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

Resolution adopted on 18 September 2009 during the eleventh 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.I 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, noting that many Member States are obtaining benefits from the application of nuclear techniques in food and agriculture through the Joint FAO/IAEA Programme, and welcoming the decision of the FAO to continue collaborating with the IAEA through this joint programme, including exploring ways of improving such collaboration,
- (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) Taking note of the "Nuclear Technology Review 2009 (GC(53) /INF/3) prepared by the Secretariat,
- (k) Aware of the problems of pollutants arising from urban and industrial activities and the potential of radiation treatment to address some of them,
- (l) 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,
- (m) Aware that strengthening support to capacity-building in developing Member States in emerging areas of nuclear technologies is important for accrual of benefits from nuclear applications,
- (n) Welcoming the announcement of the First Annual World Nuclear University (WNU) School on Radioisotopes, which will be held on 15 May-4 June 2010, and the Agency's support for applicants from developing countries,
- (o) Noting the expanding use of positron emission tomography (PET) and hospital-prepared radiopharmaceuticals,
- (p) Noting with concern that there has been a serious shortage worldwide in the supplies of fission-produced molybdenum-99, which has resulted in the disruption of the availability of technetium-99m for medical diagnostic imaging applications,
- (q) Aware of the problems and challenges in the reliable operation of the few reactors currently producing medical isotopes, and noting with appreciation the efforts made by the Agency in fostering international cooperation to address all relevant issues,
- (r) 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,
- (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) 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 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, and urges the Secretariat to further strengthen capacity-building for Member States, particularly in interregional and regional training courses and fellowship training in the areas of nuclear science, technology and applications;
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, and future efforts to address climate change;
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 continue to address identified priority 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 drug development and additional concrete efforts through PACT and in the use of cyclotrons, research reactors and accelerators for the production of 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. Urges the Secretariat to work cooperatively with other international initiatives, including the high level group on the security of supply of medical radioisotopes established by the NEA, to implement activities that will contribute to enhancing the molybdenum-99 production capacity, including in developing countries, in an effort to ensure the security of supplies of molybdenum-99 to users worldwide;
8. 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;
9. 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;
10. 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;

11. 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;
12. Requests also that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources; and
13. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its fifty-fourth (2010) 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(51)/RES/14.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 (WHO),
- (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(53)/3,
- (e) Noting the continued work of the PACT Programme Office (PPO), as part of the Department of Nuclear Sciences and Applications, in coordinating 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,
- (f) Recognizing that regional efforts can assist Member States in developing comprehensive national cancer control programmes suited to their requirements through knowledge sharing,
- (g) Recognizing the value of integrated missions of PACT (imPACT) 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, and
- (h) Noting with concern the increasing difficulty of retaining qualified medical professionals in low- and middle-income countries, and recognizing the need for these trained professionals, along with facilities and equipment, for sustaining adequate cancer care capacity,

