



International Atomic Energy Agency

GENERAL CONFERENCE

GC(XXXVI)/1018
15 September 1992

GENERAL Distr.
Original: ENGLISH

Thirty-sixth regular session
Item 14 of the provisional agenda
(GC(XXXVI)/1001)

STRENGTHENING OF THE AGENCY'S MAIN ACTIVITIES

1. Last year, in resolution GC(XXXV)/RES/569, the General Conference: affirmed that, in order to fulfil the objectives of the Agency, "an adequate balance should be achieved among the Agency's main activities, having particularly in mind safeguards and non-safeguards activities"; confirmed "its resolve to maintain and strengthen the effectiveness and efficiency of the Agency's technical assistance and co-operation activities in conformity with the Statute"; and requested the Director General "to enhance technical co-operation activities through the development of effective programmes aimed at improving the scientific and technological capabilities of developing countries in the fields of peaceful applications of nuclear energy and achieving sustainable development" and "to take account of the view of the Conference on this question in the preparation of a draft Medium-Term Plan".

2. The Conference's affirmation of the need to achieve an adequate balance among the Agency's main activities was an important consideration in drafting the programme and budget for 1993-94.

3. An analysis, undertaken in connection with the Medium-Term Plan, of how to make the Agency's activities more responsive to the changing needs of Member States continued, resulting in a number of new initiatives for 1993-94. Among the most important of these are:

- The production of documents on nuclear power for decision-makers in developing countries and on financing arrangements for nuclear power projects in developing countries;

- A detailed study (following a general assessment already made) of the comparative costs of using nuclear and fossil energy sources for seawater desalination and a feasibility study on the nuclear options;
- The elaboration of a set of safety documents on the long-term storage of spent fuel from nuclear power plants;
- The preparation of a considerable part of a set of safety documents on radioactive waste management and disposal;
- The completion of a set of technical manuals intended to assist small producers of radioactive waste from radioisotope applications in the handling and processing of such waste;
- The assumption by the Seibersdorf Laboratory of the role of an FAO/IAEA/WHO/OIE (International Office of Epizootics) reference laboratory for animal disease diagnostics;
- Support for and co-ordination of an international programme aimed at using the sterile insect technique (SIT) to eradicate the Mediterranean fruit fly from the Maghreb countries;
- A significant strengthening of the functions of the IAEA/WHO Secondary Standard Dosimetry Laboratories;
- Focussing of the nuclear medicine programme on assisting least-developed countries in Africa to upgrade their nuclear medicine departments;
- Assistance in establishing regional hydrology laboratories in the Middle East, Africa and Latin America;
- Assistance to selected leading national institutes in developing countries in assuming the role of regional and sub-regional centres

for the provision of training and advice regarding the repair and maintenance of nuclear instruments;

- The introduction of a new service to assist countries which have received a Radiation Protection Advisory Team (RAPAT) mission in implementing RAPAT recommendations;
- Strengthening of assistance to national regulatory bodies in Member States in maintaining a high level of safety in operating nuclear power plants (by offering peer review missions to examine regulatory practices and organizations and by arranging advisory missions to assist regulatory organizations in making wider use of safety-related operating data);
- Strengthening of assistance to operating facilities, including nuclear power plants, in maintaining a high level of operational safety (by strengthening existing safety review services - mainly Operational Safety Review Team (OSART) and Assessment of Safety Significant Event Team (ASSET) missions - and offering an engineering safety review service covering - inter alia - aspects of siting and design, age-related degradation and the effectiveness of ageing management programmes, and fire safety); and
- A number of measures to strengthen and streamline safeguards implementation and thereby minimize programme and budget pressures resulting from the need to safeguard additional nuclear material and facilities.

4. It should be noted in this context that during the period 1981-92, when the Regular Budget was subject (with minor exceptions) to a policy of zero real growth, Member States showed a willingness to contribute increasingly to the Agency's work through extrabudgetary contributions. The total amount of extrabudgetary resources increased from US \$5.6 million in 1981 to US \$30.8 million in 1992, i.e. by a factor of more than five, while the total Regular Budget increased during the same period by a factor of two in nominal terms. The growth

of extrabudgetary resources was especially high in nuclear safety (16-fold), the International Centre for Theoretical Physics (ICTP) (9-fold), food and agriculture (4-fold) and safeguards (3-fold).

5. As regards the General Conference's call for the effectiveness of the Agency's technical assistance and co-operation activities to be maintained and strengthened, the information contained in document GC(XXXVI)/INF/308 ("The Agency's Technical Co-operation Activities in 1991") indicates a positive response in recipient countries to the two-year technical co-operation programming cycle and a high degree of satisfaction with the quality of implementation of technical co-operation projects. A very positive development as regards resources for financing technical assistance was the Board's decision in June 1992 on the level of the Indicative Planning Figures for the Technical Assistance and Co-operation Fund (TACF) for the years 1993-95, which provides for an annual increase of US \$3 million in the TACF from the 1992 level of US \$52.5 million. It is vital that this decision of the Board be widely honoured by Member States in their pledges and payments to the TACF.

6. Any effective technical co-operation programme has to be responsive to the needs and priorities of the countries requesting assistance. As these needs vary widely from country to country, optimum technical co-operation programmes cannot be designed at Agency Headquarters for the world at large; they must be based on a careful assessment by individual countries of the local situation. The Secretariat is therefore planning to step up its efforts to assist and advise Member States in identifying areas where nuclear applications can significantly contribute to the achievement of a country's development objectives and in drawing up realistic priorities for areas where Agency assistance would have maximum impact.

