

# General Conference

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Item 18 of the agenda  
(GC(51)/22)

# Strengthening the Agency's activities related to nuclear science, technology and applications

**Resolution adopted on 21 September 2007 during the ninth plenary meeting**

## **A.**

### **Non-power nuclear applications**

#### **1.**

#### **General**

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, with due consideration for the needs of developing countries,
- (c) Noting the Medium Term Strategy as guidance and input in this respect,
- (d) Stressing 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, materials, industry, food, nutrition and agriculture, human health and water resources, and noting that many Member States are obtaining benefits from the application of nuclear techniques in food and agriculture through the Joint FAO/IAEA Programme,
- (e) Recognizing the success of the sterile insect technique (SIT) in the suppression or eradication of the screw-worm, the tsetse fly, and various fruit flies and moths that can cause large economic impacts,

- (f) Noting the perpetual serious problem of locusts in Africa, especially in areas highly prone to environmental degradation and desertification, and that it has been responsible for severe famine in certain countries,
- (g) Confirming the important role of science, technology and engineering in enhancing nuclear safety and security,
- (h) Acknowledging the need to resolve the issues of managing radioactive waste in a sustainable manner,
- (i) Acknowledging that the peaceful use of fusion energy can be advanced through increased international efforts and with the active collaboration of interested Member States and organizations in fusion-related projects,
- (j) Noting that the 21<sup>st</sup> IAEA Fusion Energy Conference was held in Chengdu, People's Republic of China, from 16 to 21 October 2006 and looking forward to the 22<sup>nd</sup> IAEA Fusion Energy Conference "Fifty Years of Fusion", to be held in October 2008 in Geneva, Switzerland, and encouraging Member States to participate in this significant event,
- (k) Taking note of the " Nuclear Technology Review 2007 " (GC(51) /INF/3) prepared by the Secretariat,
- (l) Aware of the problems of pollutants arising from urban and industrial activities and the potential of radiation treatment to address some of them,
- (m) Recognizing the increasing use of radioisotopes and radiation techniques in healthcare practices, crop improvement, food preservation, industrial process management, new materials development and analytical sciences, and in measuring the effects of climate change on the environment,
- (n) Aware that strengthening support to capacity-building in developing Member States in emerging areas of nuclear techniques is important for accrual of benefits from nuclear applications,
- (o) Noting the expanding use of positron emission tomography (PET) and hospital-prepared radiopharmaceuticals, and noting with appreciation the convening of an international conference on Quality Assurance and New Techniques in Radiation Medicine in November 2006 in Vienna, which marked the first time that quality assurance (QA) has been discussed in relation to all aspects of radiation medicine,
- (p) Acknowledging the increased capacity of Member States in using nuclear techniques in disease management and aware of the need for developing performance indicators for measuring such capacity,
- (q) Noting the completion of several CRPs on radiation processing technology and radiopharmaceutical development and welcoming the initiation of a new CRP relating to PET radioisotope production in 2006,
- (r) Noting with concern that, due to high costs related to nuclear medicine, the full deployment of up-to-date techniques has been hampered,
- (s) Noting that the Agency has embarked on an effort to compile and disseminate isotope data from aquifers and rivers worldwide aimed at assisting decision-makers in adopting better practices for groundwater management, and
- (t) Welcoming the creation of the IAEA Nobel Peace Prize Cancer and Nutrition Fund in response to the Board of Governors decision that the Agency's share of the 2005 Nobel Peace Prize should be used to fund fellowships and training to improve cancer control and child nutrition in the developing world,

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 coordinated research and development within the Agency and between the Agency and Member States and through direct assistance;
3. Recognizes the importance of and endorses Agency activities that meet the objective of fostering sustainable development and protecting the environment;
4. Urges the Secretariat to continue implementing efforts that contribute to greater understanding and a well-balanced perspective of the role of nuclear science and technology in sustainable global development, 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 nuclear 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 SIT to establish tsetse-free zones and for combating malaria-transmitting mosquitoes and the Mediterranean fruit fly, the unique applications of isotopes to track the global uptake by the oceans of carbon dioxide and the resulting acidification effects on marine ecosystems, the use of isotopes and radiation in groundwater management and applications relating to agriculture such as crop improvement, human health, including additional concrete efforts through PACT and in the use of cyclotrons for the production and quality control of PET radiopharmaceuticals, the development of novel materials, including value-added products from natural polymers, industry and the protection of the environment, including the treatment of greenhouse gases (GHGs) and flue gases resulting from fossil fuel burning;
7. Calls for the support of the Agency in setting guidelines for the adoption of advanced techniques and equipment in radiation medicine in developing Member States;
8. Requests the Secretariat to continue providing assistance with capacity-building for quality assurance in radiopharmaceutical development and disseminating radiation technology guidelines based on international quality assurance standards;
9. Urges the strengthening of the Joint FAO/IAEA Agriculture Programme to enhance its continuing efforts in supporting Member States, particularly in the areas of inter-regional and national capacity building, policy advice, establishment of standards and guidelines, and need-driven research and methods development;
10. Requests the Secretariat to initiate, in collaboration with FAO and Member States, R&D on the possible use of nuclear techniques as a component of an integrated approach for combating locusts and to provide appropriate assistance to this end;
11. Requests also that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources; and

12. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its fifty-second (2008) regular session on the progress made in the areas of nuclear science, technology and applications.

## 2.

### **Programme of Action for Cancer Therapy**

#### The General Conference,

- (a) Recalling its resolution GC(50)/RES/I3.A.2 on the Programme of Action for Cancer Therapy (PACT),
  - (b) Concerned about the suffering of cancer patients and their families, the extent to which cancer threatens development, particularly in developing countries, and that the number of new cases could reach 16 million by 2020 unless the international community acts, and concerned also that 12.5% of all deaths worldwide are caused by cancer as reported by the World Health Organization,
  - (c) Aware that PACT embodies in a clear way the peaceful use of nuclear technology for civilian and humanitarian purposes, and that the timely implementation of PACT, enabling Member States to develop capacities to fight cancer in a comprehensive way, will impact the health and development of all regions, and promote the other statutory activities of the Agency,
  - (d) Noting the Agency's policy of seeking to develop an Agency-wide strategy for the implementation of PACT, and taking note of the Director General's report on PACT in Annex 2 to document GC(51)/4,.
  - (e) Noting the establishment in December 2005 of the PACT Programme Office (PPO) as part of the Department of Nuclear Sciences and Applications, to coordinate a single unified programme for fundraising and the delivery of projects to Member States for cancer-related activities, making use - inter alia - of available Agency information, of identified resources, and of synergies and interactions across all relevant departments, as well as raising funds from extrabudgetary sources, and
  - (f) Recognizing the value of imPACT missions as a tool of comprehensive assessment and their usefulness for the planning of integrated cancer control programmes, and noting the increasing number of requests for imPACT missions made by Member States,
1. Welcomes the inclusion of PACT in the Human Health programme, under Major Programme 2, and the provision included in the Regular Budget to cover a portion of PACT's funding requirement with core funding provided for resources to implement projects using extrabudgetary funds;
  2. Commends the Secretariat for the progress made in the establishment of public-private partnerships with Member States, other international organizations and private entities, taking into consideration UNGA resolutions 58/129 (2003), 59/250 (2004) and 60/215 of 29 March 2006, and urges the PPO to foster the development and deployment of cost-effective, reliable systems for the radiation treatment of cancer patients through such partnerships;
  3. Requests the Director General to continue to advocate and build support and allocate and mobilize resources for the implementation of PACT as one of the priorities of the Agency;
  4. Welcomes the events supported by the IAEA Nobel Cancer and Nutrition Fund and held in Cape Town, Bangkok and Buenos Aires, further welcomes the work done by the PPO, through the Technical Cooperation Programme, in collaboration with international partners and donors, to

strengthen Member State capabilities to fight cancer, and appeals to them to continue working in this regard;

5. Welcomes the development of Model Practical Arrangements with partners, the establishment of partnerships with three new organizations and the activities organized with the support and participation provided by PACT's partner organizations.

6. Welcomes the number of post-imPACT and pre-imPACT missions conducted in Member States, further welcomes the ongoing process of establishing PACT Model Demonstration Sites in six Member States in different regions and, in this regard, welcomes the proposal by the Secretariat to develop Regional Cancer Training Networks in each region and encourages it and interested partners to continue establishing such networks;

7. Welcomes the realization of the "Forum on Cancer Control in Africa" and its London Declaration and calls on interested national governments, institutions, partners, international organizations and civil society to work together to enable the delivery of comprehensive cancer care in Africa.

