

# General Conference

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## Forty-seventh regular session

Item 16 of the agenda  
(GC(47)/21)

# Strengthening the Agency's Activities Related to Nuclear Science, Technology and Applications

**Resolution adopted on 19 September 2003 during the tenth plenary meeting**

## **A.**

### **Strengthening the Agency's Activities Related to Nuclear Science, Technology and Applications**

The General Conference,

- (a) Noting that the Agency's objectives as outlined in Article II of the Statute include "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world",
- (b) Noting also that the statutory functions of the Agency as outlined in Article III of the Statute, paragraphs A.1 to A.4, include encouraging research and development and fostering the exchange of scientific and technical information and the training of scientists and experts in the field of peaceful uses of atomic energy, including the production of electric power, with due consideration for the needs of developing countries,
- (c) Noting the Medium Term Strategy as guidance and input in this respect,
- (d) Aware of the present role of nuclear power in meeting 16.2% of the electricity needs of mankind, and that a number of countries consider that applications of nuclear science are making a crucial input to development strategies in Member States,
- (e) Stating that nuclear science, technology and applications address and contribute to a wide variety of basic socio-economic human development needs of Member States, in such areas as energy, industry, food, nutrition and agriculture, human health and water resources management,

- (f) Confirming the important role of science, technology and engineering in enhancing nuclear safety and security,
- (g) Acknowledging the need to resolve the issues of managing in a sustainable manner the waste from the nuclear fuel cycle, and
- (h) Taking note of the “Nuclear Technology Review Update 2003” (GC(47)/INF/6) prepared by the Secretariat,
1. Stresses the need, in conformity with the Statute, to continue to pursue activities of the Agency in the areas of nuclear science, technology and applications for meeting basic sustainable development needs of Member States;
  2. Underlines the importance of facilitating effective programmes in the areas of nuclear science, technology and applications aimed at pooling and further improving the scientific and technological capabilities of Member States through co-ordinated research and development within the Agency and between the Agency and Member States and through direct assistance;
  3. Recognizes the importance of and endorses the Agency activities which meet the objective of fostering sustainable development and protecting the environment;
  4. Suggests that the Secretariat continue to implement efforts which contribute to a greater understanding and a well-balanced picture of the role of nuclear science and technology in a global, sustainable development perspective, including the Kyoto commitments;
  5. Requests the Director General to continue to pursue, in consultation with Member States, the Agency’s activities in the areas of nuclear science, technology and applications, with special emphasis on supporting the development of power and non-power applications in Member States with a view to strengthening infrastructures and fostering science, technology and engineering with due regard to nuclear safety and nuclear security;
  6. Calls upon the Secretariat to address specific needs and requirements of Member States, including those which do not have nuclear power facilities, in the areas of nuclear science, technology and applications, including the use of the sterile-insect technique (SIT) for creating tsetse-free zones and for combating malaria-transmitting mosquitoes, the use of isotopes and radiation in applications relating to agriculture, medicine, industry and the environment, and the treatment of greenhouse gases (GHGs) and flue gases resulting from fossil fuel burning;
  7. Requests that the actions of the Secretariat called for above be undertaken subject to the availability of resources; and
  8. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its forty-eighth session on the progress made in the areas of nuclear science, technology and applications.

## **B.**

### **Nuclear Knowledge**

#### The General Conference,

- (a) Recognizing that preserving and enhancing nuclear knowledge and ensuring the availability of qualified manpower are vital to the continued and expanded safe and secure utilization of all nuclear technologies for peaceful purposes,

- (b) Recalling its resolution GC(46)/RES/11.B calling on the Agency, within available resources, to increase the attention given to activities for preserving and enhancing nuclear knowledge, to increase awareness of these activities, to assist Member States in preserving nuclear education and training, and to encourage Member States to promote networking,
  - (c) Noting the important role which the Agency has in assisting Member States in their preservation and enhancement of nuclear knowledge and facilitating international collaboration on this,
  - (d) Aware of continual growing concerns about a possible shortage of personnel in nuclear fields,
  - (e) Recognizing that preserving and enhancing nuclear knowledge involves both education and training for succession planning and the preservation or growth of existing knowledge in nuclear science and technology,
  - (f) Noting that the need to preserve, enhance or strengthen nuclear knowledge arises irrespectively of future expansion in the applications of nuclear technologies,
  - (g) Recognizing the useful role of international co-ordination and co-operation in facilitating exchanges of information and experience and in implementing actions to help address common problems, and also in benefiting from opportunities relating to education and training and to nuclear knowledge preservation and enhancement, and
  - (h) Commending the Director General and the Secretariat for the activities already undertaken and for those planned to address the issues of preserving and enhancing nuclear knowledge, as outlined in document GC(47)/11, Annex 3 (Nuclear Knowledge),
1. Urges the Secretariat to continue to strengthen, subject to the availability of resources, its current and planned efforts in this area, recognizing the need for a focused and consolidated approach, and in particular to consult with Member States and other international organizations on the development of a comprehensive Agency strategy for all aspects of nuclear education, training and qualification, as well as nuclear knowledge preservation and enhancement, and to further increase the level of awareness of its efforts in the preservation and enhancement of nuclear knowledge;
  2. Requests the Secretariat to assist Member States, particularly developing ones, in their efforts to ensure the preservation of nuclear education and training in all areas of nuclear technology for peaceful purposes, which is a necessary prerequisite for succession planning;
  3. Encourages Member States to promote the networking of institutions for such nuclear education and training;
  4. Requests the Director General to continue to evaluate the relevance of currently ongoing programmes and activities aimed at addressing common problems identified by Member States regarding the preservation and enhancement of nuclear knowledge and to identify approaches aimed at addressing those problems;
  5. Requests the Director General to note the continuing high level of interest of Member States in the range of issues associated with nuclear knowledge in the process of preparing the Agency's programme;
  6. Welcomes the plans for an international conference in 2004 on "Nuclear Information and Nuclear Knowledge Management"; and