7. The mechanisms for conducting the necessary dialogue with Member States are in place and have been employed during the past year to the extent that budgetary limitations allowed. They include visits to Member States by staff of the Departments of Technical Co-operation, Nuclear Energy and Safety, and Research and Isotopes.

8. During 1991, the staff members in question visited 37 countries in order to discuss current and future programmes with national authorities; in addition, there were 12 pre-project assistance missions, seven country programming missions, five country programme review missions and two country programme evaluation missions.

9. Efforts have been made to utilize the results of such activities when formulating, in consultation with Member States, the 1993-94 technical assistance and co-operation programme (now in the course of preparation).

10. Internally, the Secretariat intends to focus on making more systematic use of mission findings, evaluations, country reports and project implementation experience relating to given countries (or groups of countries) and fields of activity in developing strategies best suited to the needs identified and agreed upon by the Agency and the governments concerned.

11. A more integrated, development-oriented approach - possibly involving fewer projects, but with a wider impact - has always been an aim of the Secretariat and has repeatedly found support in the Board of Governors. However, individual Member States requesting technical assistance have continued to present convincing arguments for having a multitude of urgent small-scale projects to fill gaps or to provide small but essential inputs for a variety of existing activities. Given the present guidelines governing the technical co-operation programme, the Secretariat cannot reject requests for such projects if they are technically sound and are considered a priority by the requesting country. This again points to the importance of preparatory work aimed at agreement on priorities by the Agency and individual governments. Strengthening the dialogue with Member States in this respect will become a major focus of the technical co-operation programme.

12. A draft of the Agency's Medium-Term Plan was circulated to Member States on 25 October 1991 under cover of a Note by the Secretariat (see Appendix). The draft was based on: discussions within the Secretariat during the preparation of the detailed draft of the Medium-Term Plan distributed on 15 April 1991; a review of this draft by outside experts; the conclusions of the "International Conference

on the Safety of Nuclear Power: Strategy for the Future" held in September 1991; and discussions in the Administrative and Budgetary Committee in May 1991 and the Board of Governors in September 1991.

13. The draft Medium-Term Plan takes as its starting point the Agency's statutory objectives, which are to "accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world" and to verify that assistance provided by it or at its request or under its supervision or control, including nuclear material and facilities under its safeguards, are not used in such a way as to "further any military purpose". It contains an analysis of the present situation in the nuclear sphere and of developments that are expected to influence the Agency's work in the medium term in three major areas: nuclear power and the fuel cycle; non-power applications; and safeguards. It then proceeds to formulate the following three overall goals for the Agency for the period 1993-98:

- To enhance the transfer of nuclear technology and know-how to developing countries;
- To provide international leadership and assistance in achieving and maintaining a high level of nuclear safety worldwide and minimizing the environmental impact of all peaceful nuclear facilities and applications;
- To verify that all nuclear material and facilities subject to Agency safeguards are in fact safeguarded and are used exclusively for peaceful purposes.

14. Reference is made to the issue of the balance between safeguards and non-safeguards in the draft Medium-Term Plan, where it is stated that "There is a deep-rooted feeling, especially among developing Member States, that the budgetary balance between safeguards and non-safeguards activities should be maintained, if not changed in favour of non-safeguards activities."

15. The Secretariat has reviewed the draft Medium-Term Plan in the light of resolution GC(XXXV)/RES/569 and considers that the analysis and objectives set out in it broadly reflect the views expressed by the General Conference in that resolution regarding the attainment of an adequate balance between the Agency's main activities and the enhancement of technical co-operation activities.

16. The detailed programme and budget proposed for 1993-94 has been prepared on the basis of the strategy outlined in the draft Medium-Term Plan and taking into account important new developments currently affecting the Agency's work.

17. During the discussion on the programme and budget in the Administrative and Budgetary Committee and in the Board of Governors, a number of comments were made on the draft Medium-Term Plan. It was suggested that the Agency update its medium-term strategy every second year by revising the existing plan for the remaining four years of the medium-term period (six years) and extending it for a further two years.

18. If this suggestion were to receive support, the Secretariat would start work in 1993 on a Medium-Term Plan for 1995-2000, which would be considered by the Administrative and Budgetary Committee and the Board in 1994. The format of the draft circulated to Member States on 25 October 1991 would be followed in this exercise.



INTERNATIONAL ATOMIC ENERGY AGENCY
AGENCE INTERNATIONALE DE L'ENERGIE ATOMIQUE
МЕЖДУНАРОДНОЕ АГЕНТСТВО ПО АТОМНОЙ ЭНЕРГИИ
ORGANISMO INTERNACIONAL DE ENERGIA ATOMICA

WAGRAMERSTRASSE 5, P.O. BOX 100, A-1400 VIENNA, AUSTRIA
TELEX. 1-12645, CABLE: INATOM VIENNA, FACSIMILE: 43 222 230184, TELEPHONE: (222) 2360