8. Urges the Director General to continue seeking, strengthening and facilitating the Agency's involvement in international partnerships with non-traditional donors to further pursue, develop and implement PACT and, in this regard, requests the Director General to continue formalizing, where feasible and appropriate, PACT's collaboration with partners already identified for the benefit of more effective development and implementation of country-level PACT projects;

9. Welcomes the continuation of the joint work of the PPO, WHO Geneva, the International Agency for Research on Cancer (IARC) and the WHO Regional Offices to strengthen collaboration, as well as the participation of the WHO Regional Offices in IAEA Nobel Cancer and Nutrition Fund "Special Events" and in PACT Model Demonstration Site (PMDS) missions, and urges the continuation of this collaboration and the taking of additional steps toward the formalization of PACT partnership with WHO and other key agencies;

10. Notes the acknowledgement of the IAEA's role in fighting cancer by the World Health Assembly held on May 2007 and the fact that the WHO's collaboration with PACT within the PMDS framework was highlighted;

11. Encourages the Director General to continue the consultations with the Director General of WHO on the feasibility of a joint programme of the Agency and WHO for cancer prevention, control, treatment and research as well as the best means to partner in the implementation of PACT, taking into consideration General Conference resolution GC(50)/RES/13.A.2 and World Health Assembly resolution WHA/58.22, and to report on progress in this area in due course;

12. Commends the ongoing work of the PPO in using non-traditional sources to support its activities, encourages the administrative facilitation of the support, and welcomes the development and initiation of the implementation of a medium-term global fund raising strategy that focuses on the three-pronged approach;

13. Welcomes the new fund-raising mechanism launched on the PACT web site for direct contributions and the on going work to establish an "endowment fund";

14. Expresses appreciation for the financial and other contributions, offers and pledges made by Member States and others in support of PACT, and encourages Member States to show more flexibility in the use of the contributions;

15. Notes the need for sufficient human resources in the PPO for the implementation of projects using extrabudgetary funds, and in this regard encourages the Secretariat to take the necessary steps in this direction and encourages Member States to continue providing support and funding;
16. Notes the delivery of activities under the auspices of PACT, including those carried out under the technical cooperation programme, and in this regard requests the Secretariat to continue, in an integrated manner, planning and implementing PACT's cancer-related activities and projects in Member States.
17. Recommends the continuous development, in consultation with Member States, of imPACT as an Agency service available for Member States that may be included as part of a country's technical cooperation programme and/or, upon request, as a footnote-a/ project.
18. Recommends that the PPO continue to raise awareness about the global cancer burden in low- and middle-income countries and that, in this regard, the PPO use all tools at its disposal, including partnerships with local, national and international media, to meet this objective;
19. Recommends that the PPO, in consultation with relevant Agency departments and WHO, as appropriate, continue working to assist developing Member States in establishing integrated and comprehensive cancer control national plans, involving full participation of other international organizations and agencies, and strengthening their capabilities to enhance the benefits to be achieved from the implementation of PACT;
20. Invites Member States, interested organizations, private donors and foundations, and other non-traditional donors to contribute to the implementation of PACT and requests the Secretariat to keep Member States informed about its efforts in this regard; and
21. Requests the Director General to report on the implementation of this resolution at its fifty-third (2009) regular session.

### 3.

#### **Support to the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC)**

##### The General Conference,

- (a) Recalling its resolution GC (47)/RES/9 on "Strengthening of the Agency 's technical cooperation activities" and its resolutions GC (45)/RES/12.D, GC (46)/RES/11.D, GC(48)/RES/13.B , GC (49)/RES/12.D and GC (50)/RES/13.A.4 on support to the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC),
- (b) Recognizing that tsetse flies and the trypanosomosis disease which they transmit are a major transboundary African challenge and constitute one of the greatest constraints on the African continent's socio-economic development, affecting the health of humans and livestock, limiting land use and thus causing increased poverty,
- (c) Recognizing that this disease continues to claim tens of thousands of human lives and millions of livestock every year and threatens over 60 million people in rural communities in 35 countries, most of which are Agency Member States, and that the situation continues to worsen,
- (d) Recognizing the upstream work of the Agency under its Joint FAO/IAEA Programme in developing the sterile insect technique (SIT) against the tsetse fly and in spearheading successful pilot field projects financed from the Technical Cooperation Fund, which have

formed the basis for renewed interest on the part of African Member States in addressing the tsetse fly and trypanosomosis problem in a more holistic and sustainable manner,

(e) Recognizing the significant contribution by the Agency's programmes in addressing the objectives of the African Union's New Partnership for Africa's Development (NEPAD) and the Millennium Development Goals (MDGs),

