



# General Conference

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Item 16 of the agenda  
(GC(60)/20)

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

## Resolution adopted on 30 September 2016 during the tenth 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 2012–2017 as guidance and input in this respect,
- (d) Taking note of the *Nuclear Technology Review 2016* (document GC(60)/INF/2),
- (e) 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, environment, food and agriculture, nutrition, human health and water resources, noting that many Member States, both developing and developed, are obtaining benefits from the application of nuclear techniques in all the above areas and noting the successful cooperation and significant results being achieved by FAO and the Agency through the Joint FAO/IAEA Programme,

- (f) Recognizing the commitment of the Food and Agriculture Organization of the United Nations (FAO) to the Revised Arrangements regarding the work of the Joint FAO/IAEA Division for Nuclear Techniques in Food and Agriculture, signed in 2013, and the FAO's Strategic Framework for 2010–2019, as well as its five strategic objectives, all of which provide a foundation for the strong and effective collaboration with, inter alia, the IAEA through the Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture, and taking note of the support of the FAO to continue collaborating with the IAEA through this joint programme,
- (g) Appreciating the support of the Joint FAO/IAEA Division to the control of outbreaks of peste des petits ruminants, swine fever, foot-and-mouth disease, Ebola virus disease, avian influenza, bluetongue and lumpy skin disease in Africa, Asia and Europe,
- (h) Aware of the activities of the Latin American and Caribbean Analytical Network (RALACA), composed of national food safety institutes in 20 countries in Latin America and the Caribbean, to address food contamination issues and improve environmental and food safety with health, trade and economic benefits,
- (i) Noting that the United Nations General Assembly, in resolution 64/292, called upon States and international organizations to provide financial resources, capacity-building and technology transfer, through international assistance and cooperation, in particular to developing countries, in order to scale up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all,
- (j) Welcoming the adoption of the 2030 Agenda for Sustainable Development by the United Nations General Assembly of 2015 (A/RES/70/1), and recognizing the Secretariat activities that contribute to fostering sustainable development and protecting the environment,
- (k) Further welcoming the adoption of the Paris Agreement at the twenty-first Conference of the Parties (COP 21) of the United Nations Framework Convention on Climate Change,
- (l) Recognizing the success of the sterile insect technique (SIT) in the suppression or eradication of populations of the screw worm, tsetse flies, and various fruit flies and moths pests that can cause large economic impacts,
- (m) Confirming the important role of science, technology and engineering in enhancing nuclear and radiation safety and security, and the need to resolve the issues of managing radioactive waste in a sustainable manner,
- (n) 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 international organizations, such as the International Thermonuclear Experiment Reactor (ITER) project group, in fusion-related projects, appreciating the efforts taken in leading the demonstration fusion power plant (DEMO) experiments and biennial IAEA Fusion Energy Conferences, and taking note of the 26th biennial IAEA Fusion Energy Conference (FEC2016) to be held in Japan in October 2016,
- (o) Recognizing the role of ion beam accelerators and synchrotron radiation sources in research and development in material science, environmental science, bio- and life sciences and cultural heritage,
- (p) Aware of the problems of pollutants arising from urban and industrial activities and the potential of radiation treatment to address some of them, including industrial wastewaters, and noting the initiative taken by the Agency to explore the use of radiation technology for waste

water treatment and the remediation of pollutants in Member States through coordinated research activities (CRAs),

(q) Taking note of the high potential of electron beams as a source of radiation for the treatment of materials and pollutants and the attenuation of pathogens for development of vaccines and acknowledging the encouraging results produced through the related coordinated research projects (CRPs),

(r) Noting with appreciation the success of the Scientific Forum held during the 59th General Conference in 2015, focused on the theme of radiation technology applications in industry, in creating awareness about the use of radiation technology in a wide variety of situations in industries,

(s) Recognizing the increasing use of radioisotopes and radiation technology in healthcare practices, sanitation and sterilization, industrial process management, environment remediation, food preservation, crop improvement, new materials development and analytical sciences, and in assessing the impacts of climate change,

(t) Noting the expanding use of positron emission tomography (PET), PET-computed tomography (PET-CT) and hospital-prepared radiopharmaceuticals and acknowledging the efforts taken by the Secretariat in planning appropriate activities to address the needs for production of PET radiopharmaceuticals and their use following the applicable national regulatory requirements,

(u) Noting the importance of molybdenum-99 availability for medical diagnosis and treatment, and acknowledging with appreciation the efforts made by the Agency, in coordination with other international organizations, Member States and relevant stakeholders, to facilitate a reliable supply of molybdenum-99 by supporting the development of Member States' abilities to generate, for their indigenous needs and for export, the non-HEU-based production of molybdenum-99 and technetium-99m, where technically and economically feasible, including research into the accelerator-based alternative production of technetium-99 / molybdenum-99,

(v) Aware of the new cooperative initiatives that have emerged to provide reactor irradiation services, of the significant advances reported in the development of new molybdenum-99 production facilities and the expansion of existing facilities, and of the continued interest of many countries in establishing non-HEU-based molybdenum-99 production facilities to meet domestic needs, for export and/or to serve as a partial reserve capacity,

(w) Acknowledging the multiple uses of research reactors as valuable tools for, inter alia, education and training, research, radioisotope production and materials testing and also as a learning tool for Member States that are considering the introduction of nuclear power,

(x) Aware that greater regional and international cooperation will be needed to ensure broad access to research reactors, owing to the fact that older research reactors are being replaced by fewer multi-purpose reactors, resulting in a drop in the number of operational reactors and noting with appreciation the Secretariat's integrated and systematic support to countries embarking on their first research reactor project,

(y) Noting with concern that the 38 TRIGA reactors worldwide would be adversely affected by the inability of the sole supplier of TRIGA fuel to guarantee a long-term supply of this fuel due to a weak business case,

- (z) Recognizing the importance of nuclear instrumentation in the monitoring of nuclear radiation and nuclear materials in the environment and noting with appreciation the development of instruments for monitoring surface radioactivity and the provision of services to requesting Member States for the mapping of their land,
- (aa) Acknowledging the need for increasing the capacity of Member States for using advanced nuclear techniques in disease — including cancer — management, and aware of the need to develop performance indicators for measuring such capacity,
- (bb) Recognizing that independent external peer-reviews, forming part of a comprehensive quality assurance programme, are an effective tool for quality improvement of the radiation medicine practice, and appreciating the Secretariat's efforts in developing the peer-review mechanisms in nuclear medicine, diagnostic radiology and radiotherapy,
- (cc) Aware of the innovative use of IT technology capacity building and educational tools in human health through the well-developed IAEA Human Health Campus,
- (dd) Noting ongoing cooperation and partnership between the World Health Organization (WHO) and the Agency, and the increasing demand from Member States in nuclear applications for human health,
- (ee) Noting that the Agency has compiled and disseminated isotope data on aquifers and rivers worldwide and is addressing links between climate change, rising food and energy costs and the global economic crisis, with the aim of assisting decision-makers in adopting better management practices for integrated water resources management and planning, especially for surface water related to agricultural use,
- (ff) Recognizing the Agency's unique capabilities in contributing to global efforts to protect the marine environment, acknowledging the important contribution of the Ocean Acidification International Coordination Centre at the IAEA Environment Laboratories in Monaco to the coordination of activities supporting a better understanding of the global effects of ocean acidification, and welcoming the significant financial and in-kind support for the Centre provided by a number of Member States, including under the IAEA Peaceful Uses Initiative,
- (gg) Aware that the events sponsored by the IAEA Nobel Peace Prize Cancer and Nutrition Fund have led to an increase in requests from Member States for cooperation in the field of infant and young child nutrition, and prevention of obesity related non-communicable diseases, and noting that the IAEA International Symposium on Understanding Moderate Malnutrition in Children for Effective Interventions, held in Vienna, Austria from 26 to 29 May 2014 has led to closer cooperation with other agencies working in the area of malnutrition,
- (hh) Recognizing the success of science and technology studies projects in enhancing scientific communication and their contribution to training the trainer,
- (ii) Noting with appreciation the efforts of the Secretariat, together with Member States, under the programme and budget for 2016–2017, to allocate sufficient resources to renovate the Agency's nuclear applications laboratories at Seibersdorf with facilities and equipment that are fully fit-for-purpose and to ensure that maximum benefits in terms of capacity building and technology enhancement are made available to Member States, particularly developing countries,
- (jj) Recognizing the Agency's contribution through the human health and food and agriculture programmes to address the Zika virus outbreak in Latin America and the Caribbean

region, in close collaboration with WHO through the offices of the Pan-American Health Organisation (WHO-PAHO), and

(kk) Recognizing the Agency's success at establishing partnerships and successful significant funding with non-conventional partners, notably in human health,

1. Requests the Director General, in conformity with the Statute, 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 for meeting sustainable growth and development needs of Member States in a safe manner;
2. Requests the Secretariat to fully utilize the capacities of Member State institutions through appropriate mechanisms in order to expand the extent to which nuclear sciences and applications are utilized to achieve socio-economic benefits and looks forward to the Agency's contribution to the implementation of the 2030 Agenda for Sustainable Development (A/RES/70/1), as well as the Paris Agreement on Climate Change;
3. 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 CRPs 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 through interregional, regional and national training courses and fellowship training in the areas of nuclear science, technology and applications, and expanding the scope and outreach of CRAs;
4. Following up on the success of the Scientific Forum during the 2015 General Conference, urges the Secretariat to communicate the benefits of various applications of nuclear technologies for development that could benefit Member States and to address the needs for human resource training in these applications;
5. Requests the Secretariat to initiate consultations with Member States on the preparation of the 2018 Ministerial Conference on nuclear science, technologies and applications for peaceful uses, and their delivery to Member States through the Agency's TC programme, while highlighting their future contribution to sustainable development;
6. 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;
7. Welcomes all contributions announced by Member States, including the IAEA Peaceful Uses Initiative, as extrabudgetary contributions to the Agency;
8. 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 nuclear applications related to food and agriculture, such as climate-smart agriculture, the use of the SIT to establish tsetse-free zones and for combating malaria-transmitting mosquitoes and the Mediterranean fruit fly, the application of nuclear-derived techniques to early, rapid diagnosis and control of emerging and re-emerging transboundary animal and zoonotic diseases, 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 land and water management, crop improvement and management in light of climate change, and to human health, and in the use of cyclotrons, research

reactors and accelerators for the production of radiopharmaceuticals, and the use of radiation technology for development of novel materials, as well as the treatment of waste water, flue gases and other pollutants resulting from industrial activities;