IN REPLY PLEASE REFER TO
PRIERE DE RAPPELER LA REFERENCE

DIAL DIRECTLY TO EXTENSION
COMPOSER DIRECTEMENT LE NUMERO DE POSTE

MEDIUM-TERM PLAN 1993-98

Note by the Secretariat

1. At its meetings in September 1991, the Board of Governors discussed the Executive Summary of the Agency's draft Medium-Term Plan for 1993-98 contained in document GOV/INF/620.
2. The Board decided that there was no need to prepare a new, detailed version of the draft Medium-Term Plan issued on 15 April 1991, but rather that document GOV/INF/620 should be reviewed in the light of the conclusions of the Conference on the Safety of Nuclear Power: Strategy for the Future held in September 1991 and the discussion of safeguards issues which had taken place during the Board's September meetings, and then submitted to Member States as the basis for further consultations on the Medium-Term Plan.
3. The document has now been reviewed to reflect the conclusions and comments referred to above as well as the results of the Board's discussions on the Medium-Term Plan in September and the revised version is set out in the Annex. Shortly after the outline of the programme and the preliminary budget estimates for 1993-94 have been distributed (early in November), it is planned to have a "kick-off" meeting at which Missions will have an opportunity also to raise questions related to the Medium-Term Plan and to discuss the timetable for consultations on it.

25 October 1991



Annex**DRAFT OF THE AGENCY'S MEDIUM-TERM PLAN FOR 1993-98****I. BACKGROUND**

1. The Agency's Medium-Term Plan for 1993-98 has been prepared in response to a request made by the Board of Governors. Since 1985, the Agency's planning perspective has been biennial, with brief indications being given of long-term aims. Annual budgets and a review of the programme make it possible to introduce corrections each year in the light of changing circumstances. However, Board Members have expressed a desire for a medium-term plan as a longer than two-year framework for discussions on the direction of and, more importantly, desirable changes in the Agency's future activities.

2. The preparation of the present draft of the Plan was preceded by discussions by programme managers of the problems and challenges facing the Agency and the nuclear community in the medium term and of the Agency's response to these. The results of these discussions were documented in the detailed draft of the Medium-Term Plan issued on 15 April 1991. This document was reviewed by several groups of outside experts and discussed by the Administrative and Budgetary Committee in May 1991. The present draft - which focusses on the Agency's strategic goals rather than on details - is based on the above work. Experience with it will show whether the effort should be repeated and, if so, whether the present approach should be retained or modified.

3. Many events that have a direct impact on how Member States wish the Agency to serve their collective interests cannot be foreseen - a large accident such as that at Chernobyl, a new concern about energy sources that emit carbon dioxide, a new political situation in a region such as Central and

Eastern Europe, and the role assigned to the Agency by the United Nations Security Council in connection with the situation in Iraq are some examples. The new, far-reaching nuclear disarmament initiatives announced by the United States and the Soviet Union in autumn this year, although not directly related to the Agency's work, may have an impact on international safeguards. Such developments cannot be foreseen even in annual plans. They require a measure of readiness for timely response by Member States and the Secretariat. A contingency fund, perhaps in the form of an enhanced and modified Working Capital Fund, could be a part of such readiness. Such events may also lead to changes in priorities in the Agency's programme.

4. Given the uncertainty of many future events, a medium-term plan cannot be an accurate forecast of activities. It is rather a guide for action in the light of developments that can be expected with some degree of probability. It does not provide cost calculations. Its purpose is to identify longer-term trends and ambitions and thereby to provide guidance for drawing up biennial programmes and budgets.

II. THE AGENCY'S FUNCTIONS

5. The Agency's objectives, as laid down in the Statute, are to "accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world" and to verify that nuclear material and facilities under its safeguards are not used to "further any military purpose". These are the foundation on which the Medium-Term Plan is built.

6. In looking at the medium term, the Agency is not starting from scratch. A number of functions which Member States have found useful have been undertaken on a continuous basis. Their usefulness must, of course, always be kept under review, but it is reasonably safe to assume that a global, intergovernmental organization serving its Member States in the area of nuclear energy utilization will be seen by those States as a natural instrument for:

- (a) Organizing meetings at which Member States exchange experience and learn from each other. The range of topics on which the intergovernmental nuclear community wishes to focus varies somewhat from one period to another, but here, too, with ever-growing and broadening nuclear activities in Member States, there is a tendency for the number of meetings to grow. Restraint is needed;
- (b) Working out norms of various kinds - guidelines, recommendations, standards, conventions - on the basis of collective experience and agreement. The trend towards strengthening and harmonizing the international approach to nuclear safety will result in expanding this function;
- (c) Providing assistance to developing countries in building up their capacity to exploit the practical applications of nuclear energy and promoting research on subjects which feature prominently in the technical co-operation programme.
- (d) Providing services on request - sometimes against payment - e.g. Operational Safety Review Teams (OSARTs), Assessment of Safety Significant Events Teams (ASSETs), Integrated Safety Assessment of Research Reactors (INSARR) missions, Radiation Protection Advisory Teams (RAPATs), Waste Management Advisory Programme (WAMAP) missions, energy planning advisory services, and postal dose intercomparison service for radiotherapy centres;
- (e) Compiling a wide range of data from all Member States, organizing and frequently analysing these data and disseminating them. Examples are the International Nuclear Information System (INIS), the Power Reactor Information System (PRIS), the Incident Reporting System (IRS), the IAEA/NEA "Red Book" on Uranium Resources, Production and Demand, and the Agency's nuclear and atomic databases. The volume of data is growing and information is increasingly

being made available on line. As the number of databases has also been growing, consultations should be undertaken with Member States on their usefulness and the frequency with which data are published;

7. Moreover, the Agency plays a unique role in operating an international safeguards system that serves the overall objective of the non-proliferation of nuclear weapons and thereby facilitates international trade in nuclear material, hardware and technology and international co-operation in the nuclear field.