(f) Recalling decisions AHG/Dec.156 (XXXVI) and AHG/Dec. 169 (XXXVII) of the Heads of State and Government of the then Organization for Africa Unity (now African Union) to free Africa of tsetse flies and on a plan of action for implementing PATTEC,

(g) Noting the steps taken by the Commission of the African Union to establish at its headquarters in Addis Ababa, Ethiopia, an office to act as the focal point for AU-PATTEC and with the mandate to coordinate the implementation of the AU-PATTEC Plan of Action,

(h) Noting the progress being made by the Commission of the African Union in building partnerships for AU-PATTEC, including with the African Development Bank and other funding organizations and partners,

(i) Cognizant that the SIT is a proven technique for the creation of tsetse-free zones when integrated with other control techniques and when applied within an area-wide integrated pest management (AW-IPM) approach, and

(j) Acknowledging the continued support given to AU-PATTEC by the Agency as outlined in the report submitted by the Director General in document GC(51)/4, Annex 3,

1. Appreciates the continuous support of the Agency to Member States in their efforts to build capacity and further develop the techniques for integrating the SIT with other control techniques in creating tsetse-free zones in sub-Saharan Africa, and also appreciates the contributions provided by some Member States and United Nations specialized agencies in support of these efforts ;
2. Welcomes the special donors' conference organized in February 2007 in Addis Ababa by the African Union and the African Development Bank to generate further loans and grants for additional countries embarking on subregional tsetse and trypanosomosis control programmes;
3. Calls upon Member States to strengthen the provision of technical, financial and material support to African States in their efforts to create tsetse-free zones ;
4. Requests the Secretariat, in cooperation with Member States and international organizations, to continue – through Regular Budget activities under the Joint FAO/IAEA Programme and the Technical Cooperation Fund – supporting R&D and technology transfer to African Member States in order to complement their efforts to create and subsequently expand tsetse-free zones ;
5. Stresses the need for continued cooperation with the Commission of the African Union and other regional international partners, particularly FAO and WHO, with the aim of harmonizing efforts in line with the AU-PATTEC Plan of Action and providing guidance and quality assurance in planning and implementing national and subregional AU-PATTEC projects; and
6. 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 fifty-second (2008) regular session.

#### 4.

### Use of isotope hydrology for water resources management

#### The General Conference.

- (a) Appreciating the work of the Agency in the area of isotope hydrology in response to resolution GC(49)/RES/12.B,
  - (b) Noting that the United Nations have proclaimed the period 2005-2015 as an International Decade for Action, "Water for Life", to bring about a greater focus on the critical linkage between water and human development at all levels and to improve the sustainable management of freshwater resources,
  - (c) Conscious of the recent human suffering caused by water-related disasters, including tsunamis and floods,
  - (d) Recognizing that the Agency has continuously demonstrated the importance of isotope techniques for water resources development and management, particularly for groundwater management in arid and semi-arid regions and for improved understanding of the water cycle,
  - (e) Noting that the initiatives of the Agency, as mentioned in document GC(49)/12, Annex 1, are addressing national priorities and have resulted in a wider use of isotope techniques for water resources and environmental management,
  - (f) Appreciating the fact that the initiatives taken by the Agency have increased co-operation with other relevant international organizations active in water resources management and development and have led to joint projects with UNESCO and the Global Environmental Facility (GEF) of UNDP for increased capacity-building and the management of transboundary aquifers,
  - (g) Recognizing the work done by the Agency in improving the management of fossil groundwater systems, in developing human resources and in improving the global use of isotope data by their rapid and efficient dissemination through the internet,
  - (h) Commending the organization of the International Symposium on Advances in Isotope Hydrology and its Role in Sustainable Water Resources Management, held in May 2007, and the Agency's participation in the fourth World Water Forum, in March 2007,
  - (i) Noting the harmonization of procedures for data handling and the development of protocols for quality assurance and quality control aimed at improving the quality of data, and
  - (j) Appreciating the development of new helium-3 isotope detection techniques for more accurate dating, the world-wide implementation of 70 projects on water resources development and management through the technical cooperation programme, and the production of an audio-visual package on the collection of water samples aimed at improving the quality of data collection,
1. Requests the Director General, subject to the availability of resources:
    - (a) to continue to further strengthen the efforts directed towards the 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 by upgrading selected laboratories and by assisting Member States in adapting new and less expensive analytical techniques based on recent advances in relevant technologies, including laser-based ones,
  - (c) to continue its work on groundwater management, particularly the assessment and management of fossil groundwater resources, including 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 understanding of the climate and its impact on the water cycle and which are aimed at the better prediction and the mitigation of water-related natural calamities, and to contribute to the success of the International Decade on Freshwater,
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 communication techniques and educational tools 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 fifty-third (2009) session under an appropriate agenda item.