7. Requests the Director General to report on progress made in the implementation of this resolution to the Board of Governors and to the General Conference at its forty-eighth (2004) session under an appropriate agenda item and thereafter to update the report to the General Conference on a biennial basis.

## **C.**

### **Agency Activities in the Development of Innovative Nuclear Technology**

#### The General Conference;

- (a) Recalling the Agency's statutory functions "to encourage and assist research on, and development and practical application of, atomic energy for peaceful uses ... and ... to foster the exchange of scientific and technical information",
  - (b) Conscious of the potential contribution of nuclear energy to meeting the growing energy needs of the 21<sup>st</sup> century,
  - (c) Recalling its resolutions GC(44)/RES/21, GC(44)/RES/22, GC(45)/RES/12.F and GC(46)/RES/11.C, conscious of the need for sustainable development and inviting all interested Member States to combine their efforts under the aegis of the Agency in considering the issues of the nuclear fuel cycle, in particular by examining innovative, safe, economically competitive and proliferation-resistant nuclear technology,
  - (d) Noting the progress achieved in a number of Member States in the development of innovative nuclear technology and the high technical and economic potential of international collaboration in the development of such technology,
  - (e) Noting also the progress of other bilateral and international initiatives, such as the Generation IV International Forum, and their contribution to developing innovative approaches to nuclear power,
  - (f) Recognizing the unique role that the Agency can play in international collaboration in the nuclear field, and
  - (g) Welcoming the presentations on the broad range of current research made at the International Conference on Innovative Technologies for Nuclear Fuel Cycle and Nuclear Power held in Vienna from 23 to 26 June 2003,
1. Commends the Director General and the Secretariat for their work within the framework of international programmes in response to the relevant General Conference resolutions, in particular the results achieved to date within the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO);
  2. Emphasizes the unique role that the Agency can play in developing user requirements and recommendations for proliferation resistance, safety, economics, sustainability and environmental and infrastructure aspects for innovative reactors and their fuel cycles;
  3. Stresses the need for international collaboration in the development of innovative nuclear technology and the high potential and added value achieved through collaborative efforts, and also stresses the importance of identifying synergies with other international initiatives on innovative nuclear technology development;

4. Recognizing that the funding of INPRO comes partly from the Regular Budget and in large part from extrabudgetary resources, invites all interested Member States to contribute to innovative nuclear technology activities in terms of scientific and technical information, financial support or technical and other relevant experts and by performing case studies and producing work packages on the development of innovative nuclear technologies; and
5. Requests the Director General to report on the progress made in the implementation of this resolution to the Board of Governors and to the General Conference at its forty-eighth session under an appropriate agenda item.

## **D.**

### **Use of Isotope Hydrology for Water Resources Management**

#### The General Conference,

- (a) Appreciating the work done by the Agency in the area of isotope hydrology in response to resolution GC(45)/RES/12.B,
  - (b) Recognizing that the Agency has continuously demonstrated the importance of isotope techniques for water resources development and management, particularly in arid and semi-arid areas,
  - (c) Conscious of the proven techno-economic benefits of isotope hydrology in water resources management when used in conjunction with well established conventional hydrological investigations and modern methods like remote sensing,
  - (d) Noting that the initiatives of the Agency, as mentioned in document GC(47)/11, go in the right direction in that high national priorities are taken into account as well as the socio-economic impact of the utilization of isotope techniques in water resources management in Member States,
  - (e) Noting that initiatives taken by the Agency, such as leading World Water Day celebrations on behalf of the United Nations system, have increased co-operation with other relevant international organizations active in water resources development and management,
  - (f) Appreciating the initiatives of the Agency in developing joint programmes with other international organizations - for example, within the framework of a memorandum of understanding with the United Nations Educational, Scientific and Cultural Organization (UNESCO), and
  - (g) Also appreciating the work of the Agency on national and regional groundwater systems and dam leakage detection, safety and sustainability,
1. Requests the Director General, subject to the availability of resources:
    - (a) to continue to further strengthen the efforts directed towards fuller utilization of isotope and nuclear techniques for water resources development and management in the interested countries through appropriate programmes, by increased collaboration with national and other international organizations dealing directly with water resources management,
    - (b) to continue to help Member States to obtain easy access to isotopic analysis facilities by upgrading selected isotope hydrology laboratories to the level of regional resource centres,
    - (c) to continue its work on groundwater management, particularly the management of fossil groundwater resources in arid and semi-arid areas, and on dam leakage detection, safety and

sustainability, in collaboration with other international organizations and with regional organizations, and