8. These functions make up an important and continuing part of the Agency's work, but they need not be systematically discussed in a medium-term plan. The main purpose of such a plan is to identify areas and goals on which the Agency should focus in discharging these functions and to identify factors which in the medium term are likely to make governments look to the Agency for a response or, more often, a contribution to a wider response. Factors of uncertainty should also be noted.

9. The development of new forms of international co-operation by other international organizations and the creation of new organizations dealing with areas related to the Agency's work will make it necessary to give continuous attention to all emerging possibilities for closer co-ordination and co-operation, including work-sharing arrangements with such organizations or the transfer of some existing activities to them. This will especially be so in the areas of environmental protection, nuclear safety and international safeguards, which are and will continue to be subject to general review and reconsideration.

III. THE PRESENT SITUATION AND EXPECTED DEVELOPMENTS IN THE MEDIUM TERM

10. It can safely be predicted that a growing world population will need more energy, and particularly electricity, in the period ahead. A more efficient use of energy may somewhat offset, but will by no means neutralize, the increase in demand, which will be particularly strong in developing

countries. A novel and important factor is that the use of fossil fuels at present global levels is seen as environmentally problematic and that nuclear power may increasingly come to be seen as presenting fewer environmental problems.

11. The medium-term period will therefore be characterized by much analysis of various energy options at the national, regional and global level, and will be a period during which important energy policy decisions are likely to be made. As there is no global intergovernmental energy organization, the Agency should stimulate and, where necessary, co-ordinate the international effort required for a proper assessment of the benefits and problems of the nuclear power option.

12. The results of these analyses may lead to growing interest in the expanded use of nuclear power and generally contribute to the creation of a wider basis for the objective assessment of the advantages and the economic and environmental constraints associated with different energy sources. This in turn would lead to more rational energy policy decisions by Member States.

13. It can also be safely predicted that a growing world population, with a major part living in developing areas, will need much more food and water, better health care, and more industrial goods. Nuclear methods which lead to improvements in food production, health care, industry and hydrology are increasing in number and are often competitive with other methods. The scope for the exchange of experience in using nuclear methods and for transferring them to developing countries is therefore growing.

14. A need which is becoming increasingly urgent is that of environmental monitoring and protection. There is a growing awareness that nuclear technologies and methods can contribute a great deal to environmental protection and sustainable development.

15. The amount of nuclear material and the number and complexity of nuclear facilities submitted to safeguards are expected to grow in the medium term, although the exact magnitude of this growth depends upon a number of factors that cannot be assessed with any certainty. While it is recognized

that this growth will result in an increase in the Agency's safeguards workload, there is also a realization that the Agency's safeguards system must be modified so as to provide assurance that undeclared nuclear facilities and activities do not exist in States which have undertaken nuclear non-proliferation obligations and entered into comprehensive safeguards agreements with the Agency. This realization has already stimulated new discussions about the safeguards system, and these discussions can be expected to lead to important changes.

16. While the indicators of what is and will be required of the Agency undoubtedly point generally to growth, since 1985 the position of many of the governments which pay a major share of the Agency's expenses has been to insist on zero real budgetary growth.

17. Despite zero growth in the budget since 1985, the Agency's activities have increased very substantially. In part, this has been possible because of increased efficiency. In part, however, growth has been possible because Member States have made available increasing resources outside the Regular Budget, e.g. in the form of cost-free experts (especially in the Departments of Safeguards and Nuclear Energy and Safety), through national safeguards support programmes, and in the form of voluntary contributions to the technical co-operation programme. Various conditions attached to the use of some of these resources limit their usefulness for financing parts of the Agency's programme. A conflict has therefore built up between growing demand for action by the Agency and stagnant Regular Budget resources. This problem must be tackled.

18. The resource problem is a matter not only of overall growth, but also of the relationship between safeguards and non-safeguards activities. This distinction stems from the basic two-pronged approach of the Statute, which calls for the Agency to promote the peaceful uses of nuclear energy on the one hand, and to verify the peaceful nature of such uses on the other. There is a deep-rooted feeling, especially among developing Member States, that the budgetary balance between safeguards and non-safeguards activities should be maintained, if not changed in favour of non-safeguards activities.

19. It can reasonably be argued that the Statute does not prescribe anything as regards the volume of different activities and that all programmes, whether for the direct promotion of the peaceful uses of nuclear energy or for safeguards, should be worked out on their merits and on the basis of actual needs. The detailed draft of the Medium-Term Plan distributed on 15 April 1991 shows that some activities do merit expansion - and that some others can be reduced or phased out.

20. Thorough attention also needs to be given on a continuing basis to improving efficiency and economy in the "Direction and Support" area and to adapting the organizational structure of the Secretariat to the changes in the content and volume of the Agency's work. This should be part of the medium-term strategy.