## 5.

### **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, GC(45)/RES/12.A, GC(47)/RES/10.E and (49) RES/12.E,
- (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 that a number of Member States have expressed their interest 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 cooperation with interested Member States and international organizations, as outlined in the report of the Director General contained in document GC(51)4,

- (h) Taking note of the results of the eighth meeting of the International Nuclear Desalination Advisory Group (INDAG), held in February 2006, and expressing its appreciation for INDAG's continued efforts,
  - (i) Recalling 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,
  - (j) Acknowledging that innovative SMRs are of particular interest also for non-electrical energy, particularly in the desalination of seawater,
  - (k) Noting IAEA-TECDOC-1536, "Status of Small Reactor Designs without On-site Refuelling", published in January 2007,
  - (l) Noting with appreciation that activities on nuclear desalination carried out by the Agency in a number of countries,
  - (m) Commending the efforts of the Secretariat in coordinating the development of nuclear reactor simulators for use on personal computers, and
  - (n) Welcoming the expert missions undertaken by the Agency aiming at revisiting the original work plans and reviewing the progress of feasibility studies for nuclear desalination projects in some Member States,
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:
    - (a) 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
    - (b) 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 impacts 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 fifty-second (2008) regular session under an appropriate agenda item.

## **B. Nuclear power applications**

### **1. General**

#### The General Conference,

- (a) Recalling resolution GC(50)/RES/13.B and previous General Conference resolutions on strengthening the Agency's activities related to nuclear science, technology and applications,
- (b) 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",
- (c) Noting also that the Agency's statutory functions include "to encourage and assist research on, and practical application of, atomic energy for peaceful uses", "to foster the exchange of scientific and technical information", and "to encourage the exchange and 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,
- (d) Stressing that the availability of energy and access to it are vital to human development,
- (e) Recognizing that the health of the planet's environment, including action to reduce air pollution and address the risk of global climate change, is a serious concern that must be regarded as a priority by all governments, and noting that nuclear power generation does not produce air pollution or greenhouse gas emissions during normal operation,
- (f) Recognizing the safety and security issues associated with nuclear energy, as well as the need to resolve the issues of managing radioactive waste in a sustainable manner, while also recognizing the continuing international efforts to address those issues,
- (g) Recognizing that a diverse portfolio of energy sources will be needed in the 21<sup>st</sup> century to allow access to sustainable energy and electricity resources in all regions of the world, and that Member States pursue different ways to achieve energy security and climate protection goals,
- (h) Acknowledging that each State has a right to define its national energy policy in accordance with its national requirements and its relevant international obligations,
- (i) Recalling the final statement of the President of the Paris International Ministerial Conference on "Nuclear Power for the 21st Century", organized by the Agency in March 2005, where a wide range of views were expressed and where a vast majority of participants affirmed that nuclear power can make a major contribution to meeting energy needs and sustaining the world's development in the 21st century, for a large number of both developed and developing countries,

