

# General Conference

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Item 16 of the agenda  
(GC(52)/21)

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

**Resolution adopted on 4 October 2008 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) Looking forward to the 22nd 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 2008” (GC(52) /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,
  - (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 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
  - (r) Noting with appreciation the fellowships and training sponsored by the IAEA Nobel Peace Prize Cancer and Nutrition Fund 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, 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 FAO/IAEA partnership activities, in order to enhance the continuing efforts in support of 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-third (2009) regular session on the progress made in the areas of nuclear science, technology and applications.

2.

**Development of the sterile insect technique for the control or eradication of malaria-transmitting mosquitoes**

The General Conference.

- (a) Recalling its resolution GC(44)/RES/24 on “Servicing Immediate Human Needs” and its resolution GC(48)/RES/13.C on “Development of the Sterile Insect Technique for the Control or Eradication of Malaria-Transmitting Mosquitoes”,
- (b) Taking note of the declaration of the Special Summit of the African Union on HIV/AIDS, Tuberculosis, and Malaria held in May 2006 in Abuja, Nigeria, that the dual challenges of poverty and lack of human resources have led to slow progress that has not met the expectations of the Plan of Action agreed upon at the Roll-Back Malaria Summit of African Heads of State and Government in April 2000 in Abuja, Nigeria, to pursue a target to halve malaria mortality in Africa by 2010, and the recommendations for a Roll-Back Malaria global partnership,
- (c) Taking note also of the joint efforts against malaria being implemented by the Andean Community,
- (d) Appreciating the important role that nuclear applications play in addressing human needs,
- (e) Conscious that the work done by the Agency in the field of nuclear sciences and applications in the non-power sector contributes to sustainable development, especially with programmes aimed at enhancing the quality of life in various ways, including improving human health,
- (f) Recognizing the success of the area-wide integrated application of the sterile insect technique (SIT) in the eradication of the tsetse fly, the Mediterranean fruit fly and other insects of economic importance,
- (g) Noting with concern that malaria, transmitted by mosquitoes, causes about two million deaths a year and about 300-500 million cases of clinical malaria annually,
- (h) Noting with serious concern that over 90% of the world’s malaria cases occur in Africa, slowing down economic growth by 1.3% annually, and thus constitutes a major obstacle to poverty eradication in Africa,
- (i) Noting that the malaria parasite has continued to develop resistance to drugs and that mosquitoes too have continued to develop resistance to insecticides, and that it is envisaged that SIT would be used under specific conditions as an adjunct to conventional technologies, conforming to the WHO’s roll-back strategy, including integrated vector management, of not relying on any single approach to control malaria,
- (j) Noting that the control of malaria-transmitting mosquitoes over large areas will require an area-wide approach of which SIT is often a part in agricultural pest control programmes and that this characteristic represents a novel and potentially powerful supplement to existing community-based programmes,
- (k) Welcoming the fact that R&D on malaria-transmitting mosquitoes, which commenced with the inauguration of the SIT-Malaria Facility in the Agency’s Laboratories in Seibersdorf on 26 June 2003, intensified during 2006-2007,
- (l) Noting with appreciation the interest shown by some donors and their support for R&D on SIT for combating malaria-transmitting mosquitoes, and

(m) Acknowledging with appreciation the support given by the Agency to development of the SIT for the control of malaria-transmitting mosquitoes as outlined in the report by the Director General in document GC(50)/14, Annex 1,

1. Requests the Agency to continue and strengthen, through the activities mentioned above, the research, both in the laboratory and in the field, required to use SIT for the control of malaria-transmitting mosquitoes;
2. Also requests the Agency to increasingly involve African and other developing Member States' scientific and research institutes in the research programme in order to ensure their participation, leading to ownership by the affected countries;
3. Further requests the Agency to increase its efforts to raise funds for the research programme;
4. Invites the donors to continue with their financial support, and other Member States to make financial contributions to the research programme; and
5. Requests the Director General to report on the progress made in the implementation of this resolution to the General Conference at its fifty-fourth session (2010).