(d) to strengthen activities which contribute to the implementation of the programmes adopted by the World Summit on Sustainable Development and the United Nations Millennium Summit, such as those related to an improved understanding of the water cycle;

2. Requests the Agency to continue, along with other relevant United Nations agencies and with relevant regional agencies, to develop human resources in isotope hydrology through appropriate courses, at universities and institutes in Member States, through the use of advanced communications techniques and at regional training centres, designed to provide practicing hydrologists with the ability to use isotope techniques; and

3. Further requests the Director General to report on achievements in implementing this resolution to the Board of Governors and to the General Conference at its forty-ninth session under an appropriate agenda item.

## **E.**

### **Plan for Producing Potable Water Economically Using Small and Medium-Sized Nuclear Reactors**

The General Conference,

- (a) Recalling its resolutions GC(43)/RES/15, GC(44)/RES/22 and GC(45)/RES/12.A,
- (b) Recognizing that sufficient and clean potable water supplies for all mankind are of vital importance, as emphasized in Agenda 21 of the Rio Summit on Development and Environment and subsequently recalled at the 19th special session of the United Nations General Assembly,
- (c) Taking note with great concern of the fact that a great portion of the world's population will, over the next years, face the ever-growing problems of potable water shortages,
- (d) Noting that seawater desalination using nuclear energy is technically feasible and in general cost-effective,
- (e) Noting also the interest of a number of Member States in activities relating to seawater desalination using nuclear energy,
- (f) Underlining the urgent need for regional and international co-operation in helping to solve the serious problem of potable water shortages, particularly through the desalination of seawater,
- (g) Taking note with appreciation of the different activities carried out by the Secretariat in co-operation with interested Member States and international organizations, as outlined in the report of the Director General contained in document GC(47)/11, and the guidebook entitled "Introduction of Nuclear Desalination" contained in IAEA Technical Reports Series 400,
- (h) Taking note with concern of the rate of progress in the interregional technical co-operation project on "Integrated nuclear power and desalination system design",
- (i) Taking note of the results of the sixth meeting of the International Nuclear Desalination Advisory Group (INDAG), held in July 2002,
- (j) Expressing its appreciation for the continued efforts of INDAG,

- (k) Noting that the Agency has initiated a programme to assist developing countries interested in small and medium-sized reactors (SMRs) to address economics, safety, reliability and technical measures for proliferation resistance,
- (l) Acknowledging that innovative SMRs are of particular interest also for non-electrical energy, particularly in the desalination of seawater,
- (m) Noting with appreciation the activities carried out in co-ordination with other organizations,
- (n) Commending the efforts of the Secretariat in co-ordinating the development of nuclear reactor simulators for use on personal computers, and
- (o) Appreciating the launching in February 2002 of a Co-ordinated Research Project entitled "Economic Research on, and Assessment of, Selected Nuclear Desalination Projects and Case Studies",
1. Requests the Director General to continue consultations and interactions with interested Member States, the competent organizations of the United Nations system, multilateral financial institutions, regional development bodies and other relevant intergovernmental and non-governmental organizations in activities relating to seawater desalination using nuclear energy;
  2. Invites the Director General to:
    - continue to take the appropriate measures to assist Member States, particularly developing countries, engaged in the process of preparatory actions with regard to demonstration projects, and
    - carry out, subject to the availability of resources, further work on safety-related aspects in connection with the desalination of seawater;
  3. Invites INDAG to continue its functions as a forum for advice and review on nuclear desalination activities;
  4. Stresses the need for international co-operation in the planning and implementation of nuclear desalination demonstration programmes through national and regional projects open for the participation of any interested country;
  5. Requests the Director General and interested Member States to include in the feasibility studies (besides the technical aspects) the social and economic impact of this technology;
  6. Further invites the Director General to raise seed funds and other appropriate funding from extrabudgetary resources in order to catalyze and contribute to the implementation of all Agency activities relating to nuclear desalination and the development of innovative SMRs;
  7. Requests the Director General to note the high priority given by interested Member States to the nuclear desalination of seawater and SMR development in the process of preparing the Agency's Programme and Budget and to promote effective international information exchange and co-operation in this area; and
  8. Further requests the Director General to report on the progress made in the implementation of this resolution to the Board of Governors and to the General Conference at its forty-ninth session under an appropriate agenda item.