- (j) Aware of the present role of nuclear power in providing 16 % of world electricity supply, and that a number of countries that have or are considering plans for nuclear energy believe it will make a crucial input to their sustainable development strategies and contribute to global energy security while reducing air pollution and addressing climate change, while others hold different views based on their assessments of benefits and risks,
- (k) Stressing in that regard the role and contribution of various nuclear power, fuel cycle and waste technology programmes, including furthering the understanding of future global nuclear scenarios, in promoting international cooperation on nuclear power, and noting various initiatives,
- (l) Confirming that the use of nuclear power must be accompanied by commitments to and ongoing implementation of effective levels of safety, security and safeguards, consistent with States' national legislation and respective international obligations,
- (m) Recognizing the unique role which the Agency plays, and in particular the current role it is playing through the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), by bringing together all interested Member States to consider jointly innovations in nuclear reactors and fuel cycle systems,
- (n) Recognizing that the development and implementation of an appropriate infrastructure to support the successful introduction of nuclear power and its safe, secure and efficient use, taking into account relevant Agency standards, is an issue of central importance, especially for countries that are considering and planning for the introduction of nuclear power,
- (o) Noting the numerous requests received from Member States planning to introduce nuclear power generation for assistance in conducting energy studies to evaluate future energy options and in establishing appropriate technical, human, legal and administrative infrastructure, and acknowledging the Agency's role in this regard and the importance of the assistance it provides,
- (p) Noting with interest the results of the International Conference on Knowledge Management in Nuclear Facilities, held in Vienna on 18-21 June 2007, which showed inter alia the growing importance of knowledge management in the current context of growing interest for nuclear power, and acknowledging in that context the important contribution of Agency programmes and guidance and the need to continue these activities,
- (q) Taking note of the Agency's activities supporting Member States interested in the development and deployment of small and medium-size reactors, and encouraging it to further strengthen and focus these activities to help meet the demand from developing countries with small electrical grids in a cost-effective, safe and secure manner, taking due account of waste management,
- (r) Taking note of the improved performance record of nuclear power plants globally, and recognizing the essential role which the Agency plays as the principal international forum for the exchange of information and experience on nuclear power plant operation, for their continual improvement among Member States and international organizations such as the OECD/NEA and NGOs such as WANO,
- (s) Confirming the important role of science and technology in addressing the continuing challenges of nuclear safety, security and non-proliferation, and in the management of nuclear waste,

- (t) Taking note of the “Nuclear Technology Review 2007” (GC(51)/INF/3) prepared by the Secretariat, and
- (u) Emphasizing the increasing importance of Agency databases and web-based systems for the exchange of and the access to nuclear safety information and knowledge for the general public as well as for dedicated experts,
1. Affirms the importance of the role of the Agency in facilitating, through international cooperation among interested Member States, the development and use of nuclear energy for peaceful purposes, including the specific application of the generation of electric power, in assisting these States in that regard, in fostering international cooperation and in disseminating to the public well balanced information on nuclear energy;
  2. Underlines the importance of facilitating effective programmes in the areas of nuclear science, technology and applications related to nuclear power, aimed at pooling and further improving the scientific and technological capabilities of interested Member States through cooperation and coordinated research and development within the Agency, among Member States including through regional cooperation agreements, and between the Agency and interested Member States;
  3. Recognizes the importance of and endorses the Agency activities that meet the objective of fostering sustainable development and protecting the environment;
  4. Recommends that the Secretariat continue to implement efforts that contribute to a greater understanding and a well balanced picture of the role of nuclear science and technology in a global, sustainable development perspective, and in that context acknowledges its contribution to the 15<sup>th</sup> session of the Commission on Sustainable Development held in New York in April 2007;
  5. Stresses the importance, when developing nuclear energy, including nuclear power and related fuel cycle activities, of ensuring safety, security, non-proliferation and environmental protection,
  6. Requests the Secretariat to continue to pursue, subject to the availability of resources and in consultation with interested Member States, the Agency’s activities in the areas of nuclear science and technology for nuclear power applications in Member States, with a view to strengthening infrastructures and fostering science, technology and engineering;
  7. Requests in particular the Secretariat to continue and strengthen, subject to the availability of resources, its efforts relating to nuclear power, fuel cycle and waste technology, focusing particularly on technical areas where the needs for improvement, advances and enhanced international collaboration are greatest;
  8. Notes with interest the creation in the Secretariat of the Nuclear Power Support Group to coordinate the support that the Agency provides to interested Member States considering the introduction or expansion of nuclear power and looks forward to receiving more information on its activities and impact;
  9. Welcomes the organization in Beijing in 2009 of a high-level international conference on the global nuclear energy status and future developments, with particular focus on nuclear power, and encourages interested Member States to participate in this important event;
  10. Reiterates its request to the Director General to provide in a timely manner a report on the financing of nuclear power as an option in meeting energy needs, and encourages interested Member States to work towards addressing financial issues related to the introduction of nuclear power;