### 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, GC (50)/RES/13.A.4 and GC(51)/RES/14.A-3 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(52)/3, Annex 1,
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 strengthen – through the Regular Budget, the Technical Cooperation Fund and other partnerships – its support for R&D in and technology transfer to African Member States in order to complement their efforts to create and subsequently expand tsetse-free zones;
  5. Urges the Secretariat to strengthen capacity building and to support the establishment of regional training centres in the affected Member States so as to promote the development of the human resources necessary for implementing the operational national and regional PATTEC projects;
  6. Stresses the need for enhanced cooperation with the Commission of the African Union and other regional and 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
  7. 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-third (2009) regular session.

4.

**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, (49) RES/12.E, and GC(51)/RES/14,
- (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) Noting in addition that nuclear desalination has been successfully demonstrated through various projects in some States,
- (g) 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,
- (h) 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(52)/3,
- (i) Taking note of the results of the ninth meeting of the International Nuclear Desalination Advisory Group (INDAG), held in January 2008, and expressing its appreciation for INDAG's continued efforts,
- (j) Taking note of INDAG's recommendation that the IAEA create a "nuclear desalination tool kit" to provide guidelines and information on launching desalination programmes in Member States,
- (k) 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,
- (l) Acknowledging that innovative SMRs are of particular interest also for non-electrical energy, particularly in the desalination of seawater,
- (m) Noting IAEA-TECDOC-1536, "Status of Small Reactor Designs without On-site Refuelling", published in January 2007,
- (n) Noting with appreciation the activities on nuclear desalination carried out by the Agency in a number of countries,
- (o) Commending the efforts of the Secretariat in coordinating the development of nuclear reactor simulators for use on personal computers, and

- (p) Taking note of the efforts of the Director General in soliciting additional funds for nuclear desalination,
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 extra budgetary 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-third (2009) regular session under an appropriate agenda item.

## 5.

### **Strengthening the support to Member States in food and agriculture**

#### The General Conference,

- (a) Noting the global food security crisis with rapidly rising global food prices that are having significant negative socioeconomic impacts and political implications in all regions of the world,
- (b) Recognizing the central role of agricultural development in achieving several of the key Millennium Development Goals (MDGs), in particular to eradicate extreme poverty and hunger,
- (c) Acknowledging that increased agricultural productivity, achieving higher crop yields and higher-producing and better-adapted livestock rather than bringing more land under cultivation, will be one of the key determinants to reduce poverty, meet the increasing food demand, and



address the diminishing agricultural resources, whilst sustaining agricultural natural resources and conserving the environment,

(d) Welcoming the establishment in 1964 of a Joint Division between the Food and Agriculture Organization of the United Nations (FAO) and the International Atomic Energy Agency (IAEA) dedicated to the development and application of nuclear techniques in food and agriculture,

(e) Recognizing the importance of making available to developing Member States nuclear technologies in the field of food and agriculture,

(f) Noting that many Member States joined the Agency specifically to obtain the benefits from the peaceful application of nuclear techniques in food and agriculture,

(g) Recognizing that the demand from Member States for technical assistance in the area of nuclear applications in food and agriculture has significantly increased, as is evidenced by an increase of 44 per cent of technical cooperation projects in agriculture between 2002 and 2007, and

(h) Welcoming document GOV/INF/2008/12-GC(52)/INF/10 on the “Contribution by the Joint FAO/IAEA Division to Food and Agriculture” and recalling its resolution GC (51)/RES/14.A.1,

1. Stresses the need to harness and expand agriculture’s unique poverty-reducing power in developing countries;
2. Requests the Secretariat to expand efforts to address, inter alia, food insecurity in Member States, to increase its contribution to raise agricultural productivity and sustainability through the development and integrated application of nuclear science and technology;
3. Requests the Secretariat to continue developing and applying nuclear techniques, inter alia, in areas of food and agriculture using an integrated and holistic approach – namely, land and water management, plant breeding and crop production, insect pest control, animal production and health, and food safety;
4. Expresses appreciation for the work undertaken by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, including the FAO/IAEA Agriculture and Biotechnology Laboratory in Seibersdorf, under the Regular Budget and the Technical Cooperation Fund for Member States in the fields of food and agriculture and natural resource management through, inter alia, capacity building and training, applied research to improve and adapt new technologies, networking with other national, regional and international partners, and technology transfer to pilot and operational field projects;
5. Urges the Secretariat to continue to strengthen its activities in the field of food and agriculture through inter-regional, regional and national capacity building, to facilitate the transfer of technology to developing Member States;
6. Expresses appreciation for the financial and extrabudgetary contributions made by Member States and others in support of, inter alia, the food and agriculture programme of the Agency and encourages Member States to continue making contributions to these activities;
7. Encourages the Secretariat to pursue the consultations with FAO to continue this partnership, which should be further strengthened through a joint review of the activities and achievements, and to continue adjusting and adapting its technology development, capacity building and technology transfer and services in response to Member States’ demands and needs in food and agriculture; and

8. Requests the Director General to report on the progress made in the implementation of this resolution to the Board of Governors and the General Conference at its fifty-fourth (2010) regular session.