9. Encourages strengthening mutual cooperation between Member States to exchange information on relevant experiences and good practices on water resources management in synergy with the UN system organizations dealing with water resources management, such as the IAEA and UNIDO;

10. Takes note with appreciation of the continued efforts of the Secretariat with Member States party to the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (RCA) for Asia and the Pacific, in particular India, to support cancer management by developing a smart phone application that would enable cancer staging to improve the management of gynaecological cancer, launched during this 60th General Conference, and also recalling the launching of the TNM App for Cancer Staging during the 59th General Conference, which enables cancer management professionals to harmonize communication on cancer staging, and encourages the Secretariat to use IT tools in a similar way in other areas of nuclear applications;

11. Urges the Secretariat to continue exploring the use of accelerators for various radiation technology applications and to facilitate demonstrations and training for interested Member States;

12. Recognizes the success of the VETLAB network of veterinary diagnostic laboratories in disseminating the use of nuclear techniques for the diagnosis and control of transboundary animal and zoonotic diseases such as Ebola virus disease, avian influenza and lumpy skin disease in Africa, Asia and Europe, and urges the Secretariat to further increase these efforts;

13. Requests the Secretariat, in collaboration with interested Member States, to continue with the development of appropriate instruments and to make available, to requesting Member States, services for the rapid and economic mapping of radioactivity on the Earth's surface;

14. Urges the Secretariat to continue to implement activities that will contribute to securing and supplementing the molybdenum-99/technetium-99m production capacity, including in developing countries, in an effort to ensure the security of supplies of molybdenum-99 to users worldwide and further urges the Secretariat to continue its cooperative work towards this goal with other international initiatives such as the High-level Group on the Security of Supply of Medical Radioisotopes established by the OECD Nuclear Energy Agency;

15. Requests the Secretariat, upon request from interested Member States, to provide technical assistance to emerging national and regional efforts to establish non-HEU based molybdenum-99 production capabilities, and to provide technical assistance to transition existing production capabilities to utilize non-HEU-based methods and facilitate training activities such as workshops to support Member States in their efforts to achieve self-sufficiency in local production of medical radioisotopes;

16. Requests the Secretariat to continue to provide to interested Member States, upon request, technical assistance regarding medical isotope production;

17. Requests the Secretariat to foster regional and international efforts in ensuring wide access to existing multi-purpose research reactors to increase research reactor operations and utilization, and further requests the Secretariat to facilitate safe, effective and sustainable operation of these facilities;

18. Urges the Secretariat to continue to assist Member States considering their first research reactor with systematic, comprehensive and appropriately graded infrastructure development and to provide guidelines on the applications of research reactors to help Member State organizations make informed decisions that ensure the strategic viability and enduring sustainability of these projects;

19. Requests the Secretariat to assist interested Member States in developing safety infrastructure and in establishing regional training and education centres in their regions, where they do not exist, for the specialized training of nuclear and radiological experts, and requests the Secretariat to take advantage of qualified instructors from developing countries in this regard;
20. Urges the Secretariat to continue to engage with stakeholders and to encourage the international fuel supply industry to ensure uninterrupted and adequate supplies of research reactor fuels, including TRIGA fuel;
21. Encourages the Secretariat to continue cooperating with the World Nuclear University (WNU) in the biennial School on Radiation Technologies and to enhance its support for the participation of applicants from developing countries;
22. Requests the Secretariat to strengthen the Agency's activities in the area of fusion science and technology in view of the advances in nuclear fusion research at ITER and worldwide and to continue the DEMO activities, expanding the scope and participation to the extent possible;
23. Recognizing the underpinning nature of reliable nuclear data for all activities related to nuclear sciences and engineering, expresses its appreciation to the Secretariat for the provision of reliable nuclear data to the Member States for over 50 years as well as the development of an application for accessing nuclear data through mobile phones, and encourages it to continue the service in future;
24. Calls for the support of the Agency in setting guidelines for the adoption of advanced techniques and equipment in radiation medicine in Member States;
25. Encourages the Secretariat to further strengthen the IAEA-WHO partnership, and to explore the possibility for a more formalized cooperation, such as a joint programme or entity between the WHO and the IAEA;
26. Requests the Secretariat to continue providing assistance with capacity-building for quality assurance in radiopharmaceutical development and the use of radiation technology in industries and disseminating radiation technology guidelines based on international quality assurance standards;
27. Encourages Member States to make use of the existing peer-review mechanisms in radiation medicine to strengthen quality diagnosis and patient treatment;
28. Requests the Secretariat to make efforts together with Member States in developing industrial irradiation facilities such as electron accelerators and their accessories for use in, inter alia, healthcare practices, crop improvement, food preservation, industrial applications, sanitization and sterilization, and further requests the provision of technical support for the use of research reactors in the production of radiopharmaceuticals and industrial radioisotopes;
29. Requests also that the actions of the Secretariat called for in this resolution be undertaken subject to the availability of resources; and
30. Recommends that the Secretariat report to the Board of Governors and to the General Conference at its sixty-first (2017) 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-, dengue-, Zika- and other disease-transmitting mosquitoes**

The General Conference,

- (a) Recalling its resolution GC(44)/RES/24 on “Servicing Immediate Human Needs” and its resolution GC(58)/RES/13 on “Development of the sterile insect technique for the control or eradication of malaria-, dengue- and other disease-transmitting mosquitoes”,
- (b) Taking note of the decisions taken by the Summit of the African Union at its Fifteenth Ordinary Session, held in Kampala, Uganda, on 25–27 July 2010, on the five-year review of the Abuja Call for Accelerated Action Towards Universal Access to HIV/AIDS, Tuberculosis and Malaria Services in Africa, reaffirming the commitments undertaken at the Special Summit on HIV/AIDS, TB and Malaria, as well as under the Millennium Development Goals (MDGs) and the Decade for Roll Back Malaria, and deciding to extend the Abuja Call for Accelerated Action Towards Universal Access to HIV/AIDS, Tuberculosis and Malaria Services (the Abuja Call) to 2015 to coincide with attainment of the MDGs,
- (c) Welcoming the adoption of the 2030 Agenda for Sustainable Development, especially the relevant targets under Sustainable Development Goal 3 to ensure healthy lives and promote well-being for all, at all ages,
- (d) Appreciating the important role of nuclear applications 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 and/or suppression of tsetse flies, moths, fruit flies and other insects of economic importance,
- (g) Noting with concern that about 3.2 billion people remain at risk of malaria, transmitted by mosquitos and that in 2015 alone, there were an estimated 214 million new cases of malaria and 438 000 deaths, mainly in Africa, thus constituting a major obstacle to poverty eradication in Africa,
- (h) Noting that the malaria parasite has continued to develop resistance to drugs and that mosquitoes have continued to develop resistance to insecticides, and that it is envisaged that the SIT would be used under specific conditions as an adjunct to other technologies, conforming to the World Health Organizations’s (WHO’s) roll-back strategy, including integrated vector management, of not relying on any single approach to control malaria,
- (i) Noting with serious concern that mosquito-transmitted dengue has become in recent years a major international public health concern due to the increasing spread of invasive mosquito species, with 2.5 billion people living in 128 countries where dengue viruses can be transmitted, and that insecticide-treated bed nets are not effective in combating dengue as the mosquito vectors are active during the day and other control tactics are urgently required,
- (j) Noting with concern an increase of mosquito-transmitted chikungunya in the Latin American and the Caribbean region, and that currently there is no treatment available for this mosquito-borne disease,

- (k) Noting with concern the Zika virus outbreak in the Americas, which has been strongly linked to babies born with severe neurological disorders, such as congenital microcephaly, and which led to the declaration of a public health emergency of international concern by the WHO on 1 February 2016, and that so far there are no drugs nor effective global vaccines available to treat or prevent Zika,
- (l) Noting that the Thematic Plan for the Development and Application of the Sterile Insect Technique (SIT) and Related Genetic and Biological Control Methods for Disease Transmitting Mosquitoes organized by the Agency and held in Vienna from 16 to 20 June 2014 recommended that the Agency invest in supporting the control of the mosquito vector species through continuous funding of the development of the SIT and other related genetic and environment-friendly methods,
- (m) Noting that the suppression of disease-transmitting mosquitoes using the SIT will be suitable mostly in urban areas, where aerial spraying with insecticides is prohibited or not indicated, and that an area-wide approach is required, which represents a novel and potentially powerful supplement to existing community-based programmes,
- (n) Welcoming the fact that R&D on malaria and other disease-transmitting mosquitoes, which commenced with the inauguration of the Agency's mosquito laboratory in Seibersdorf on 26 June 2003, continued in the last biennium,
- (o) Taking note of the prioritization of the renovation of the Insect Pest Control Laboratory in Seibersdorf within the ReNuAL Strategy — *Strategy for the Renovation of the Nuclear Sciences and Applications Laboratories in Seibersdorf* (GOV/INF/2014/11),
- (p) Noting with appreciation the interest shown by some donors in and their support for R&D on the SIT for combating malaria-, dengue-, Zika- and other disease-transmitting mosquitoes, and
- (q) Acknowledging with appreciation the support given by the Agency to development of the SIT for the control of mosquitoes that transmit arthropod borne viruses as outlined in the report by the Director General in document GC(60)/5, Annex 3,
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 be able to refine and validate the use of the SIT for the integrated management of malaria-, dengue-, Zika- and other disease-transmitting mosquitoes;
  2. Requests the Agency to increasingly involve 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. Requests the Agency to increase efforts to develop and transfer more efficient sex separation systems that allow complete removal of the female mosquitoes in production facilities and to develop cost-effective methods to release and monitor sterile males in the field;
  4. Further requests the Agency to allocate adequate resources and to attract extrabudgetary funds so as to enable an expansion of the mosquito research programme, laboratory/office space and staffing;
  5. Requests the Agency to strengthen capacity building and networking in Latin America, Asia and Africa through regional TC projects and to support field projects against *Aedes* and *Anopheles*

mosquitoes through national TC projects for assessing the potential of the SIT as an efficient control tactic for disease-transmitting mosquitoes;