1. Welcomes the provision included under Major Programme 2 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 continued 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 (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. Welcomes the entry into force of the WHO-IAEA Joint Programme on Cancer Control on 12 March 2009, and calls on the PPO to harness the benefits that may be derived therefrom, particularly in terms of accelerated programmatic delivery to Member States and increased resource mobilization potential;
4. 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;
5. 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;
6. Welcomes the establishment of six PACT Model Demonstration Sites (PMDSs) in Albania, Nicaragua, Sri Lanka, the United Republic of Tanzania, Vietnam and Yemen, and calls on the PPO to continue working on their enhancements as well as the development of additional PMDSs;
7. Welcomes the development of Model Practical Arrangements to formalize the collaboration between PACT and its partner organizations, the establishment of partnerships with new organizations, and the activities organized with the support and participation provided by PACT's partner organizations;
8. Welcomes the number of imPACT missions that were conducted in Member States through voluntary contributions, notes that more than sixty (60) Member States have requested imPACT missions, and encourages the PPO and interested partners to continue establishing such networks, and encourages Member States to continue providing funding to enable PACT to respond to such requests;
9. Welcomes the development, in collaboration with WHO, of a comprehensive imPACT questionnaire covering all areas of cancer control, and encourages its use in connection with imPACT missions;
10. Welcomes the collaboration between PACT, the Department of Technical Cooperation and the Division of Human Health in developing TC regional projects in Africa on "Supporting the Development of Comprehensive National Cancer Control Programmes", and in Asia and the Pacific on "Supporting National Cancer Control", in the 2009-2011 cycle, further welcomes the regional planning and coordination workshops that were held in this regard in Cairo in June 2009 and in Vienna in July 2009, and urges the Secretariat to develop similar projects in other regions;
11. Welcomes the cooperation between the Agency and the Pan American Health Organization in the design of a subregional project on Cancer Prevention and Integral Cancer Care in Central America and the Dominican Republic and its implementation in 2008;
12. Welcomes the support provided by PACT for the participation of health professionals working in cancer control in low- and middle-income countries in training courses on cancer prevention and control, and calls on the PPO to continue facilitating such training;

13. Welcomes the launch in 2008 of a Regional Cancer Training Network concept supported by a Virtual University for Cancer Control, looks forward to its implementation, and further looks forward to the establishment on a pilot basis of the first Regional Cancer Training Centres;
14. 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;
15. Commends the ongoing work of the PPO in using non-traditional funding mechanisms to support its activities and, noting that PACT's resource mobilization efforts have secured or facilitated the mobilization of voluntary contributions, pledges, grants, long-term loans and donations of cash, equipment and in-kind expertise and training valued in excess of US\$ 23 million, encourages the administrative facilitation of the support, and welcomes the development and initiation of the implementation of a medium-term PACT global fundraising strategy that focuses on a three-pronged approach;
16. Welcomes the establishment of the PACT Fund at the National Foundation for Cancer Research in providing the framework for US-based donors to support PACT initiatives, and recommends that the PPO explore the establishment of similar mechanisms in other Member States;
17. 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;
18. 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;
19. 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;
20. Recommends the continuous development, in consultation with Member States, of imPACT missions 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;
21. 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;
22. 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 national cancer control 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;
23. 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

24. Requests the Director General to report on the implementation of this resolution to the General Conference at its fifty-fifth (2011) 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, GC(50)/RES/13.A.4, GC(51)/RES/14.A-3 and GC(52)/RES/12.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,
- (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 (AU) 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(53)/3, Annex 1,

1. Appreciates the continued high priority assigned by the Agency to agricultural development in Member States, including 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. Appreciates the efforts made by the Secretariat, in close cooperation with other mandated specialized UN organizations, to develop manuals and technical guidelines in support of national and subregional AU-PATTEC projects, to enable a standardized, phased and conditional project planning and implementation approach;
3. Welcomes the initiative taken by the Agency and the African Union Commission to strengthen their partnership and formalize the collaborative framework, within their respective mandates, in support of the overall objectives of the AU-PATTEC Plan of Action, with particular emphasis on (i) capacity building and training; (ii) baseline data collection and feasibility assessments; (iii) the development of project documents and approaching donors; (iv) applied research and demand-driven methods development; and (v) monitoring, review and quality assurance of AU-PATTEC projects;
4. 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;
5. Requests the Secretariat, in cooperation with Member States and international organizations, to maintain funding through the Regular Budget, the Technical Cooperation Fund and other partnerships and to strengthen 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;
6. 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;
7. Stresses the need for continued harmonized, synergetic efforts by the Agency and other international partners, particularly FAO and WHO, with the aim of supporting the African Union Commission and Member States through the provision of guidance and quality assurance in planning and implementing national and subregional AU-PATTEC projects; 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 fifty-fourth (2010) 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, GC(51)/RES/14.A.5, and GC(52)RES/12.A.4,
- (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 generally 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 cooperation 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 tenth meeting of the Technical Working Group on Nuclear Desalination (TWG-ND), held in June 2009, and expressing its appreciation for TWG-ND's continued efforts,
 - (j) Taking note of TWG-ND's recommendation that the Agency 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, regional development bodies and other relevant intergovernmental and non-governmental organizations in activities relating to seawater desalination using nuclear energy;
 2. Invites TWG-ND to continue its functions as a forum for advice and review on nuclear desalination activities;
 3. 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;