## **B. Nuclear power applications**

### **1. General**

#### The General Conference,

- (a) Recalling resolution GC(51)/RES/14/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 15.2 % 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 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 safeguards, safety and security, 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 IAEA 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, regulatory and administrative infrastructure, acknowledging the Agency's role in this regard and the importance of the assistance it provides, and noting with interest its activities in this field for the safe, secure and efficient use of nuclear power,

(p) Noting the increasing number of requests from Member States for advice on exploration of uranium resources and on mining and milling for safe and effective uranium production while minimizing the environmental impact, and acknowledging the importance of Agency assistance in this field,

(q) Noting with interest the growing importance of human resource development and knowledge management in the current context of revival of interest in nuclear power, and acknowledging in that context the important contribution of Agency programmes and guidance and the need to continue these activities,

(r) 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,

(s) 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,

(t) 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,

- (u) Taking note of the “Nuclear Technology Review 2008” (GC(52)/INF/3) prepared by the Secretariat,
  - (v) 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, and
  - (w) Taking note of other bilateral and multilateral cooperations intended to complement and supplement Agency programmes,
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. Requests that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources;
  4. Recognizes the importance of and endorses the Agency activities that meet the objective of fostering sustainable development and protecting the environment;
  5. 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 contributions to relevant international discussions;
  6. Stresses the importance, when developing nuclear energy, including nuclear power and related fuel cycle activities, of ensuring safety, security, non-proliferation and environmental protection;
  7. Requests the Secretariat to continue to pursue, 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;
  8. Requests in particular the Secretariat to continue and strengthen 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;
  9. Recognizes the work of the Nuclear Power Support Group in the Secretariat for the provision of coordinated support to interested Member States for the safe, secure and efficient introduction or expansion of nuclear power with respect to required infrastructures;
  10. 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;
  11. Takes note of the Secretariat’s report on the financing of nuclear power as an option in meeting energy needs (NG-T-4.2) and its continuing work on the issue, in particular with regard to the needs of

the interested developing countries, and encourages interested Member States to work towards addressing financial issues related to the introduction of nuclear power;

12. Notes with satisfaction the organization of workshops on vital topics related to nuclear power, such as technologies and economics, the competitiveness of nuclear power and other energy technologies, the development of the required infrastructure for the safe, secure and efficient use of nuclear power, desalination, partitioning and transmutation, as well as the training of many professionals from Member States through various regional and national courses, and encourages the Agency to continue such activities;

13. Acknowledges the importance of Agency technical cooperation projects to assist Member States in energy analysis and planning, and in establishing the infrastructures required for the safe, secure and efficient introduction and use of nuclear power, and encourages interested Member States to consider how they can further contribute in this field in developing countries through enhanced Agency technical cooperation;

14. Notes with interest the Secretariat's report International Status and Prospects of Nuclear Power (GC(52)/INF/6), which provides a comprehensive overview of the international status and prospects of nuclear power for the benefit of Member States and policy-makers worldwide, and that it will be published biennially; and

15. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its fifty-third session on developments relevant to this resolution.

## 2.

### **Approaches to supporting nuclear power infrastructure development**

#### The General Conference,

- (a) Recognizing that the development and implementation of an appropriate infrastructure to support the successful introduction of nuclear power and its safe and efficient use is an issue of concern, especially for countries that are considering and planning for the introduction of nuclear power,
- (b) Recalling its resolutions GC(50)/RES/13.B.2 and GC(49)/RES/12.G on approaches to supporting nuclear power infrastructure development,
- (c) Acknowledging the Agency's significant role in assisting Member States that are considering and planning for the introduction of nuclear power with assessments of infrastructure needs, taking into account relevant economic, social and policy considerations, to support the safe, secure and efficient use of nuclear power,
- (d) Taking note of the importance in a nuclear power programme of adequate human resources for ensuring – inter alia – safe and secure regulation, and of the worldwide shortage of such resources in both developed and developing countries,
- (e) Acknowledging that the development of innovative nuclear energy technologies offers promising possibilities for lessening the infrastructure requirements through novel approaches to infrastructure needs, which may be possible thanks to the innovative aspects of future nuclear energy technologies, and acknowledging that such approaches to infrastructure needs may also apply to supporting the safe, secure and efficient use of existing nuclear power technologies,