6. Invites the Agency to act upon the recommendation made by the experts of the Thematic Plan for the Development and Application of the Sterile Insect Technique (SIT) and Related Genetic and Biological Control Methods for Disease Transmitting Mosquitoes organized by the Agency in Vienna in June 2014 to invest in supporting the control of the mosquito vector species through continuous funding of the development of the SIT and related genetic and environment-friendly methods;

7. Calls on Member States to support the renovation of the Insect Pest Control Laboratory in Seibersdorf with increased space for the rapidly expanding mosquito activities and make financial contributions in support of its research programme;

8. Requests the Secretariat to continue to solicit extrabudgetary resources, including through the IAEA Peaceful Uses Initiative, so as to enable increased efforts to be made in validating in the field the SIT package for disease-transmitting mosquitoes through an operational project in the field; and

9. Requests the Director General to report on the progress made in the implementation of this resolution to the General Conference at its sixty-second session (2018).

### 3.

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

##### The General Conference,

(a) Recalling its previous resolutions on support to the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC),

(b) Recognizing that the main objective of AU-PATTEC is to eradicate tsetse flies and trypanosomosis by creating sustainable tsetse- and trypanosomosis-free areas, using various suppression and eradication techniques, while ensuring that the reclaimed land areas are sustainably and economically exploited and hence contributing to poverty alleviation and food security,

(c) Recognizing that tsetse fly and trypanosomosis (T&T) control programmes are complex and logistically demanding activities which require flexible, innovative and adaptable approaches in the provision of technical support,

(d) Recognizing that tsetse flies and the trypanosomosis problem which they cause are increasing and constitute one of the greatest constraints on the African continent's socio-economic development, affecting the health of humans and livestock, limiting sustainable rural development and thus causing increased poverty and food insecurity,

(e) Recognizing that although reported cases of human African trypanosomosis (HAT) are now below 4000 per year and are currently at the lowest level for several decades, animal trypanosomosis still affects millions of livestock every year and is a constraint to rural development for tens of millions of people in rural communities in 39 African countries, most of which are Agency Member States,

(f) Recognizing the importance of the development of more efficient livestock production systems in rural communities affected by tsetse flies and trypanosomosis in order to reduce poverty and hunger and to form the basis for food security and socio-economic development,

- (g) Recalling decisions AHG/Dec.156 (XXXVI) and AHG/Dec. 169 (XXXVII) of the Heads of State and Government of the then Organization of African Unity (now African Union) to free Africa of tsetse flies and on a plan of action for implementing AU-PATTEC,
- (h) Recognizing the upstream work of the Agency under its Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture in developing the sterile insect technique (SIT) against tsetse flies and providing assistance through field projects, supported from the Agency's Technical Cooperation Fund, on integrating tsetse SIT into Member States' efforts to address the T&T problem in a sustainable manner,
- (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,
- (j) Welcoming the continuing close collaboration of the Secretariat with AU-PATTEC, in consultation with other mandated specialized United Nations organizations, in raising awareness regarding the T&T problem, organizing regional training courses and providing, through the Agency's Technical Cooperation programme and Regular Budget programme, operational assistance to field project activities, as well as advice regarding project management and policy and strategy development in support of national and subregional AU-PATTEC projects,
- (k) Welcoming the adoption of the AU-PATTEC Strategic Plan for the period 2012–2018 on 12 December 2012 and looking forward to its effective implementation,
- (l) Welcoming the progress made by AU-PATTEC in increasingly involving — besides international organizations such as the Agency, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) — also non-governmental organizations and the private sector in addressing the T&T problem and to foster sustainable agriculture and rural development (SARD),
- (m) Welcoming the progress made in the Agency-supported tsetse eradication project under the National Institute for Control and Eradication of Tsetse and Trypanosomiasis (NICETT) in the Ethiopian Southern Rift Valley and the progress made in eradication of tsetse in the Niayes Region of Senegal,
- (n) Appreciative of the contributions made by various Members States and United Nations specialized agencies in support of addressing the T&T problem in West Africa, especially the contributions made by the United States of America through the Peaceful Uses Initiative (PUI) in support of projects for T&T control in Senegal and Burkina Faso,
- (o) Acknowledging the continued close collaboration of the Secretariat and the International Centre of Research and Development for Livestock in Subhumid Zones (CIRDES) in Bobo-Dioulasso, Burkina Faso, the first IAEA Collaborating Centre in Africa for the 'Use of the Sterile Insect Technique for Area-Wide Integrated Management of Tsetse Fly Populations',
- (p) Welcoming the efforts made by the Agency's Department of Technical Cooperation and the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture in support of AU-PATTEC,
- (q) Welcoming the efforts made by the Secretariat to address and eliminate obstacles to applying the SIT against tsetse flies in African Member States through applied research and methods development, both in-house and through the Agency's coordinated research project mechanism, and

(r) Acknowledging the continued support given to AU-PATTEC by the Agency as outlined in the report submitted by the Director General in document GC(60)/5, Annex 1,

1. Urges the Secretariat to continue assigning high priority to agricultural development in Member States and to redouble its 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;
2. 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, while stressing the importance of a needs-driven approach to applied research and methods development and validation to support operational field projects;
3. Requests the Secretariat, in cooperation with Member States and other partners, to maintain funding through the Regular Budget and the Technical Cooperation Fund for consistent assistance to operational SIT field projects and to strengthen its support for R&D and technology transfer to African Member States in order to complement their efforts to create and subsequently expand tsetse-free zones;
4. Requests the Secretariat to support Member States through technical cooperation projects on baseline data collection, development of full project proposals and implementation of operational tsetse eradication projects underpinned by on-site based experts, with priority given to genetically isolated tsetse populations;
5. Encourages the Agency's Department of Technical Cooperation and the Joint FAO/IAEA Division to continue working closely with AU-PATTEC in the agreed areas of collaboration as specified in the Memorandum of Understanding between the African Union Commission and the Agency signed in November 2009;
6. 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 sound and viable national and sub-regional AU-PATTEC projects;
7. Requests the Agency and other partners to strengthen capacity-building in Member States for informed decision-making regarding the choice of T&T strategies and the cost-effective integration of SIT operations in AW-IPM campaigns;
8. Urges the Secretariat and other partners to continue capacity building and to explore the possibilities of private-public partnership for the establishment and operation of tsetse mass rearing centres for providing cost-effectively large numbers of sterile male flies to different field programmes;
9. Encourages the countries that have selected a T&T strategy with an SIT component to focus initially on the field activities, including releases of sterile males imported from mass production centres as in the case of the successful eradication project in Senegal;
10. Encourages the Agency's Department of Technical Cooperation and the Joint FAO/IAEA Division to continue to support AU-PATTEC; 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 sixty-first (2017) regular session.

4.

**Plan for producing potable water economically using small and medium-sized nuclear reactors**

The General Conference,

- (a) Recalling resolution GC(58)/RES/13, Section 4, Plan for producing potable water economically using small and medium-sized nuclear reactors, and previous General Conference resolutions on strengthening the Agency's activities related to nuclear science, technology and applications,
- (b) Recognizing that sufficient and clean potable water supplies for all humankind are of vital importance, as emphasized in Agenda 21 of the Rio Summit on Development and Environment, held in 1992, and the United Nations Conference on Sustainable Development (Rio +20), held in June 2012 in Rio de Janeiro, Brazil, and most recently, in Goal 6 of the 2030 Agenda for Sustainable Development, as well as through the discussion towards implementing the Paris Agreement adopted at the COP 21 United Nations Climate Change Conference in December 2015, and the Rabat Call 'Water for Africa' outcome document of the International Conference on Water and Climate: "Water Security for Climate Justice", which seeks to ensure stronger integration of water in the climate agenda ahead of the COP 22 United Nations Climate Change Conference scheduled to take place in Morocco in November 2016,
- (c) Noting that potable water shortages are of growing concern in many regions of the world, due to population growth, increased urbanization and industrialization and the effects of climate change,
- (d) 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,
- (e) Recognizing that a number of Member States have expressed their interest in participating in activities relating to seawater desalination using nuclear energy,
- (f) Noting that seawater desalination using nuclear energy has been successfully demonstrated through various projects in some Member States both for drinking water and for plant operated service water and is generally cost-effective, while recognizing that the economics of implementation will depend on site-specific factors,
- (g) Taking note with appreciation of the different activities carried out by the Secretariat in cooperation with interested Member States and international organizations, as outlined in the report of the Director General contained in document GC(60)/5,
- (h) Taking note of the recent enhancement in the scope of the Technical Working Group on Nuclear Desalination (TWG-ND), to encompass integrated water resources management and more specifically the efficient use of water in nuclear facilities,
- (i) Noting that the Secretariat has in 2015 published IAEA-TECDOC-1753, which documents the results of the Coordinated Research Project (CRP) on new technologies for seawater desalination using nuclear energy, and also noting that progress has been made in developing a report that provides generic guidance on cogeneration options and also assesses the economics associated with such options, and reports on "Opportunities for Cogeneration with Nuclear Energy" and "Industrial Applications of Nuclear Energy" (under publication),
- (j) Further noting the release of a new version of the Desalination Economic Evaluation Programme (DEEP) 5.1, in January 2015, which includes a new option for sensitivity analysis,

case comparison, as well as an optimized merit function for faster and easier access, and the release of an updated version of the nuclear desalination toolkit,