11. Notes with satisfaction the organization of workshops on vital topics related to the use of nuclear power, such as technologies and economics, the competitiveness of nuclear power and other energy technologies, desalination, partitioning and transmutation, as well as the training of many professionals from 49 Member States through various regional and national courses, and in that context welcomes the workshop on “Issues for the Introduction of Nuclear Power” that took place in December 2006 and addressed topics covered in the Director General’s document “Considerations to Launch a Nuclear Power Programme”, and encourages the Agency to continue such activities.
12. Acknowledges the publication of documents on infrastructure issues, in particular the document “Milestones in the Development of a National Infrastructure for Nuclear Power” (NG-G-3.1), and encourages the Secretariat, within the framework of its existing programmes, to continue to undertake generic and country-specific assessments on approaches and options for addressing infrastructure requirements so as to provide guidance for the introduction of nuclear energy and its safe, secure and efficient use, for Member States that are interested in or planning for the introduction of nuclear energy in the 21st century;
13. Acknowledges the importance of technical cooperation projects to assist Member States in energy analysis and planning, and in establishing the infrastructures required for nuclear power including, inter alia, safety, and invites interested Member States to consider how they can further contribute in this field in developing countries through enhanced technical cooperation;
14. Reiterates its request to the Secretariat to provide, in addition to the Nuclear Technology Review, a separate biennial comprehensive report on the international status and prospects of nuclear power, beginning in 2008; and
15. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its fifty-second (2008) regular session on developments relevant to this resolution.

## 2.

### **Small and medium-sized nuclear reactors – Development and deployment**

#### The General Conference,

- (a) Recalling its resolutions GC(43)/RES/15, GC(44)/RES/22, GC(45)/RES/12.A, GC(47)/RES/10.E and GC(49)/RES/12.E,
- (b) Confirming that the use of nuclear power must be accompanied by commitments to and ongoing implementation of effective levels of safety and security and safeguards, consistent with States’ national legislation and respective international obligations,
- (c) Recalling that the Agency has initiated a programme to assist developing countries interested in small and medium-sized reactors (SMRs) to address economics, environmental protection, safety and security, reliability, proliferation resistance and waste management,
- (d) Noting that smaller reactors could reduce the required initial investments and associated infrastructure costs and that they could be better suited to the small electrical grids of many developing countries,
- (e) Recognizing that the issue of the infrastructure requirements of SMRs in Member States without nuclear power plants is important, and that the size of nuclear reactors is a national decision that each Member State takes based on its own needs and the size of electrical grids,
- (f) Appreciating the particular relevance of INPRO to the development of SMRs, including the development of common user criteria,

- (g) Commending the publication by the Agency of an annex to the 2007 Nuclear Technology Review on innovative SMRs detailing different SMR designs and examining the technology and infrastructure development needs common to the various concepts of such reactors,
  - (h) Further noting that SMRs could have a significant role to play in desalination and hydrogen generation systems in the future,
  - (i) Noting with appreciation the activities carried out in co-ordination with other organizations,
  - (j) Noting the recent publications on the status of innovative SMR designs: “Reactors with Conventional Refuelling Schemes,” “Advanced Nuclear Power Plant Design Options to Cope with External Events” and “Small Reactor Designs Without On-site Refuelling”, and
  - (k) Noting with satisfaction that a common outline for the description of passive safety design options (PSDOs) has been defined and structured descriptions of such options for ten representative SMR concepts have been prepared,
1. Requests the Director General to continue taking appropriate measures, subject to the availability of resources, to assist Member States, particularly developing countries, engaged in the process of preparatory actions with regard to demonstration projects, and encouraging the development of safe, secure, economically viable and proliferation-resistant SMRs, including with respect to nuclear desalination and hydrogen production;
  2. Also requests the Director General to note the high priority given by interested Member States to SMR development and to promote effective international information exchange and co-operation in this area;
  3. Requests the Director General and interested Member States to include in the feasibility studies, besides the technical aspects, which cover safety and security and environmental protection, the social and economic impacts of SMR technology;
  4. Also requests the Director General to continue consultations and interactions with interested Member States, the competent organizations of the United Nations system, financial institutions, regional development bodies and other relevant intergovernmental and non-governmental organizations in advising on to the development and deployment of SMRs;
  5. Invites the Director General to raise seed funds and other appropriate funding from extrabudgetary resources in order to contribute to the implementation of all Agency activities relating to the development of and facilitating the deployment of innovative SMRs; and
  6. Further requests the Director General to continue to report on:
    - (i) the status of the programme initiated to assist developing countries interested in SMRs,
    - (ii) the progress made in the research, development, demonstration and deployment of SMRs in interested Member States intending to introduce SMRs in the future, and
    - (iii) the progress made in the implementation of this resolution to the Board of Governors and to the General Conference at its fifty-third (2009) regular session under an appropriate agenda item.