- (f) Recognizing that the issue of infrastructure requirements for innovative nuclear energy technologies is an important topic within the Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), and
- (g) Taking note of other international initiatives focusing on support for infrastructure development,
1. Commends the Director General and the Secretariat for their efforts in implementing resolution GC(50)/RES/13.B.2 as reported in document GC(52)/3, in particular the publication of IAEA Nuclear Energy Series document No. NG-G-3.1, *Milestones in the Development of a National Infrastructure for Nuclear Power*, which provides valuable guidance on the infrastructure that a country needs to develop;
  2. Welcomes the planned December 2008 workshops to provide information on infrastructure evaluation methodology and the establishment of the Nuclear Energy Programme Implementing Organization (NEPIO), which is referenced in the Agency's 'Milestones' document;
  3. Encourages the Secretariat, within the framework of its existing programmes and budget, and drawing on its work on innovative nuclear technologies and its existing programmes for promoting effective and sustainable national regulatory infrastructures, to undertake further assessments on approaches and options for addressing infrastructure requirements so as to support the introduction of nuclear energy technologies and their safe, secure and efficient use for those Member States that are considering or planning for the introduction of nuclear energy technologies in the 21<sup>st</sup> century;
  4. Invites all Member States that are interested in developing and applying current and innovative nuclear energy systems, and especially developing Member States that are interested in considering or planning for the introduction of nuclear energy technologies, to contribute, as appropriate, to such assessments by providing information enabling the Agency to apply its full spectrum of tools in support of infrastructure development;
  5. Encourages the Secretariat to take the results of its assessments of infrastructure requirements into account as part of the Agency's ongoing programme and activities regarding nuclear power;
  6. Calls on the Secretariat to, in particular and subject to the availability of resources, focus on activities aimed at helping interested Member States to assess their human resource needs and identify ways to address those needs;
  7. Notes with interest the activities undertaken by Member States, both individually and collectively, to cooperate in infrastructure development and encourages this exchange; and
  8. 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 53<sup>rd</sup> 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, GC(50)/RES/13.B1 and GC(51)/RES/14.B.3 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 21<sup>st</sup> century,
- (d) Noting that the Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) can provide a forum for technical experts to discuss global scenarios, visions and perspectives and explore the development and deployment of innovative nuclear energy systems,
- (e) Noting the progress achieved in a number of Member States in the development of innovative nuclear energy systems technology and the high technical and economic potential of international collaboration in the development of such technology,
- (f) Noting that the Agency has Technical Working Groups (TWGs) working on facilitating innovations for advanced reactors and fuel cycles and that INPRO, which has 27 Member States and the European Commission as members, complements these activities,
- (g) Recognizing that INPRO is suitable for providing a platform and tools for:
- (1) the assessment, using a holistic approach, of innovative nuclear power systems from the viewpoints 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 conduct of discussions and of collaborative projects among interested Member States to commonly study innovative nuclear energy systems, including innovative power reactors and innovative fuel cycle options, and
  - (3) dialogue between the potential users in developing countries and the holders of nuclear energy system technology, to address innovative institutional and infrastructural issues, to foster the development of innovative nuclear energy systems, or as the basis for discussions at different stages during the deployment of such systems,
- (h) Recalling the recommendations contained in the 2007 Programme Evaluation Report regarding INPRO,
- (i) Noting the progress of other bilateral and international initiatives, such as the Generation IV International Forum and the Global Nuclear Energy Partnership (GNEP), and their contribution to developing innovative approaches to nuclear power, and
- (j) Noting with appreciation the Director General's report on the development of innovative nuclear energy system technology contained in document GC(52)/3,
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 in line with their development needs;

3. Requests that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources;

4. Urges that INPRO Member States study the role and place of nuclear energy in energy mixes for sustainable economic development;