III.A. Nuclear Power and the Fuel Cycle

21. As can be seen from the status of new plants under construction or planned for construction, the expansion of nuclear power that will take place in the world in the medium term is modest. It will create some additional demand for assistance and services from the Agency. However, the fundamental challenge for the Agency and its Member States in the medium term will be to make nuclear power - which has already demonstrated that it can supply large quantities of electricity efficiently and economically - an acceptable and viable energy option for governments, parliaments and the public. Given that the primary concern worldwide is that environmental protection and the conservation of resources should be the principal components of the strategy for the future development of both industrialized and developing countries, electricity will play an increasingly important role in energy end use. One of the conclusions of the Senior Expert Symposium on Electricity and the Environment held in Helsinki in May 1991 was that: "The global demand for electricity services will continue to increase, subject only to constraints on economic growth". The market for nuclear power will therefore expand. However, success in this market will depend essentially on how safely and competitively nuclear power performs and on how well and how safely it is perceived to perform. Radioactive waste management is part of this issue.

22. The development of measures to achieve the objective of improving the safety and reliability of nuclear power should command a high place in the medium-term strategy of Member States and international organizations; in other words, it will be an essential element of the "Atoms for peace for the 1990s" programme.

23. A major Agency conference on the Safety of Nuclear Power: Strategy for the Future held in September 1991 addressed the issue of the adequacy of the existing international nuclear safety framework and formulated specific recommendations in this area. These recommendations were reviewed at the 35th regular session of the Agency's General Conference, which identified directions for future work in resolution GC(XXXV)/RES/997.

24. While indicating that ensuring a high level of nuclear safety should remain primarily the responsibility of national authorities, the General Conference stressed the need to strengthen international co-operation in nuclear safety and to harmonize the international approach to all aspects of nuclear safety, including safety objectives for nuclear waste management. A step-by-step approach should gradually result in rules, guidelines, services and other activities which may be seen as an international nuclear safety regime and which would include the establishment of some general safety principles, methods of verification of compliance, a comprehensive system of incident reporting and analysis, exchange of experience, and peer reviews. The General Conference indicated that work should start on an international framework convention for nuclear safety as a potential mechanism for formalizing the elements of such a regime.

25. Four safety-related areas have been identified as deserving special attention within the overall strategy described above for promoting the highest level of nuclear safety throughout the world:

- Achieving excellent safety performance in all operating nuclear installations. For this a more thorough and transparent international overview of safety should be considered. OSARTs, ASSETs and the IRS were referred to as useful and appropriate instruments whose use should be promoted;

- Determining an acceptable level of safety for all operating nuclear power plants built to earlier standards. In order to make such a judgement, a common basis needs to be developed;
- Developing an internationally harmonized approach to safety objectives for nuclear waste management;
- Developing safety principles for the design of future reactors.

26. In the light of the above it is expected that nuclear power safety and related issues will represent the highest priority area for the Agency in the medium term. There are close links between the objectives of many activities relating to the improved performance of existing nuclear power plants and the development of advanced reactor concepts on the one hand, and the objectives of the safety programme on the other. The nuclear power option could be seriously jeopardized by any accident with significant radioactive releases. It is against this background that the expression "an accident anywhere is an accident everywhere" was coined and that demand for an "international safety culture" has arisen.

27. The awareness of an acute need to ensure that nuclear power safety is at a high level everywhere in the world must be reconciled with safety remaining the responsibility of individual governments. The Agency's approach at present is to offer advisory visits, services and peer reviews, with particular emphasis on ensuring the safety of operating nuclear power plants. Training of nationals from developing countries through the technical co-operation programme complements these activities. Governments will have to decide whether this is adequate to attain international safety goals. The International Nuclear Safety Advisory Group (INSAG) expressed the view that the Agency should adopt a more aggressive approach, especially where serious weaknesses exist. It should have a "right of initiative" in offering services designed to improve the national regulatory function. The conference on the Safety of Nuclear Power: Strategy for the Future in September endorsed this approach.

28. These new trends will lead to a further increase in demand for Agency activities in nuclear power safety in the medium term, even if the Agency concentrates on the role that is appropriate for an institution of a governmental character and if allowance is made - as it should be - for the role of the World Association of Nuclear Operators (WANO) in dealing with the strengthening of safety that can be achieved through international co-operation between operators. When considering the Agency's role in the context of international co-operation in nuclear safety involving other international organizations, its unique attribute in having a wide representation of States, including all nuclear States, on a governmental basis should be kept in mind. An element of the Agency's medium-term strategy in the nuclear safety area should be to orient its programme more closely to the needs of the nuclear regulatory components of governments.

29. The existence of INSAG and INWAC (International Radioactive Waste Management Committee) as high-level advisory bodies within the Agency adds authority and competence to the Agency's activities in the field of safety and waste management. Implementation of the activities associated with the new international safety strategy will also create a higher demand for leading nuclear safety, radiation protection and waste management experts from Member States to assist the Secretariat.

30. While safety, in particular operational safety, is undoubtedly the highest priority in the field of nuclear power, other important activities are harder to place in order of priority. For example, questions relating to plant ageing and life extension and to decommissioning could require more international co-operation in the medium term. The same is true of spent fuel management and waste disposal. In the latter areas, international standards worked out and agreed to in the medium term might help make the public aware that there is great confidence among nuclear experts about their ability to manage spent fuel and manage and dispose of waste safely. Although the idea of international repositories has been studied extensively, and appears to be technically possible, there is little chance of establishing such a repository until solutions have been demonstrated at the national level.