4. Requests the Director General, subject to the availability of resources, to:
 - (a) develop a report that defines all the aspects for a technical and economic feasibility study on using nuclear energy both exclusively for seawater desalination, as well as for cogeneration options (e.g. electricity, seawater desalination, hydrogen production, etc.), and
 - (b) hold a workshop to discuss nuclear desalination and water management in nuclear power plants;
5. 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;
6. Requests the Director General to note the high priority given by interested Member States to the nuclear desalination of seawater in the process of preparing the Agency's Programme and Budget; and
7. 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-fifth regular session under an appropriate agenda item.

5

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(51)/RES/14.A.4,
- (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 central role of access to water and water resource management in achieving the United Nations' Millennium Development Goals,
- (d) Noting that during the recently held 5th World Water Forum (WWF-5) participating countries emphasized that support of scientific research, education, and the adoption of new technologies in the field of water resources management and promotion of their utilization towards the sustainable use and management of water resources should be strengthened,
- (e) Aware that a lack of comprehensive mapping of water resources adversely impacts on the ability of Member States to increase water availability and use,
- (f) 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,
- (g) Noting that the initiatives of the Agency, as mentioned in document GC(53)/3, Annex 3, are addressing national priorities and have resulted in a wider use of isotope techniques for water resources and environmental management,
- (h) Appreciating the fact that the initiatives taken by the Agency, particularly in conjunction with the Commission on Sustainable Development and the World Water Forum, have significantly raised awareness of the Agency's work on water resources, and

- (i) Recognizing the recent achievements of the Agency in increasing Member State access to isotope analysis facilities by testing and adaptation of and training of Member State personnel for laser spectroscopy instruments, and in disseminating isotope data through a series of Isotope Hydrology Atlases,
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 adopting 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, as well as on the safety and sustainability of these resources, in collaboration with other international and regional organizations, and to develop tools and methodologies for improved mapping of water resources, 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 better prediction and 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-fifth (2011) session under an appropriate agenda item.

B. Nuclear power applications

1. General

The General Conference,

- (a) Recalling resolution GC(52)/RES/12/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) Acknowledging the experience and the capabilities of the Agency in the area of nuclear power and the unique role it plays in exchange of information and expertise and transfer of technology, inter alia, through the technical cooperation programme,
- (f) 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,
- (g) 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,
- (h) Recognizing that a diverse portfolio of energy sources will be needed in the 21st 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,
- (i) Acknowledging that each State has a right to define its national energy policy in accordance with its national requirements and its relevant international obligations,
- (j) Recalling the concluding statement of the President of the Beijing International Ministerial Conference on "Nuclear Energy in the 21st Century", organized by the Agency in April 2009 (the Beijing Conference), where a vast majority of participants affirmed their view that "nuclear energy, as a proven, clean, safe, competitive technology, will make an increasing contribution to the sustainable development of human kind throughout the 21st century and beyond",
- (k) Aware of the present role of nuclear power in providing more than 15 % 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,
- (l) Stressing in that regard the role and contribution of various nuclear power, fuel cycle and radioactive waste technology programmes, including furthering understanding of future global nuclear scenarios, in promoting international cooperation on nuclear power, and noting various initiatives,
- (m) 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,
- (n) 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,

(o) Recognizing that the development and implementation of an appropriate infrastructure to support the safe, secure and efficient use of nuclear power, 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,