### 3.

#### **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) Recalling also its resolutions GC(44)/RES/21, GC(45)/RES/12.F, GC(46)/RES/11.C, GC(47)/RES/10.C, GC(48)/RES/13.F, GC(49)/RES/12.F and GC(50)/RES/13.B.1 on the Agency's activities in the development of innovative nuclear technology,
  - (c) Conscious of the need for sustainable development and of the potential contribution of nuclear power to meeting the growing energy needs in the 21st century,
  - (d) Noting that recent international initiatives underline the importance of the Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) and complement its activities,
  - (e) 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,
  - (f) Noting that 27 Member States and the European Commission are now members of INPRO, with Belgium having joined since the 2006 session of the General Conference,
  - (g) Recognizing that INPRO has become a new mechanism and advanced platform for:
    - (1) the assessment, using a holistic approach, of innovative nuclear power systems from the viewpoint of economics, infrastructure, safety, resource use, waste minimization, environmental protection, proliferation resistance and physical protection in order to identify the actions necessary for the development and deployment of such systems that may contribute to sustainable development,
    - (2) the establishment of collaborative projects for jointly studying innovative nuclear power systems of common interest to Member States,
    - (3) the consideration of institutional and infrastructure arrangements that will be needed to foster the development and deployment of innovative nuclear power systems, integrating the results of other international initiatives,
  - (h) Emphasizing the importance of creating databases and web-based systems for the exchange of information, for decision-makers as well as for experts in the area of common user requirements for innovative nuclear power system development and deployment,
  - (i) Noting the progress of other bilateral and international initiatives, such as the Generation IV International Forum (GIF), and their contribution to the development of innovative approaches to nuclear power, and
  - (j) Noting with appreciation the Director General's report on the development of innovative nuclear technology contained in document GC(51)/4,
1. Commends the Director General and the Secretariat for their work in response to the relevant General Conference resolutions, in particular the results achieved to date within INPRO;



2. Emphasizes the important role that the Agency can play in assisting interested Member States with the planning and development of their nuclear infrastructures through the application of the INPRO methodology for assessments of safety, proliferation resistance, sustainability, environmental, infrastructural and economic aspects of innovative reactors and fuel cycles, and with the selection and implementation of efficient strategies for dealing, in line with their development needs, with the 21st century energy challenges in ways that meet national objectives while contributing to the balanced development of the global energy system;
3. Requests the Secretariat to proceed in an expeditious manner with the publishing of the INPRO users manual, which will provide useful guidance in the undertaking of such assessments;
4. Invites all interested Member States to combine their efforts under the aegis of the Agency in the activities of INPRO Phase 2 in considering the issues of innovative nuclear reactors and fuel cycle systems, institutional capacity, infrastructure development, and the mobilization of unconventional financial resources, in particular by continuing assessment studies of such systems and their role in the national, regional and global scenarios for further use of nuclear energy, as well as identifying common issues for possible collaborative projects, including coordinated research projects and joint initiatives, and methods for their joint implementation;
5. Encourages interested Member States, by the concerted efforts of developed and developing countries, jointly to consider how to meet their energy needs and contribute to economic development, inter alia by developing and deploying innovative nuclear power systems, taking into account the possible role of the recent initiatives aimed at the further development of the peaceful use of nuclear energy in a manner consistent with non-proliferation commitments;
6. Recommends that INPRO, subject to the availability of resources, continue to refine common user criteria for developing countries in a timely manner, including infrastructure development requirements, domestic legal and regulatory frameworks, provisions for management of spent fuel and radioactive waste and flexible financing arrangements;
7. Calls on the Secretariat and on Member States in a position to do so to investigate the availability of new, more proliferation-resistant technologies for the recycling of spent fuel and its use in advanced reactors under appropriate controls and for the long-term disposition of remaining waste materials;
8. Recognizing that the funding of INPRO comes partly from the Regular Budget and in large part from extrabudgetary resources, requests the Director General to strengthen the Agency's efforts related to the development of innovative technology, subject to the availability of resources;
9. Stresses the need for international collaboration for the development of innovative nuclear technology, including enabling technologies, and the high potential and added value achieved through such collaborative efforts, as well as the importance of taking advantage of synergies between international activities on innovative nuclear technology development;
10. Recommends also that INPRO continue to explore opportunities for synergy between its activities and those pursued under other international initiatives in areas related to international co-operation in peaceful uses of nuclear energy, safety, proliferation resistance and other security issues;
11. Invites all interested Member States to contribute to innovative nuclear technology activities in terms of scientific and technical information, financial support or the support of technical and other relevant experts and by performing joint innovative nuclear power system collaborative projects; and

12. 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 fifty-second (2008) regular session under an appropriate agenda item.