(k) Noting that the CRP on the Application of Advanced Low Temperature Desalination Systems to Support Nuclear Power Plants and Non-Electric Applications is progressing as planned with two research coordinating meetings held in 2014 and 2015,

(l) Recalling with appreciation that the Agency has established a programme to assist developing countries in addressing issues concerning economics, safety, reliability and technical measures for proliferation resistance in the application of small and medium-sized nuclear reactors (SMRs) for the production of potable water, and

(m) 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 strengthen 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. Encourages the TWG-ND to continue its functions as a forum for advice and review on nuclear desalination activities;

3. Stresses the need for international cooperation 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) Continue to hold regional training workshops and technical meetings and to use other available mechanisms for disseminating information on nuclear desalination and water management using SMRs and to undertake further activities aimed at better establishing how existing reactors may offer options for cogeneration;

(b) Issue a technical report addressing responsibilities of vendors and users involved in nuclear desalination projects, and assessing different scenarios for cogeneration; and

(c) Increase the Secretariat's activities in capacity building (including training and education) on nuclear desalination projects to bridge the gap among users/vendors/operators/regulators;

5. Invites the Director General to raise funds from extrabudgetary sources in order to catalyse and contribute to the implementation of all Agency activities relating to nuclear desalination and cogeneration, and the development of innovative SMRs;

6. Requests the Director General to note the high priority given by a growing number of 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 sixty-second (2018) regular session under an appropriate agenda item.

5.

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

The General Conference,

- (a) Recalling its resolutions GC(58)/RES/13.A.5, GC(56)/RES/12.A.4, GC(54)/RES/10.A.4 and GC(52)/RES/12.A.5 on “Strengthening the support to Member States in food and agriculture” and its resolution GC(51)/RES/14 on “Strengthening the Agency’s activities related to nuclear science, technology and applications”,
- (b) Recognizing the central role of agricultural development in accelerating progress towards several Sustainable Development Goals (SDGs), in particular to end hunger, achieve food security and improved nutrition and promote sustainable agriculture,
- (c) Recognizing that the major global trends that will frame agricultural development over the medium-term include: rising food demand, lingering food insecurity, malnutrition, and the impact of climate change,
- (d) Noting that the Paris Agreement on Climate Change recognizes the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change,
- (e) Noting that, according to the FAO publication “The State of Food Insecurity in the World 2015”, hunger remains an everyday challenge for 795 million people worldwide, including 780 million in the developing regions,
- (f) Noting the benefits from the peaceful application of nuclear techniques in food and agriculture, and the importance of making appropriate technologies available, particularly to developing Member States,
- (g) Appreciating the work of the Joint Division of the Food and Agriculture Organization of the United Nations and the International Atomic Energy Agency (the Joint FAO/IAEA Division) dedicated to the development and application of nuclear and related techniques in food and agriculture, and welcoming the reaffirmation of the commitment of both organizations to the long-standing partnership between the two organizations through the signing by the Agency and FAO in 2013 of revised arrangements regarding the work of the Joint FAO/IAEA Division,
- (h) Affirming the synergy and contribution of the unique partnership between the FAO and the Agency through the Joint FAO/IAEA Division to global food security and sustainable agriculture development,
- (i) Noting that the Strategic Framework of FAO focuses on five Strategic Objectives, streamlining its priorities, results and resource allocation to accelerate the eradication of hunger, malnutrition, poverty, and the sustainable use of natural resources,
- (j) Expressing appreciation for the work undertaken by the FAO/IAEA Agriculture and Biotechnology Laboratories in Seibersdorf and noting the importance of fit-for-purpose laboratories that comply with health and safety standards and have the appropriate infrastructure,
- (k) Recognizing the importance of the Agency’s Biosafety Level 3 (BSL3) capabilities to support Member States’ efforts to control transboundary animal and zoonotic diseases, and appreciating the good cooperation with Austrian authorities, in particular the Austrian Agency for Health and Food Safety (AGES), which provides full access and use of its new BSL3

facility, and welcoming the Agency's consideration to establish an IAEA owned extension to the existing facility,

(l) Commending the Secretariat on the effective support provided to Member States to combat emerging and re-emerging animal and zoonotic diseases such as peste des petits ruminants, swine fever, foot-and-mouth disease, Ebola virus disease, avian influenza, bluetongue and lumpy skin disease in Africa, Asia and Europe,

(m) Commending the Secretariat for strengthening the VETLAB network of national veterinary diagnostic laboratories in Africa, Asia and Europe,

(n) Noting the efforts made by the Secretariat in building national and regional capacity in animal genetic characterization targeting animal breeding for sustainable development in the context of resistance to diseases and tolerance to climate change and in supporting the Global Plan of Action for Animal Genetic Resources,

(o) Noting the efforts made by the Secretariat in identification and inclusion of lesser known, non-conventional feeds and forages, crop residues and industrial by-products for sustainably increasing animal-origin food production,

(p) Noting with appreciation the eradication of the Mediterranean fruit fly (medfly) from 300 000 hectares in Guatemala, facilitating the export of fresh fruit and vegetables to the United States of America and other high-value medfly-free international markets,

(q) Applauding the support provided by the Agency to the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC), which is making excellent progress in eradicating tsetse flies from the Niayes region of Senegal and is fostering the suppression of tsetse flies and the disease they transmit in several affected Member States, including 10 000 km<sup>2</sup> of the Southern Rift Valley in Ethiopia, permitting an increase of productive livestock and opening up opportunities for sustainable agricultural and rural development and thereby benefiting thousands of farmers,

(r) Appreciating the major achievement of the Joint FAO/IAEA Division and the Agency's Technical Cooperation programme in developing mutant wheat varieties with resistance to Ug99, a black stem rust disease of wheat,

(s) Commending the Agency and FAO on jointly providing Achievement Awards and Outstanding Achievement Awards to plant breeders and institutes in Member States for exceptional achievements in mutation breeding and their contributions to global food security,

(t) Commending the Agency on its key role in the post-rinderpest era, including its contributions to the sequestration of the rinderpest virus from diagnostic and vaccine production and storage facilities and to the maintenance of global diagnostic capabilities and expertise, and on its support in building national and regional capacity, improving epidemiological studies and data management and setting up pertinent networks to combat and eliminate other livestock and zoonotic diseases,

(u) Commending the Agency on its exemplary role in the enhancement of nuclear emergency response in the field of food and agriculture and on its adaptation of nuclear and related technologies in that connection,

(v) Applauding the demand-driven R&D work at the FAO/IAEA Agriculture and Biotechnology Laboratories in Seibersdorf on the development of the sterile insect technique (SIT) for disease-transmitting mosquitoes, the use of isotopic techniques in soil erosion

control, land and water management, climate-smart agriculture, greenhouse gas emission reduction, food forensics, traceability and contaminant control to improve food safety and quality, the investigation of irradiated animal vaccines, and the application of stable isotopes as tracing technologies and in enhancing animal disease diagnostic applications,

(w) Applauding the support of the Secretariat to 65 African, Asian, European and Latin American countries in the development of soil conservation strategies using fallout radionuclide (FRN) techniques to ensure sustainable agricultural production and to mitigate the impacts of climate change,

(x) Welcoming the demand-driven research activities on the development of communication tools to improve decision-making in agricultural water management in Africa, and the new visualization platform for nuclear and radiological emergency preparedness and response for food and agriculture, and

(y) Recognizing that the demand from Member States for technical assistance in the area of nuclear applications in food and agriculture remains high, as evidenced by the scientific and technical support of the Joint FAO/IAEA Division for 278 national, regional and interregional technical cooperation projects and 28 coordinated research projects,

1. Urges the Secretariat to further expand, in an integrated and holistic manner, its efforts to address, inter alia, food insecurity in Member States and to further increase its contribution to raising agricultural productivity and sustainability through the development and integrated application of nuclear science and technology;

2. Encourages the Secretariat, and in particular the Joint FAO/IAEA Division, to continue playing its unique role in strengthening the capacity of Member States in the use of nuclear and related techniques to improve food security and sustainable agriculture through international cooperation in research, training and outreach activities;

3. Urges the Secretariat to address the impacts of climate change on food and agriculture through the use of nuclear technologies, with priority on adaptation to and mitigation of the effects of climate change, including, in soil and water management, through the development of tools and technology packages to build soil resilience and address land degradation, and requests the Secretariat to carry out new activities for addressing the climate change challenges under the thematic heading of ‘climate-smart agriculture’;

4. Encourages the Secretariat, in view of the global trend of antimicrobial resistance (AMR) and its impact on human and animal health, to join the international community in efforts to address the global AMR concern, e.g. through investigation of AMR using nuclear/isotopic-derived methods/tools and molecular techniques;