31. Radiation protection represents another area in which considerably more Agency work will undoubtedly be needed in the medium term, as a result of the recent new recommendations of the International Commission on Radiological Protection (ICRP). These will need to be translated into practical Agency standards. Also, assistance will have to be given to many developing countries in incorporating international standards into detailed national regulations for radiation protection, in setting up authorities to supervise the implementation of such regulations and in enhancing the performance of such authorities. Achieving this and helping to provide education and training in radiation protection to relevant groups of professionals are prerequisites for Agency assistance involving the use of radioactive materials and other radiation sources. These would seem to be realistic aims for the medium term. An issue which should continue to receive emphasis in the programme is the enhancement of radiation safety for nuclear workers in the work place.

32. The role of nuclear power in the energy systems of the future depends on a number of factors which cannot be foreseen with any certainty. Clearly, the occurrence of any further serious accident would have a strong impact. Institutional factors such as licensing procedures and rate setting are of central importance. So are the economic competitiveness of new plants and the degree to which nuclear power may come to be recognized as environmentally benign compared with realistic alternatives.

33. While many industrialized countries have experienced electricity surpluses in the past decade, this situation will increasingly give way in the medium term to a need to plan for greater generating capacity and for replacing obsolescent power plants. There will be considerable interest among governments in assessing available options for electricity generation: coal, oil, gas, hydro, nuclear power and renewables.

34. The nuclear industry, which has been hard hit by the dearth of new orders, has a strong interest in being ready to offer new plants which are economically competitive, are simpler to operate and rely more on passive safety. Contacts with governments indicate that the Agency is not regarded as an instrument through which joint ventures for prototype construction could be

organized. Rather, many Member States seem to think that the Agency should serve predominantly as a forum in which interested parties can exchange experience and consider jointly the major parameters that could usefully govern the design of advanced reactors. This does not really go beyond the role which the Agency is playing at present. On the other hand, a larger role might be given to the Agency as regards specific types of reactor in which some governments may be interested - for example, small and medium-sized reactors beyond the turn of the century and specialized reactors for desalination of water, district heating, and the provision of process heat.

35. When considering the Agency's role in contributing to the transfer of nuclear power and fuel cycle technology, it should be recognized that the nuclear industry has made great progress in commercializing many technologies and that new suppliers have appeared on the market, including some in developing countries. The establishment of WANO and the current discussions on the extension of the work of the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA) to countries in Central and Eastern Europe and to developing countries in Latin America and Asia are examples of the emergence of new forms of international co-operation between utilities and other non-governmental organizations active in this field.

36. Under these circumstances the Agency's future role should increasingly be to focus on finding ways of supporting and assisting buyers and on removing obstacles to free choice. The Agency's traditional function of providing a forum for information exchange in this area may expand in the future if demand for nuclear power increases and is followed by expanded development programmes in the field of power reactor technology and design. The Agency should also be ready to respond to requests for assistance from developing countries which are considering the nuclear option, particularly as regards manpower training.

37. The need in many countries to plan for a greater electricity generating capacity in the medium term points to the importance of programmes aimed at developing methods of analysing and comparing different options in terms of economics and of impact upon health and the environment. As there is no universal intergovernmental organization that specializes in energy, the Agency, acting together with organizations such as the International Energy

Agency (IEA), the United Nations Environment Programme (UNEP), the World Health Organization (WHO) and the World Meteorological Organization (WMO) may also be increasingly called upon to provide such comparative data for the international discussion of the relationship between energy and the environment, which seems likely to intensify in the medium term.

III.B. Non-Power Applications

38. The broad field of non-power applications of nuclear energy is not subject to as many unpredictable factors as are nuclear power or safeguards. The scope for the transfer of technologies is constantly increasing as more developing Member States acquire the potential to make use of nuclear techniques. The Agency's work in the medium term will almost invariably aim at creating or strengthening capabilities at the national level, primarily through the technical co-operation programme. The need for greater effectiveness in achieving this aim will require greater precision in identifying those elements of these capabilities where the assistance supplied will have the most impact.

39. The use of nuclear techniques can provide very significant advantages in food production and food preservation. Mutation breeding, nitrogen fixation and improvements in the health and productivity of cattle all help to provide more food on a sustainable basis. The sterile insect technique and food irradiation can prevent food losses.

40. The use of nuclear techniques for the assessment of water resources, especially in arid and semi-arid countries, for tracing the transfer of elements within the oceans and for research on and the monitoring of a wide variety of environmental pollutants is becoming increasingly important. The use of nuclear techniques in the recent campaign to eradicate the screwworm from North Africa, in the project on the purification of flue gases and by the Agency's Monaco Laboratory in connection with the recent oil spills in the Persian Gulf are three examples of their value.

41. Nuclear methods are now one of the largest and fastest-growing areas of medicine. While some of these methods are costly and require very sophisticated equipment, others do not. With cancer and cardiovascular diseases gaining considerable importance also in developing countries, assistance in the field of nuclear medicine and radiotherapy must increase. The large network of Secondary Standard Dosimetry Laboratories which the Agency has helped to establish and maintain is an important part of the necessary infrastructure for radiotherapy and requires greater attention. To the extent that WHO is ready to take on activities which the Agency currently performs in this field, the Agency should transfer responsibility to it.

42. In industry, an increasing number of nuclear methods are used for such purposes as gauging, non-destructive testing, radiation processing of industrial materials and medical products, and materials analysis using accelerators. The Regional Co-operation Agreement for Asia has shown that the potential usefulness of the transfer of techniques in this area is great. The further dissemination of these techniques must be pursued in the medium term.