(p) 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,

(q) Acknowledging the right of Member States planning to launch or expand their respective nuclear power programmes to establish their national policies, priorities and technology requirements, including as regards nuclear reactor technology, in accordance with their relevant international obligations,

(r) 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,

(s) 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,

(t) Taking note of the improved safety and operational performance, as well as cost-effectiveness, 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,

(u) 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 radioactive waste,

(v) Taking note of the "Nuclear Technology Review 2009" (GC(53)/INF/3) prepared by the Secretariat,

(w) 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

(x) 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. Welcomes the success of the Beijing Conference, the major high-level international conference on the global status and prospects of nuclear energy, which recognized that nuclear energy can make a major contribution to meeting the world's energy needs in a sustainable manner in the 21st century;

3. 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;

4. Requests that the actions of the Secretariat called for in this resolution be undertaken as a priority subject to the availability of resources;

5. Recognizes the importance of and endorses the Agency activities that meet the objective of fostering sustainable development and protecting the environment;

6. 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, including those addressing global climate change;

7. Stresses the importance, when developing nuclear energy, including nuclear power and related fuel cycle activities, of ensuring safety, security, non-proliferation and environmental protection;

8. 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;

9. 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;

10. Stresses in this connection that the safe management of spent fuel, which for some countries includes reprocessing and recycling, as well as the safe management and/or disposal of radioactive waste are of great importance in order, inter alia, to avoid imposing undue burdens on future generations and for the sustainable development of nuclear power and, while noting that each State remains responsible for the management of its spent fuel and radioactive waste, encourages international cooperation in the safe management of spent fuel and radioactive waste;

11. Welcomes the continuing 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;

12. Calls on the Secretariat to begin to plan for a high-level international conference in 2013 on the global nuclear energy status and future developments, with particular focus on nuclear power, to follow on similar successful conferences in 2005 and 2009, and encourages interested Member States to participate in this important event;

13. Takes note of the Secretariat's continuing work on the financing of nuclear power as an option in meeting energy needs, in particular with regard to the needs of the developing countries, and also notes the comment at the Beijing Conference by the Director General that the entry into force of the

Kyoto Protocol and the European carbon trading scheme means there is now a real financial benefit to avoiding greenhouse gases, and that this increases the attractiveness of low-carbon electricity generation such as nuclear power and renewables and encourages interested Member States to work towards addressing financial issues related to the introduction of nuclear power;

14. Welcomes the activities of the Agency in human resource development and knowledge management, and requests the Secretariat to continue its efforts in these areas;

15. 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, while ensuring the widest possible participation of experts from all interested Member States;

16. 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;

17. Requests the Secretariat to report on the International Status and Prospects of Nuclear Power to the fifty-fourth (2010) session of the General Conference, which would provide an updated comprehensive overview of the international status and prospects of nuclear power for the benefit of Member States and policy-makers worldwide; and

18. Recommends that the Secretariat report to the Board of Governors as appropriate and to the General Conference at its fifty-fourth (2010) 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 previous resolutions 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, and noting the Agency's increasing activities in this area, in accordance with the requests of Member States,

(d) Taking note of the importance of adequate human resources for ensuring – inter alia – safe and secure operation, and effective regulation, of a nuclear power programme and of the worldwide shortage of such resources in both developed and developing countries,

(e) 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

(f) 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(52)/RES/12.B.2 as reported in document GC(53)/3, in particular the publication of IAEA Nuclear Energy Series document No. NG-T-3.2, *Evaluation of the Status of National Nuclear Infrastructure Development*, which follows on the valuable guidance of the *Milestones in the Development of a National Infrastructure for Nuclear Power*, and provides the basis for conducting an evaluation of the status of a country's infrastructure, and supports the establishment of the Agency's new Integrated Nuclear Infrastructure Review (INIR) service;