5. Urges the Joint FAO/IAEA Division to continue developing laboratory networks in order to strengthen support for the control and eradication of transboundary animal diseases (TADs) (e.g. VETLAB) and for food safety, including the application of appropriate and competitive nuclear and non-nuclear techniques in animal health and food safety, and, with the participation of multiple stakeholders, to strengthen national programmes and enhance laboratory networks;

6. Requests the Secretariat to strengthen capacity building for Member States, including in addressing those transboundary animal and zoonotic diseases that potentially pose a bio-threat to people and their livelihoods, in case of accidental or deliberate release to the environment, and encourages the Agency, in consultation with Member States, to pursue its consideration of an IAEA owned extension of the existing BSL3 laboratory of the AGES in order to strengthen capacity building for Member States to address these global threats;

7. Encourages the Joint FAO/IAEA Division, including the FAO/IAEA Agriculture and Biotechnology Laboratories in Seibersdorf, to continue its valuable work in the provision of demand-driven training and services and in applied R&D;
8. Requests the Secretariat to work towards the renewal of the FAO/IAEA Agriculture and Biotechnology Laboratories in Seibersdorf, in conjunction with the other programmatic entities of the laboratories of the Department of Nuclear Sciences and Applications, in order to ensure that fit-for-purpose laboratories will also in future be optimally positioned to assist Member States' research and development activities;
9. Urges the Secretariat to continue strengthening its activities in the area of food and agriculture through interregional, regional and national capacity building initiatives, and to further expedite the sustainable transfer of technology to developing Member States;
10. Expresses appreciation for the financial and extrabudgetary contributions made by Member States and other stakeholders in support of, inter alia, the food and agriculture programme of the Agency, and encourages Member States to contribute, particularly through the Peaceful Uses Initiative, to food and agriculture activities, and to continue supporting these activities by funding projects that will further enhance agricultural productivity while protecting increasingly scarce natural resources;
11. Urges the Secretariat to further strengthen its efforts to seek extrabudgetary funding for infrastructure and equipment improvement and modernization of the Seibersdorf laboratories, especially the FAO/IAEA Agriculture and Biotechnology Laboratories, so as to enable these to meet the growing and continuously evolving needs of Member States, and specifically encourages Member State contributions in support of the ReNuAL+ project;
12. Urges the Secretariat, in its resource mobilization efforts for the ReNuAL project, to draw on the extensive experience of the FAO in mobilizing extrabudgetary resources, and encourages the Secretariat to have relevant FAO staff work closely with Agency staff in these efforts;
13. Encourages the Secretariat to further strengthen its partnership with FAO and to continue adjusting and adapting its technology development, capacity building and technology transfer services in response to Member States' demands and needs in food and agriculture, especially in light of the FAO Strategic Objectives;
14. Appreciates the continuing activities of the Secretariat in relation to nuclear and radiological emergency preparedness and response, especially in the areas of agricultural countermeasures and remediation strategies to mitigate immediate and longer-term effects arising from radionuclide contamination, and urges the Secretariat to develop technologies, manuals, protocols and guidance to strengthen the capacity of Member States to deal with radionuclide contamination in the area of food and agriculture;
15. Encourages the Joint FAO/IAEA Division to continue responding to the major global trends framing agricultural development in order to ensure to the maximum extent possible an increased resilience of livelihoods to threats and crises in agriculture, including the adaptation to and mitigation of the effects of climate change;
16. Urges the Secretariat to further strengthen its effort to seek extrabudgetary funding for strengthening its research activities in the preparedness and response to nuclear emergencies, with a particular focus on the area of food and agriculture; and

17. 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 sixty-second (2018) regular session.

## 6.

### **Renovation of the Agency's Nuclear Applications Laboratories at Seibersdorf**

#### The General Conference.

- (a) Recalling paragraph 9 of resolution GC(55)/RES/12.A.1, in which the General Conference called upon the Secretariat to make efforts, together with Member States, to modernize the Agency's Nuclear Applications (NA) Laboratories at Seibersdorf, thus ensuring maximum benefits to Member States, particularly developing ones,
- (b) Further recalling additional resolutions requiring that the NA Laboratories at Seibersdorf be fully fit-for-purpose (such as resolution GC(56)/RES/12.A.2, concerning the development of the sterile insect technique for the eradication and/or suppression of malaria-transmitting mosquitoes; resolution GC(57)/RES/12.A.3, concerning support to the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC); resolution GC(56)/RES/12.A.4, on strengthening the support to Member States in food and agriculture; resolution GC(57)/RES/9.13, regarding nuclear and radiological incident and emergency preparedness and response; and resolution GC(57)/RES/11, relating to the strengthening of the Agency's technical cooperation activities),
- (c) Recognizing the growing applications, with economic and environmental benefits, of nuclear and radiation technologies in a wide variety of areas, the vital role that the NA Laboratories at Seibersdorf play in the demonstration and development of new technologies and in their deployment in Member States, and the dramatic increase in associated training courses and provision of technical services during recent years,
- (d) Acknowledging with appreciation the worldwide leading role of the NA Laboratories at Seibersdorf in the establishment of global laboratory networks in several areas, such as the animal disease control networks supported through the Peaceful Uses Initiative (PUI), the African Renaissance Fund (ARF) initiative and numerous other initiatives,
- (e) Further recognizing that the NA Laboratories at Seibersdorf are in urgent need of modernization in order to respond to the evolving range and complexity of the requests submitted to them and the growing demands of Member States and keep pace with increasingly rapid technological developments,
- (f) Emphasizing the importance of fit-for-purpose laboratories that comply with health and safety standards and that have the appropriate infrastructure,
- (g) Supporting the Director General's initiative regarding the modernization of the NA Laboratories at Seibersdorf, announced in his statement at the 56th regular session of the General Conference,
- (h) Recalling resolution GC(56)/RES/12.A.5, and specifically paragraph 4, in which the General Conference requested the Secretariat "to develop a strategic overarching plan of action for the modernization of the NA Laboratories at Seibersdorf, provide a concept and methodology for the short-, medium- and long-term modernization programme and outline the vision and future role for each of the eight NA laboratories",

- (i) Further recalling the report of the Director General to the Board of Governors (GC(57)/INF/11), mapping out activities and services of the NA Laboratories at Seibersdorf aimed at benefiting Member States and other stakeholders, quantifying projected future needs of and demands by Member States and identifying current and anticipated future gaps,
- (j) Welcoming the Director General's report to the Board of Governors on the Strategy for the Renovation of the Nuclear Sciences and Applications Laboratories in Seibersdorf as contained in GOV/INF/2014/11, which outlines the necessary elements and resource requirements for assuring fit-for-purpose laboratories, known as the ReNuAL project, to be implemented from 2014–2017 within a €31 million target budget, and the Addendum to the Strategy as contained in GOV/INF/2014/11/Add.1, which provides an update to the Strategy defining the additional elements as contained in paragraph 15 of the Strategy, known as ReNuAL Plus (ReNuAL+), and the Agency's consideration to establish its own Biosafety Level 3 (BSL3) laboratory capabilities,
- (k) Further welcoming the Director General's report in GOV/2016/34-GC(60)/5, Annex 2, to the Board of Governors on progress made in preparing and implementing the ReNuAL project since the 59th General Conference,
- (l) Noting the finalization of the designs of the new Insect Pest Control Laboratory (IPCL), the new Flexible Modular Laboratory (FML) building and the new bunker to house a medical linear accelerator as the final preparatory steps before construction began, with work on site infrastructure having begun in March 2016,
- (m) Further noting GOV/INF/2016/4 "The Renovation of the Nuclear Applications Laboratories Project (ReNuAL)", which provided an update to Member States on progress and described the revised scope of the project,
- (n) Recognizing that the revised scope of ReNuAL now includes the structure of the IPCL to be built in full with as much of its interior as possible, two of the originally planned three laboratory wings of the FML to be built and fully finished, the majority of the required infrastructure and some of the required equipment within the target budget of €31 million,
- (o) Noting that some elements of the ReNuAL strategy as defined in GOV/INF/2014/11, "Strategy for the Renovation of the Nuclear Science and Applications Laboratories in Seibersdorf", have been moved to ReNuAL+,
- (p) Further noting that the construction contract was awarded in March 2016 and that work on both the IPCL and the FML began in July 2016, with the IPCL to be fully built and an estimated 60% of its interior to be completed by December 2017, and that the completion of the two wings of the FML should be completed along with required infrastructure by mid-2018,
- (q) Recognizing the importance of the Agency's BSL3 capabilities to support Member States' efforts to control transboundary animal and zoonotic diseases, and appreciating the good cooperation with Austrian authorities, in particular the Austrian Agency for Health and Food Safety (AGES), which began providing full access and use of its new BSL3 facility at Mödling, thereby enhancing the Agency's ability to provide increased assistance to Member States in controlling transboundary animal and zoonotic diseases, and further noting the Austrian Government's offer of a package of land, infrastructure and technical services that it values at €2 million towards the Agency establishing its own BSL3 capabilities at the same facility in Mödling,
- (r) Welcoming that, since the start of the 59th General Conference, 20 financial contributions to ReNuAL were announced, pledged or provided bilaterally by 18 Member States and

collectively in the case of the African Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA), which consists of 39 Member States, totalling approximately €13.2 million and bringing the total of extra budgetary funds to the €20.6 million of extra budgetary funds required for ReNuAL to be funded fully,

(s) Further welcoming the financial and in-kind contributions as well as cost-free experts for the implementation of the ReNuAL project, made by the following 26 Member States: Australia, Austria, France, Canada, China, Germany, India, Indonesia, Israel, Japan, Kazakhstan, the Republic of Korea, Kuwait, Malaysia, Mongolia, New Zealand, Norway, Pakistan, the Philippines, the Russian Federation, Saudi Arabia, South Africa, Spain, Switzerland, the United Kingdom and the United States of America, as well as AFRA, to further support the full implementation of the project,