43. The scope for Agency activities relating to the transfer of nuclear technology and techniques in the areas of food and agriculture, medicine and industry is great. An important limiting factor is the amount of technical co-operation and research contract funds available rather than the capacity of developing countries to absorb the assistance, as the large number of footnote-a/ projects shows. A considerable expansion has taken place in these activities as a result of the growth of technical co-operation funds. If more such funds were made available, there would be no lack of high-priority projects on which to spend them. The implementation of such projects should go in parallel with assistance to developing Member States in establishing and strengthening radiation protection and radioactive waste management infrastructures, and the medium-term period will probably see substantial progress in both of these areas. There is one specific and limited area of waste disposal to which the Agency could contribute decisively. Many developing countries lack satisfactory waste disposal facilities for the increasing quantities of radioactive waste from isotope applications in hospitals and industry and from the operation of nuclear research centres, including research reactors in some cases. Through its technical co-operation

programme the Agency could help create national or regional facilities in the medium term. Increasing resources are needed in order to meet technical co-operation requirements and to make visible progress in strengthening the national infrastructures, thus providing a sound basis for the Agency's work in the medium term.

III.C. Safeguards

44. As regards the need for growth in safeguards activities, it should first be noted that, under an optimistic but not totally unrealistic scenario for the medium term, full-scope safeguards might come to be adopted in all non-nuclear-weapon States. Argentina and Brazil are now introducing comprehensive safeguards and South Africa has already accepted such safeguards. The creation of a nuclear-weapon-free zone in the Middle East is undoubtedly very difficult but it is not just a theoretical possibility. The significant progress being made by nuclear-weapon States on nuclear disarmament may result in India and Pakistan considering the acceptance of comprehensive safeguards.

45. Even disregarding the distant possibility that the Agency might be asked to verify any nuclear material transferred to the peaceful sector as a result of arms control and disarmament and the possibility of increased verification in nuclear-weapon States under voluntary offers, it is clear from detailed studies performed during the preparation of the Medium-Term Plan that, assuming there is no important change in the traditional approach to safeguards, there will be a need for a significant increase in safeguards activities - and hence resources - in the medium term. This will result from an increase in the number and complexity of nuclear installations under safeguards and from significant growth in the total amount of nuclear material under safeguards. It is hard to see how this increase could be offset by greater efficiency, although the search for such efficiency must continue. The trend is not towards accepting a lowering of the level of assurance by relaxing safeguards practices - rather the opposite; and it is difficult to imagine a departure from the principle of equal treatment of Member States as regards safeguards. There is a growing feeling that there is a need to examine whether the safeguards system could be made stronger and how this

could be achieved. At the same time there is a wish to reduce the cost of the system or, at least, to avoid making it costlier. In the medium-term period, during which the 1995 NPT Conference is to take place, these two wishes, which cannot easily be reconciled, must be addressed and a solution found.

46. Barring any drastic action by the Board to change present safeguards approaches, the cost of safeguards will rise in the medium term.

IV. OVERALL AND SPECIFIC OBJECTIVES FOR 1993-98

47. In the light of (a) discussions within the Secretariat during preparation of the detailed draft of the Medium-Term Plan distributed to Member States on 15 April, (b) the review of this draft by outside experts, (c) the conclusions of the International Conference on the Safety of Nuclear Power: Strategy for the Future held in September 1991, and (d) discussions on the draft Plan in the Administrative and Budgetary Committee in May 1991 and in the Board of Governors in September 1991, it is possible to formulate the following overall objectives for the medium term:

- To enhance the transfer of nuclear technology and know-how to developing countries.
- To provide international leadership and assistance in achieving and maintaining a high level of nuclear safety worldwide and minimizing the environmental impact of all peaceful nuclear facilities and applications;
- To verify that all nuclear material and facilities that States have an obligation to declare and to place under international safeguards are declared and are used for exclusively peaceful purposes;

48. The Agency's specific objectives, which are related to the above statements and are derived from an assessment of expected developments in Member States and in international co-operation, are listed below.

(i) Transfer of Technology

- (a) To ensure that the Agency's technology transfer activities are in line with national development plans through increased interaction with the governmental authorities responsible. The aim of Agency assistance will be to strengthen the relevant part of national infrastructures so that they become self-supporting. Manpower development, quality control services and maintenance of nuclear instrumentation will receive more attention in this strategy. Recognizing the important role that the technical co-operation programme will play in achieving these objectives, the traditional means and procedures for technology transfer will be reviewed to ensure the high quality of the programme delivered.
- (b) Mainly through the provision of training and advice, to help establish and strengthen national nuclear safety, radiation protection and waste management systems as a prerequisite for the development of nuclear energy programmes.
- (c) In selecting areas for co-operation and assistance, to give priority to the transfer of technology in areas involving basic human needs such as food security, health and energy and to the transfer of techniques contributing to environmental protection and sustainable development.
- (d) To promote only those nuclear techniques which have a clear advantage in developing countries over other techniques. To this end, to compare nuclear and non-nuclear techniques, taking into account the conditions prevailing in the countries to which the nuclear techniques are to be transferred.
- (e) To co-operate with relevant international organizations in establishing appropriate databases, developing methods and systematically analysing the economic, health, environmental

and climatic impacts of various energy options and, in particular, to contribute analyses and data concerning nuclear power to such studies. To make the results of this work widely available to experts in Member States.