5. Recommends that INPRO continue and initiate activities aimed at identifying and facilitating the development and deployment, including capacity building, of innovative reactor technologies and fuel cycle options;

6. Calls upon the Secretariat to address the recommendations regarding INPRO in the 2007 Programme Evaluation Report and to report to the Board of Governors;

7. Requests the Secretariat to provide, for interested Member States, training in INPRO methodology and its application and assistance with its application as requested by them;

8. Invites all interested Member States to join, under the aegis of the Agency, in the activities of INPRO Phase 2 in considering the issues of innovative nuclear reactors and fuel cycles systems, institutional capacity, infrastructure development, particularly by continuing assessment studies of such technologies and systems and their role in national, regional and global scenarios for the 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;

9. Encourages interested Member States, through the concerted efforts of developed and developing countries, to jointly 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 recent initiatives aimed at the further development of the peaceful uses of nuclear energy in a manner consistent with non-proliferation commitments;

10. Recommends that the Secretariat continue to examine, using the INPRO methodology, infrastructure options for the deployment of innovative nuclear energy systems and innovative fuel cycle options with reduced concerns regarding proliferation and with broad applications;

11. Calls upon the Secretariat and 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;

12. 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, in particular by better coordinating activities of the TWGs and INPRO;

13. 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;

14. Recommends that the Secretariat and INPRO continue to explore opportunities for synergy between INPRO's activities and those pursued under other international initiatives in areas related to



international cooperation in peaceful uses of nuclear energy, safety, proliferation resistance and other security issues;

15. Recommends that each year the Secretariat publish a technical report concerning INPRO activities;

16. 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

17. 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-third (2009) regular session under an appropriate agenda item.

## **C. Nuclear knowledge**

### The General Conference,

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

(b) Recalling its resolutions GC(50)/RES/13.C, GC(48)/RES/13.E, GC(47)/RES/10.B and GC(46)/RES/11.B on nuclear knowledge,

(c) Noting the important role which the Agency plays in assisting Member States in their preservation and enhancement of nuclear knowledge and in facilitating international collaboration on this,

(d) Aware of concerns about a shortage of personnel in nuclear fields and about a possible erosion of the nuclear knowledge base,

(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, including their regulation,

(g) Recognizing the useful role of international coordination and cooperation 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) Noting the recommendations of the International Conference on Knowledge Management in Nuclear Facilities held in Vienna in 2007, and the meeting of Senior Officials on Nuclear Knowledge Management Cooperation for Development held in Vienna in 2008,

1. Commends the Director General and the Secretariat for their efforts in addressing issues of preservation and enhancement of nuclear knowledge in response to relevant General Conference

resolutions, and as described in document GC(52)/3, including, in particular, the holding of the International Conference on Knowledge Management in Nuclear Facilities in 2007;

2. Commends the Secretariat on developing comprehensive methodology and guidance for managing nuclear knowledge and on providing eight publications on key pilot nuclear knowledge management projects during the past two years;

3. 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, to consult with Member States and other international organizations, to take into account the results of relevant international meetings in the ongoing 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, and in particular it:

(a) Requests the Secretariat to assist Member States, particularly developing ones, at their request and subject to the availability of resources, 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, in particular through the networking of nuclear education and training, including activities of the World Nuclear University and the Asian Network for Education in Nuclear Technology, encourages Member States in a position to do so to participate in and support such networking, and underlines the importance of the technical cooperation programme in that context;

(b) Requests the Secretariat to further develop, in consultation with Member States, guidance and methodologies for planning, designing and implementing nuclear knowledge management programmes, including programmes for preserving knowledge and sustaining education and training, and to disseminate that guidance through expert missions, publications and workshops in Member States;

(c) Requests the Secretariat to continue to enhance and make available to Member States nuclear information and knowledge resources on the peaceful use of nuclear energy, including the International Nuclear Information System (INIS) and the IAEA Library; and

(d) Requests the Secretariat to continue to develop tools and methods to capture, share and preserve nuclear knowledge, considering also the increasing importance of information and knowledge available through the Internet;

4. Requests the Director General to take into account the continuing high level of interest of Member States in the range of issues associated with nuclear knowledge when preparing and carrying out the Agency's programme; and

5. 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 54<sup>th</sup> session under an appropriate agenda item.