(t) Recognizing the efforts of the informal group of Member States known as the 'Friends of ReNuAL' who are actively facilitating the mobilization of resources for the project and encouraging all Member States that are in a position to do so, to make resources available to support activities,

(u) Further recognizing both bilateral as well as regional efforts to mobilize resources such as the Symposium on Nuclear Applications for Sustainable Development in GCC Member States in Kuwait in February 2016, as well as efforts to attract support from non-traditional donors, including equipment manufacturers, foundations and industry associations, leading to significant progress in working with manufacturers to develop a modality for the cost-free lending of equipment,

(v) Emphasizing that completing the elements of ReNuAL that were moved to ReNuAL+ in GOV/INF/2016/4, and in particular the full completion of the IPCL, the FML as well as construction of the bunker for the Dosimetry Laboratory, should be the first priority of mobilizing resources,

(w) Noting that planning for the initial elements of ReNuAL+ as defined in GOV/INF/2014/11/Add.1 is now proceeding, and

(x) Noting with appreciation that the implementation of the ReNuAL project has commenced with an initial €2.6 million per year as provided for in the Agency's Programme and Budget for 2014–2015, and €2.5 million in 2016 as well as the €2.5 million that is planned for 2017 in the 2016–2017 Programme and Budget,

1. Stresses the need, in conformity with its Statute, for the Agency to continue pursuing adaptive research and development activities in the areas of nuclear science, technology and applications where the Agency has a comparative advantage, and to retain its focus on capacity-building initiatives and the provision of technical services so as to meet the basic sustainable development needs of Member States;

2. Requests the Secretariat to strive to ensure that, commensurate with the prominence of the NA Laboratories at Seibersdorf within the Agency, the urgent needs and projected future demands of Member States as regards the services of those laboratories are met within the overall funding target for the renovation project;

3. Encourages the Secretariat to continue to implement the key recommendations of the Standing Advisory Group for Nuclear Applications (SAGNA) as regards prioritization of the redesign and expansion of infrastructure, including buildings, safety and security arrangements and administration

and to ensure that the project results in fully fit for purpose laboratories that meets the needs of Member States;

4. Encourages the Secretariat to continue to explore the possibilities of extrabudgetary funding from non-traditional donors, and to assess the potential for collaboration with the private sector, within the Agency's financial and administrative rules and regulations, with a view to the establishment of low- or no-cost arrangements for equipment acquisition;
5. Calls on the Secretariat to continue to pursue a project specific resource mobilization strategy seeking resources from Member States, foundations and the private sector and encourages partnerships amongst them and further encourages the Secretariat to consider devoting financial resources from savings or efficiency gains to the project, in consultation with Member States;
6. Further calls on the Secretariat to continue to develop targeted resource mobilization packages that will match the interest of the potential donors with the needs of ReNuAL+, prioritizing the elements that were originally in the adjusted project scope of ReNuAL and now moved to ReNuAL+;
7. Requests the Secretariat to provide information on the financial resources required for upcoming implementation and to indicate where resources are needed to match implementation schedules;
8. Invites Member States to make financial commitments and contributions, as well as in-kind contributions in a timely manner, as well as to facilitate cooperation with other partners, as relevant, including foundations and the private sector, to ensure that the completion of the IPCL with full functionality, as well as the construction of the third wing of the FML with full functionality, can be undertaken as early as possible to ensure cost saving;
9. Requests the Secretariat to undertake planning activities in order to appropriately scope the elements required to complete the renovation of the NA Laboratories as defined in GOV/INF/2014/11/Add.1;
10. Further invites Member States, based on the information provided from the current planning efforts of the Secretariat, to make the appropriate contributions to support the completion of the renovation of the NA Laboratories in Seibersdorf, as provided for in the addendum to the Strategy for the Renovation of the Nuclear Sciences and Applications Laboratories in Seibersdorf, as contained in GOV/INF/2014/11 and so that those elements within ReNuAL+ are implemented as soon as possible, in consultation with all Member States;
11. Encourages the 'Friends of ReNuAL' under the co-chairmanship of South Africa and Germany, and all Member States to continue to support the implementation of the project with a focus on mobilizing resources in a timely manner; and
12. Requests the Director General to report to it on progress made in the implementation of this resolution at its sixty-first (2017) session.

## **B.**

### **Nuclear power applications**

#### **1.**

##### **General**

###### The General Conference.

- (a) Recalling resolution GC(59)/RES/12 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) Recalling the importance of involving the Member States in the drafting and publication process of important publications on nuclear energy,
- (e) Noting that in the present resolution, expanding countries or expanding nuclear power programmes mostly refers to re-embarking countries with existing nuclear power programmes, now considering or actively pursuing one or more modern nuclear power plants,
- (f) Noting the continued value of Integrated Work Plans (IWPs), which provide an operational framework for the delivery of optimized Agency assistance to support Member States with new and expanding national nuclear programmes, the latter mostly referring to re-embarking countries,
- (g) Acknowledging the value of the contribution of the Secretariat and its Nuclear Infrastructure Development Section in providing a coordinated approach to supporting Member States in the area of nuclear infrastructure,
- (h) Acknowledging that actions have been taken by the Secretariat and Member States with nuclear power, in response to the lessons learned from the Fukushima Daiichi accident, towards enhancement of the robustness of nuclear power plants and fuel cycle facilities, as well as human and organizational effectiveness, and emphasizing the need for ensuring competent technical support at every stage of the lifetime of a nuclear power plant for safe and reliable operations,
- (i) Recalling that new, maintaining and expanding nuclear power programmes require the development, implementation and continuous improvement of appropriate infrastructure to ensure the safe, secure, efficient and sustainable use of nuclear power, and implementation of the highest standards of nuclear safety, taking into account relevant Agency standards and guidance and relevant international instruments, as well as a strong and long-term commitment of national authorities to creating and maintaining this infrastructure,
- (j) Recognizing the growing interest within a number of Member States in next generation reactor designs,
- (k) Encouraging interested Member States, including both technology users and holders, to consider jointly the improving of innovations in nuclear reactors, fuel cycles and institutional approaches, such as in the framework of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO),
- (l) Recognizing that small and medium-sized/modular reactors (SMRs) could be well-suited to the small electrical grids of many developing Member States with less developed infrastructure, and that for some developed Member States they could be one way to replace obsolete, ageing or high-carbon-emitting small and medium-sized power sources and noting that SMRs could play a significant role in district heating, desalination and hydrogen production systems in the future, and their potential for use in innovative energy systems,

- (m) Recalling that the development of innovative fast neutron systems, closed fuel cycles, and alternative fuel cycles (e.g. thorium, recycled uranium) are regarded by many as steps towards a long-term sustainable energy supply that can extend the lifetime of nuclear fuel resources and contribute to effective solutions to nuclear waste management,
- (n) Noting the increasing number of requests from Member States for advice on the exploration of uranium resources and on mining and milling for safe, secure and effective uranium production while minimizing the environmental impact, and acknowledging the importance of the Agency's assistance in this field,
- (o) Noting the importance of identifying undiscovered uranium or secondary uranium resources, and underlining the necessity to support uranium mine remediation, as part of a sustainable nuclear programme,
- (p) Welcoming the signing of a Host State Agreement between the Agency and Kazakhstan, and the signing of a Transit Agreement between the Agency and the Russian Federation to support the implementation of the low enriched uranium (LEU) bank,
- (q) Taking note of the decision made to build a dedicated new facility, in cooperation with Kazakhstan, to assure the operation of the future LEU bank according to the IAEA safety standards and nuclear security guidance,
- (r) Noting also the functioning of the LEU reserve in Angarsk, Russian Federation, comprising 120 tons of LEU under the aegis of the Agency,
- (s) Aware of the availability of the American Assured Fuel Supply, a bank of approximately 230 tons of LEU, for responding to supply disruptions in countries pursuing peaceful civilian nuclear programmes,
- (t) Recognizing the role that the effective management of spent fuel and radioactive waste should play in avoiding imposing undue burdens on future generations, and recognizing that, while each Member State should, as far as is compatible with the safe management of such material, dispose of the radioactive waste it generates, in certain circumstances the safe and efficient management of spent fuel and radioactive waste might be fostered through agreements among Member States to use facilities in one of them for their mutual benefit,
- (u) Stressing the importance of IAEA safety standards related to the management of radioactive waste and spent nuclear fuel and the benefits of strong cooperation with international organizations,
- (v) Recognizing that the establishment of a robust safety, security and non-proliferation infrastructure in the States considering introducing nuclear power plants is vital for any nuclear programme and stressing that the use of nuclear power must be accompanied at all stages by commitments to and ongoing implementation of the highest standards of safety and security throughout the life of the power plants, and effective safeguards, consistent with Member States' national legislation and respective international obligations and welcoming the Agency's assistance in these areas,
- (w) Emphasizing the need to ensure effective management of spent fuel and radioactive waste, decommissioning and remediation in a safe and sustainable manner, and confirming the important role of science and technology in continuously addressing these challenges, particularly through innovations,