- (f) To promote the exchange of information and international discussions with such parties as interested Member States, WANO and financing institutions, with the aim of developing new schemes for financing, constructing and operating nuclear power plants in developing countries.
- (g) To perform global analyses and strategic studies of selected aspects of nuclear power and the fuel cycle, including assurances of supply and plutonium utilization.

(ii) Nuclear Safety, Radiation Protection and Radioactive Waste Management

- (a) To provide international leadership and assistance to national nuclear safety authorities and especially to nuclear regulatory governmental bodies with a view to detecting and correcting safety deficiencies in operating nuclear facilities and thereby to preventing accidents. To this end:
 - A more thorough and transparent system for overseeing the safety of all operating nuclear installations should be developed and implemented;
 - A common basis should be developed for judging the acceptable level of safety of all operating nuclear power plants built to earlier standards, and direct assistance should be provided to Member States in performing periodical reviews of such plants and in assessing and monitoring the effects of ageing on safety.

- (b) To co-ordinate the efforts of international and national bodies in reaching, step by step, a consensus on safety principles for the design of future nuclear power plants.
- (c) To take the lead in the development of an international technical consensus on the acceptability of disposal methods for nuclear waste of all kinds, including the development of safety objectives, and to help gain public confidence in these matters.
- (d) To provide expanded international guidance and assistance to national nuclear safety authorities with a view to ensuring the safety of research reactors, spent fuel management facilities and installations using radiation sources, with special attention to larger research reactors and irradiation facilities.
- (e) To work towards establishing a harmonized international approach to all aspects of nuclear safety, including the incorporation of the ICRP's recommendations into the Agency's standards and guides. To this end, to identify possible elements of an international convention on nuclear safety.

(iii) Safeguards

- (a) To operate the Agency's safeguards system effectively on the basis of international, multilateral and bilateral agreements and to develop and introduce new approaches that would strengthen the Agency's ability to detect nuclear material and facilities that should have been submitted to safeguards.
- (b) To undertake a review of the present safeguards system in order to identify shortcomings and, if possible, to propose safeguards approaches which would allow a reduction in the inspection workload while enhancing or maintaining the effectiveness of the system.

- (c) To develop effective safeguards implementation techniques and approaches suitable for new large-scale complex nuclear facilities and new technologies, mainly through co-ordinating development work in Member States.
- (d) To conclude the safeguards agreements, subsidiary arrangements and facility attachments necessary for the application of full-scope safeguards in all non-nuclear-weapon States, including those which have recently acceded to the NPT, and to develop suitable safeguards implementation techniques and approaches for nuclear technology in these States.
- (e) To participate in the preparations for the NPT extension conference in 1995 insofar as it concerns the Agency's functions under the Treaty.

V. IN-HOUSE AND OTHER ISSUES

49. When considering the format and preparation of a medium-term plan, the Board of Governors decided that certain in-house issues of importance to the conduct of the Agency's work in the medium term should also be considered. The following major issues that need to be addressed in the medium term have been identified:

1. Strengthening co-operation with other international organizations so as to involve them more closely in the execution of some parts of the nuclear-related programme, with the Agency becoming more active as a catalyst or in providing a forum for considering ways of improving the co-ordination of multi-agency efforts;
2. Remedying the considerable deterioration in the conditions of service of staff in the Professional and higher categories in order to be able to attract and retain the high calibre of staff that is needed to implement the strategy;

3. Reforming the Agency's financing systems for:

- Safeguards (completion of the work of the informal working group leading to a new financing formula);
- Technical assistance and co-operation;
- Major investments;
- Unforeseen programme developments (contingency fund).

4. Improving programme planning and evaluation. It is planned to evaluate the Agency's technical programmes using a four-year evaluation cycle.

VI. CONCLUDING REMARKS

50. The description of the strategies proposed for the medium term given in the preceding chapters identifies the areas on which the Agency proposes to concentrate and in this way gives a broad indication of the relative priority of planned activities. A more specific indication of priorities - in the form of the distribution of budgetary resources - will be given by the Secretariat in the draft programme and budget submitted for 1993-94.

51. The three overall objectives for the medium-term period formulated in paragraph 47 are regarded as having the same level of priority. Within each of them different approaches to the determination of priorities have been followed.

52. As regards direct assistance and co-operation for the transfer of technology, the requests made by Member States are the determining factor in the distribution of resources, which come mainly from the Technical Assistance and Co-operation Fund and extrabudgetary sources. The assignment of priorities to the Agency's activities in support of technology transfer and

the funding of these activities (which comes mainly from the Regular Budget and extrabudgetary sources) should be based on an assessment of developing Member States' interest in the various areas (e.g. nuclear medicine), as determined from the volume of requests received for assistance.

53. In the nuclear safety, radiation protection and waste management areas, international consensus is always sought on the activities considered to be most topical at a given time for the Agency. INSAG and INWAC play an active role in this respect and the recent Agency Conference on Safety of Nuclear Power: Strategy for the Future and the subsequent discussions at the 35th session of the General Conference were a good example of the process of successfully arriving at a consensus on programme priorities.

54. In the field of safeguards, yet another approach is used in assigning resources: the verification system should operate at the lowest cost and with the maximum level of assurance possible.