22 600	-
Switzerland	15 800	15 800	15 800	15 800
Thailand	3 000	3 000	3 000	3 000
Turkey	6 200	6 200	6 200	200
Union of Soviet Socialist Republics	111 111	111 111	111 111	111 111
United Arab Republic	11 500	11 500	11 500	-
United Kingdom of Great Britain and Northern Ireland	110 000	110 000	110 000	-
Uruguay	2 000	-	2 000	-
Venezuela	9 000	9 000	-	-
Viet-Nam	1 400	1 400	1 400	-
Yugoslavia	6 400	8 000	6 400	-
	900 638	874 648	774 071	343 626
United States of America (including matching contribution)	540 383 ^{a)}	470 964 ^{b)}	456 283	-
Total	1 441 021	1 345 612	1 230 354	343 626

a) Equivalent to 37.5 % of the total pledged by all Member States including the United States.

b) Equivalent to 35 % of the total pledged by all Member States including the United States.