- (x) Recognizing the continuing efforts and good progress that have been made on the Fukushima Daiichi site, whilst noting the enormous decommissioning, environmental remediation and radioactive waste management challenges that remain,
- (y) Acknowledging that it is important for Member States that opt to use nuclear power to engage the public in science-based and transparent dialogue,
- (z) Recognizing that the growing number of shut down reactors increases the need for collecting experience and developing adequate methods and techniques for decommissioning, environmental remediation and managing large volumes of radioactive waste, including contaminated water, resulting from legacy practices and radiological or nuclear accidents,
- (aa) Acknowledging progress made in the field of deep geological disposal of spent nuclear fuel or highly radioactive waste, and further acknowledging the vital importance of involving national authorities, including regulatory bodies, in order to enhance stakeholder engagement,
- (bb) Recognizing the need for Member States to evaluate and manage the financial commitments that are necessary for planning and implementing radioactive waste management programmes, including disposal,
- (cc) Commending the continuous efforts of the Secretariat to enable the safe and effective borehole disposal of disused sealed radioactive sources and acknowledging the Canadian pledge to enable the projects implemented in Ghana and Malaysia,
- (dd) Noting the Agency's integrated peer review service for radioactive waste and spent fuel management, decommissioning and remediation programmes (ARTEMIS) and welcoming the requests made by Australia, Poland and France to each host a mission in 2017, and by Spain in 2018,
- (ee) Recognizing the success of the International Conference on Advancing the Global Implementation of Decommissioning and Environmental Remediation Programmes, in Spain in May 2016, and noting the request for Member States to reach consensus on matters where further international collaboration could contribute to safe and cost-effective decommissioning and remediation, wherever applicable,
- (ff) Recalling the International Action Plan on the Decommissioning of Nuclear Facilities, adopted at the 48th Regular Session of the General Conference, GC(48)/RES/10,
- (gg) Acknowledging the organization by the Secretariat, in June 2015, of the International Conference on the Management of Spent Fuel from Nuclear Power Reactors – An Integrated Approach to the Back-End of the Fuel Cycle,
- (hh) Noting also the organization of workshops by the Agency on vital topics related to nuclear power, such as technologies and economics, the competitiveness of nuclear power and other energy technologies, regional cooperation to support transitioning to sustainable nuclear power, the development of the required infrastructure for the safe, secure and efficient use of nuclear power, desalination and other non-electrical uses of nuclear power, advanced waste management approaches among which are partitioning and transmutation, the role of research reactors in the development of nuclear power programmes, in support of operating and future power plants and in the training of many professionals from Member States through various regional and national courses,
- (ii) Noting the increasing number of technical cooperation projects, including the provision of assistance to Member States planning to introduce or expand nuclear power generation in

conducting energy studies to evaluate future energy options, especially in the scope of the Intended Nationally Determined Contributions (INDCs), and in establishing appropriate technical, human, legal, regulatory and administrative infrastructure, and acknowledging the Agency's role in facilitating the safe, secure, efficient and sustainable use of nuclear power,

(jj) Recalling the importance of human resource development, education and training and knowledge management and stressing the Agency's unique experience and capacity to assist Member States in building their national capacities to support the safe, secure and efficient use of nuclear power and its application, inter alia through its technical cooperation programme,

(kk) Noting that significant concerns over energy resource availability, the environment and energy security suggest that a wide variety of energy options needs to be addressed in a holistic manner in order to ensure that they are competitive, environmentally benign, safe, secure and affordable, so as to support sustainable economic growth in all Member States,

(ll) Stressing that ensuring access to affordable, reliable, sustainable and modern energy for all, along with taking urgent action to combat climate change and its impacts, have been identified as Sustainable Development Goals by the Member States of the United Nations in September 2015,

(mm) Taking note that nuclear power does not produce either air pollution or greenhouse gas emissions during normal operation, which makes it one of the low carbon technologies available to generate electricity,

(nn) Acknowledging that each State has the right to decide its priorities and establish its national energy policy in accordance with its national requirements, taking into account relevant international obligations, and to use diverse portfolios of energy sources when pursuing its own way to achieving its energy security and climate protection goals in light of the Paris Agreement adopted on 12 December 2015 at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), held in Paris from 30 November to 13 December 2015,

(oo) Recognizing the challenges in obtaining a large amount of financing to construct nuclear power plants as a viable and sustained option in meeting energy needs and taking into account appropriate financing schemes, which could involve investors from not only the public sector but the private sector where it is available,

(pp) Taking into account the potential advantages offered by SMRs (including lower upfront capital cost, shorter construction time, smaller footprint for site flexibility, better compatibility with small grids, enhanced safety features, suitability of coupling with renewables and non-electric applications),

(qq) Noting the important role that the Agency plays in assisting Member States in the establishment, preservation and enhancement of nuclear knowledge and in implementing effective knowledge management programmes at national and organizational levels and confirming the important role of nuclear knowledge management programmes in strengthening nuclear education, training and networking capabilities,

(rr) Recognizing the role that safe, secure, reliably operated and well utilized research reactors can play in national, regional and international nuclear science and technology programmes, including support of R&D in the fields on neutron science, fuel and material testing, and education and training,

- (ss) Acknowledging with appreciation the efforts made by the Agency to organize the quadrennial International Conference on Research Reactors: Safe Management and Effective Utilization, which fostered the exchange of information on operating and planned research reactors, provided a forum at which members of the research reactor community shared lessons learned, and addressed common issues, challenges, and strategies,
- (tt) Commending the Secretariat for the first International Centre based on Research Reactors (ICERR) announced during the 59th General Conference and the designation, during the 60th General Conference, of the Joint Stock Company ‘State Scientific Center – Research Institute of Atomic Reactors’ in Dimitrovgrad, Russian Federation,
- (uu) Taking note of the *Nuclear Technology Review 2016* (GC(60)/INF/2), as well as of the report *Strengthening the Agency’s Activities related to Nuclear Science, Technology and Applications* (GC(60)/5), prepared by the Secretariat, and
- (vv) Acknowledging that the peaceful use of fusion energy can be advanced through increased international efforts, through the active collaboration of interested Member States and organizations in fusion-related projects, such as the International Thermonuclear Experimental Reactor (ITER) project and noting the latest biennial IAEA Fusion Energy Conference in St Petersburg, Russian Federation,
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. Encourages the Agency to continue its support to interested Member States in building their national capacities in the operation of nuclear power plants and in embarking on new nuclear power programmes;
  3. Encourages Member States to develop programmes and initiatives such as the Capacity Building Initiative, in close relationship with the Agency, to improve and promote the potential of all Member States;
  4. Commends the Agency for the assistance and review services for Member States with embarking and re-embarking national nuclear power programmes and encourages Member States to voluntarily use this assistance and the Agency’s review services when planning and assessing the economics/socio-economics of their energy programmes, developing their national infrastructures for nuclear power and defining their long-term strategies for sustainable nuclear energy;
  5. Encourages the Nuclear Infrastructure Development Section (NIDS) to pursue its activities integrating the Agency’s assistance provided to Member States embarking on or expanding nuclear power programmes, such as the Integrated Nuclear Infrastructure Review (INIR) missions;
  6. Requests the Secretariat to consolidate the application of the Milestones approach (IAEA Nuclear Energy Series No. NG-G-3.1 (Rev. 1), 2015) across the Agency as the leading document for the use of Member States in the development of new nuclear power programmes and in the establishment of corresponding IWPs;
  7. Recommends that the Secretariat continue to pursue, in consultation with interested Member States, activities in the areas of innovative nuclear technologies with a view to strengthening infrastructure, safety and security, fostering science, technology, engineering and capacity building via

the utilization of existing and planned experimental facilities and material test reactors, as well as the development and validation of advanced modelling and simulation tools;

8. Recommends that the Secretariat continue and strengthen the effort, together with other relevant international organizations and initiatives, aimed at assisting Member States in developing robust and harmonized regulatory approaches to support the licensing of innovative nuclear systems;

9. Welcomes the organization by the Agency, in cooperation with Rosatom, of the International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development, FR17, in Yekaterinburg, in June 2017 and the joint organization by the Department of Nuclear Safety and Security and the Department of Nuclear Energy of the International Conference on Topical Issues in Nuclear Installation Safety: Safety Demonstration of Advanced Water Cooled Nuclear Power Plants, in Vienna, in June 2017;

10. Encourages the Secretariat to explore, in consultation with interested Member States, the need for closer collaboration in technology development for advanced reactor lines by hosting a workshop with the aim of considering launching a new project on molten salt and molten salt cooled advanced reactors;

11. Encourages the Secretariat to pursue its efforts on reducing the number of finalized but unpublished documents, and on promoting the systematic review of oldest ones, as appropriate;

12. Calls on the Secretariat to proactively and regularly share the list of documents being drafted and provide the opportunity for inputs from willing Member States;

13. Recognizes the importance of assisting Member States interested in uranium production to develop and maintain sustainable activities through appropriate technology, infrastructure and stakeholder involvement and the development of skilled human resources and encourages the Agency to cooperate with the OECD Nuclear Energy Agency (NEA) for the publication of the 26th edition of the Red Book on Uranium Resources, Production and Demand;

14. Looks forward to the organization by the Secretariat of the 4th International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle: Exploration, Mining, Production, Supply and Demand, Economics and Environmental Issues (URAM 2018), which is expected in 2018;

15. Welcomes the Secretariat's efforts in pursuing activities for enhancing Member State capabilities in modelling, predicting and improving the understanding of the behaviour of nuclear fuel under accident conditions, for instance through Coordinated Research Projects;

16. Welcomes the intending signing of the transit agreement with China in the first half of 2017, to support the operation of the LEU bank;

17. Welcomes the Secretariat's effort to ensure a fair LEU acquisition process for the LEU bank, with the upcoming organization of a workshop with experts in order to enable openness and avoid undue influence in the process;

18. Encourages discussion among interested Member States on the development of multilateral approaches to the nuclear fuel cycle, including on the one hand possibilities of creating mechanisms for assurance for nuclear fuel supply and on the other hand possible schemes for the back-end of the fuel cycle, recognizing that any discussion on these matters should take place in a non-discriminatory, inclusive and transparent manner and be respectful of the rights of each Member State to develop national capabilities;