2. Welcomes the planned November 2009 workshop on nuclear power newcomers and international cooperative actions, focusing on the sharing of infrastructure experience and building cooperation between Member States, which will follow on the successful December 2008 workshop that provided information on infrastructure evaluation methodology and the establishment of a Nuclear Energy Programme Implementing Organization (NEPIO);

3. Encourages the Secretariat, within the framework of its existing programmes, and drawing on its work in all relevant areas, including, inter alia, on innovative nuclear technologies and its existing programmes for promoting effective and sustainable national 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 power;

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 and/or resources to enable the Agency to apply its full spectrum of tools in support of infrastructure development;

5. Encourages Member States and the Secretariat to take the results of assessments of infrastructure requirements into account in optimizing the Agency's ongoing activities regarding nuclear power, and in this regard commends the Secretariat for its internal coordination and holistic approach to nuclear infrastructure support in the past year;

6. Welcomes the publication of the NE Series Guide NG-G-2.1 entitled *Managing Human Resources in the Field of Nuclear Energy*, which provides a strategic framework for human resource development for new and expanding nuclear power programmes, and looks forward to the publication of an NE series report on workforce planning;

7. Calls on the Secretariat, in particular, to continue to focus on activities aimed at helping interested Member States assess their human resource needs and identify ways to address those needs, and in this regard welcomes the planned March 2010 International Conference on Human Resource Development for Introducing and Expanding Nuclear Power Programmes to be held in the United Arab Emirates;

8. Further calls on the Secretariat to continue facilitating the participation of personnel from Member States in training programmes to enhance their capabilities in addressing the different aspects of their national infrastructural requirements;

9. Notes with interest the activities undertaken by Member States, both individually and collectively, to cooperate in infrastructure development and encourages this exchange;
10. Requests that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources; and
11. 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-fourth (2010) session under an appropriate agenda item.

3.

Small and medium-sized nuclear reactors – Development and deployment

The General Conference,

- (a) Recalling its previous resolutions on small and medium-sized nuclear reactors – development and deployment,
 - (b) Noting that the Agency has in place a programme which includes the preparation of reports and coordinated research projects covering several relevant topics, 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,
 - (c) Noting that smaller reactors could be better suited to the small electrical grids of many developing countries, but recognizing that the size of nuclear reactors is a national decision that each Member State takes on the basis of its own needs and the size of its electrical grid,
 - (d) Further noting that SMRs could have a significant role to play in desalination and hydrogen generation systems in the future,
 - (e) Noting the publication of a report on “Design Features to Achieve Defense in Depth in Small and Medium Reactors” and the preparation of a report on “Approaches to Assess Competitiveness of SMRs”, and
 - (f) Noting with appreciation the Director General’s report on Small and Medium Sized Reactors (SMRs) - Development and Deployment as contained in document GC(53)/3,
1. Commends the Director General and the Secretariat for their work in response to previous relevant General Conference resolutions;
 2. Requests that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources;
 3. Encourages the Secretariat to continue taking appropriate measures 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;
 4. Calls upon the Secretariat to promote effective international exchange of information on options as regards SMRs available internationally for deployment and on topics such as operational performance, maintainability, safety and security, constructability, economics, proliferation resistance and the state of development of innovative SMRs, by organizing workshops, as appropriate, and to produce a relevant status report;

5. Invites the Secretariat and the Member States which are in a position to offer SMRs to foster international cooperation in undertaking studies of the social and economic impacts of SMR deployment in developing countries;
6. Encourages the Secretariat 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 organizations regarding advice on the development and deployment of SMRs;
7. Encourages the Secretariat to continue the activities of the Regular Budget project “Common Technologies and Issues for SMRs” on both the development of key enabling technologies and the resolution of key infrastructure issues for innovative SMRs of various types, which is complementary to the extrabudgetary “International Project on Innovative Nuclear Reactors and Fuel Cycle (INPRO)”;
8. Invites the Director General to raise seed funds and other appropriate funding from extrabudgetary sources in order to contribute to the implementation of all Agency activities relating to the development of and facilitating the deployment of SMRs; and
9. Requests the Director General to continue to report on:
 - (i) the status of the programme initiated to assist developing countries interested in SMRs,
 - (ii) progress made in the research, development, demonstration and deployment of SMRs in interested Member States intending to introduce them, and
 - (iii) progress made in the implementation of this resolution to the Board of Governors and to the General Conference at its fifty-fifth (2011) regular session under an appropriate agenda item.

4.

Agency activities in the development of innovative nuclear technology

The General Conference.

- (a) Referring to 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 its previous resolutions 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 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,
- (e) Noting that the Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), whose membership has reached 30 Member States and the European Commission, provides a forum for technical experts to discuss global scenarios, visions and perspectives and explore the development and deployment of innovative nuclear energy systems,

- (f) Noting also that the Agency fosters collaboration among interested Member States on selected innovative technologies and approaches to nuclear power through INPRO Collaborative Projects, Technical Working Groups (TWGs) working on facilitating innovations for advanced reactors and nuclear fuel cycle options, and Coordinated Research Projects, and acknowledging that the coordination of INPRO-related activities is achieved through the Agency-wide Joint Action Plan,
- (g) Noting with interest the publication of all nine volumes of the “Guidance for the Application of an Assessment Methodology for Innovative Nuclear Energy Systems” (IAEA-TECDOC-1575) as a final report of Phase I of INPRO,
- (h) Recognizing that, at the beginning of 2009, INPRO activities were consolidated into five substantive areas, which also form the basis for the INPRO action plan for 2010-2011, including nuclear energy system assessments (NESAs) using the INPRO methodology, the establishment of a global vision on sustainable nuclear energy, the promotion of innovations in nuclear technology, the promotion of innovations in institutional arrangements and the INPRO Dialogue Forum,
- (i) Noting the progress of other bilateral and international initiatives and their contribution to joint research and development on innovative approaches to nuclear power, and
- (j) Noting with appreciation the Director General's report on Agency activities in the development of innovative nuclear technology contained in document GC(53)/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 power programmes with innovative nuclear energy systems by using Agency tools and methodologies for energy system planning and NESAs;
 3. Requests the Secretariat to promote the exchange of relevant technical information among interested Member States and to foster human resource training on innovative nuclear technologies;
 4. 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 energy systems, including institutional and infrastructure innovations, particularly by continuing assessment studies of such energy systems and their role in national, regional and global scenarios for the further use of nuclear energy, as well as by identifying common issues for possible collaborative projects;
 5. Encourages interested Member States, through the concerted efforts of all countries using mechanisms like the INPRO Dialogue Forum, to jointly consider how developing and deploying innovative nuclear energy systems could meet their energy needs and contribute to economic development, 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;
 6. Calls upon the Secretariat and Member States in a position to do so to investigate, taking into account, inter alia, economic, safety and security factors, the availability of new, more proliferation-resistant reactor and fuel cycle technologies, including those needed 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;

7. Encourages interested Member States, together with the Secretariat, to identify and explore innovative institutional and infrastructural solutions supporting the future deployment of innovative nuclear energy systems;
8. Stresses the need for international collaboration in 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;
9. Recommends that the Secretariat continue to explore opportunities for synergy between Agency's activities (including INPRO) 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;
10. Welcomes the Secretariat's progress report on INPRO activities in 2008 and recommends that the Secretariat continue issuing such reports, as appropriate;
11. Invites all interested Member States to contribute to innovative nuclear technology activities by providing scientific and technical information, financial support, or technical and other relevant experts and by contributing to joint collaborative projects on innovative nuclear energy systems;
12. Recognizing that the funding of INPRO activities in the development of innovative nuclear technology 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 nuclear technology by further enhancing the effective use of available resources in support of related activities of the TWGs and INPRO;
13. Requests that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources; and
14. 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-fourth (2010) regular session under an appropriate agenda item.