19. Requests the Secretariat to continue and strengthen its efforts relating to nuclear power, fuel cycle and radioactive waste management, focusing particularly on technical areas where the needs for improvement, advances and enhanced international collaboration are greatest;
20. Encourages international cooperation in the safe management of spent fuel and radioactive waste, as well as in exploring multinational approaches to storage and disposal;
21. Encourages the upcoming publication of the report setting out the results of the 2013 project on ‘Status and Trends of Spent Fuel and Radioactive Waste’, which was initiated as a joint activity of three agencies — the OECD/NEA, the IAEA and the European Commission;
22. Stresses in this regard the importance of the safe management of spent fuel, which for some Member States includes reprocessing and recycling, as well as the safe management and/or disposal of radioactive waste, inter alia for the safe, secure, efficient and sustainable development of nuclear science and technology, including nuclear power and to avoid imposing undue burdens on future generations;
23. Encourages the Secretariat to continue the preparation of safety and technical documents on the management of large amounts of waste generated after a nuclear or radiological accident and on the implementation of post-accident decommissioning and environmental remediation projects;
24. Encourages the Secretariat to promote information sharing to better integrate approaches to the back-end of the fuel cycle that impact retrievability, transportation and recycling of spent nuclear fuel, for example through the coordination of research projects;
25. Encourages the Secretariat to pursue its activities on ‘Status and Trends of Radioactive Waste Management’ by publishing a series of reports on global inventories of radioactive waste and spent nuclear fuel and on provisions for their management;
26. Requests the Agency to formulate milestone and guidance documents on decommissioning and action plans to support decommissioning, inter alia by establishing an international cooperation framework for implementation with a view of promoting the safe, secure, efficient and sustainable execution of these activities;
27. Encourages the Secretariat to promote the ARTEMIS peer review service concept, explaining its benefits as a means of encouraging Member States to invite such peer reviews where appropriate;
28. Encourages further strengthening of Agency safety standards and strong cooperation with international organizations, such as through the Net-Enabled Waste Management Database;
29. Welcomes the Agency’s efforts to provide more detailed information on designing, constructing, operating and closing a radioactive waste disposal facility, and thereby assisting Member States, including those embarking on nuclear power programmes, to develop and implement adequate disposal programmes;
30. Takes note of the success of the Ministerial Conferences on global nuclear power, status and future development with a particular focus on nuclear power including safety aspects, organized by the Agency in Paris, France, Beijing, China and St Petersburg, Russian Federation, respectively in 2005, 2009 and 2013, and welcomes the offer by the United Arab Emirates to host the next such Ministerial Conference in 2017 and encourages interested Member States to participate in this important event;
31. Encourages the Agency to continue to organize capacity building workshops on vital topics related to nuclear power to understand and implement, in an integrated way, the requirements of effective management systems to ensure the safety, effectiveness and sustainability of nuclear power programmes;

32. Acknowledges the importance of the Agency's technical cooperation projects for assisting Member States in energy analysis and planning, and in establishing the infrastructure 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 by enhancing the Agency's technical cooperation with developing countries and notes the importance of active stakeholder involvement in the development or expansion of nuclear power programmes;
33. Encourages the Secretariat to continue to enhance Member States' understanding as they seek to identify potential approaches to financing nuclear power programmes, including radioactive waste management in a changing international financial landscape, and encourages interested Member States to work with the relevant financial institutions towards addressing financial issues related to the introduction of enhanced safety design and technologies for nuclear power;
34. Encourages the Secretariat to analyse the technical and economic cost drivers for economic sustainability of nuclear power operation, especially in the scope of life extension, to determine the value of nuclear power in the energy mix considering environmental conditions;
35. Welcomes the creation of the new Division of Planning, Information and Knowledge Management;
36. Requests the Secretariat to henceforth publish the International Status and Prospects for Nuclear Power on a 4-year basis, starting in 2017, to enhance its visibility and make this publication an input document for the 2017 Ministerial Conference on Nuclear Power in the 21st Century;
37. Encourages the Secretariat to reshape the annual publication Energy, Electricity and Nuclear Power Estimates for the Period up to 2050, Reference Data Series No. 1, in order to better describe the plausible development of new nuclear power plants in different world regions whatever the scenario taken into account, and invites willing Member States to support the Secretariat with the promotion of this publication;
38. Further commends the Secretariat for fostering nuclear knowledge management as a vital component of an integrated management system;
39. Encourages the Secretariat to facilitate effective programmes in the areas of nuclear science technology and applications related to nuclear power, aimed at sharing and further improving the scientific and technological capabilities of interested Member States through cooperation and coordinated research and development;
40. 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, including safety and security, and fostering science, technology and engineering, including capacity building via the utilization of existing research reactors;
41. Encourages the Secretariat to continue to foster regional and international collaboration and networking that expands access to research reactors, such as international user communities;
42. Encourages the Secretariat to inform Member States considering the development or installation of their first research reactor of the utility, economics, environmental protection, safety and security, reliability, proliferation resistance and waste management issues associated with such reactors and about international alternatives, and, on request, to assist decision makers in pursuing new reactor projects systematically and on the basis of robust, utilization-based strategic plans;

43. Urges the Secretariat to continue to provide guidance on all aspects of the research reactor life cycle, including the development of ageing management programmes at both new and older research reactors, to ensure continuous improvements in safety and reliability, the sustainability of fuel supply and exploration of disposition options for spent fuel and waste management;
44. Further encourages Member States operating research reactors to voluntarily invite an Operation and Maintenance Assessment for Research Reactor (OMARR) mission;
45. Encourages the Secretariat to promote the ICERR scheme and call on willing Member States to apply for designation, in order to build a comprehensive network comprising different nuclear operating techniques, worldwide access and different languages;
46. Acknowledges with appreciation the kick-off of the IAEA Internet Reactor Laboratory project in Latin America and Europe as well as the implementation of multi-reactor based, hands-on training courses and encourages the Secretariat to further its efforts to support capacity building based on research reactors;
47. Calls on the Secretariat to continue to support international programmes working to minimize the civilian use of highly enriched uranium, for example through the development and qualification of low enriched uranium high density fuel for research reactors, where such minimization is technically and economically feasible;
48. Stresses the importance, when planning and deploying nuclear energy, including nuclear power and related fuel cycle activities, of ensuring the highest standards of safety and emergency preparedness and response, security, non-proliferation, and environmental protection, for example through the promotion of a platform for the international nuclear community to continuously exchange information on R&D addressing safety issues highlighted by the Fukushima Daiichi accident, as well as the strengthening of long-term research programmes to learn about severe accidents and related decommissioning activities;
49. Welcomes the continuation of the IAEA Peaceful Uses Initiative and all contributions announced by Member States or regional groups of States, and encourages Member States and groups of States, in a position to do so, to contribute;
50. Requests that the actions of the Secretariat called for in this resolution be undertaken as a priority subject to the availability of resources; and
51. Requests the Secretariat to report to the Board of Governors as appropriate and to the General Conference at its sixty-first (2017) session on developments relevant to this resolution.

## 2.

### **Communication and IAEA cooperation with other agencies**

#### The General Conference,

- (a) Welcoming the Secretariat's contributions to international discussions addressing global climate change, such as at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), held in December 2015 in Paris, France, and attended by the IAEA Deputy Director General and Head of the Department of Nuclear Energy, and taking note of the participation of the Agency in the Intergovernmental Panel on Climate Change (IPCC), and
- (b) Commending the 2016 Scientific Forum, entitled "Nuclear Technology for the Sustainable Development Goals",

1. Requests the Secretariat to continue cooperation with international initiatives such as UN-Energy, and to explore the possibility of cooperation with Sustainable Energy for All (SE4All), stressing the importance of ongoing, transparent communications about the risks and benefits of nuclear power in operating and newcomer countries;
2. Encourages the Secretariat's efforts in providing comprehensive information on nuclear energy's potential as a low carbon energy source and its potential to contribute to mitigating climate change, in advance of the United Nations Climate Change Conference, COP 22, to be held in Marrakech, Morocco, in November 2016, and encourages the Secretariat to work directly with Member States upon request and to continue to extend its activities in these areas, including the Paris Agreement adopted on 12 December 2015, which sets out the related national commitments to address climate change;
3. Encourages the Agency to participate and contribute expertise and data to the scientific assessment on climate change in the IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels and related Global Greenhouse Emission Pathways;
4. Encourages the Agency to consider senior level representation at COP 22 and other major international forums where there will be debate and decisions regarding climate change and the potential role of nuclear power; and
5. Encourages strengthening mutual cooperation between Member States by exchanging information on relevant experiences and good practices with respect to nuclear power programmes, through international organizations such as the IAEA, OECD/NEA and the World Association of Nuclear Operators (WANO).

### 3.

#### **Operating existing nuclear power plants**

##### The General Conference,

- (a) Stressing the essential role the Agency plays as an international forum for the exchange of information and experience on nuclear power plant operation and for continuous improvement of this exchange among interested Member States, inter alia through the Nuclear Operator Organization Cooperation Forum held during regular sessions of the General Conference, while recognizing both the role of international organizations such as the OECD Nuclear Energy Agency, and multinational networks among operators, such as the World Association of Nuclear Operators (WANO), and the need to further strengthen the cooperation between the Agency and these organizations, and
- (b) Noting the growing importance of long-term operation of existing nuclear power reactors and underlining the need to benefit from this experience gained from long-term operation and to apply it to new programmes that may have nuclear power reactors capable of operating beyond 60 years,
  1. Stresses the importance of adequate human resources for ensuring, inter alia, the safe and secure operation and the effective regulation of a nuclear power programme, and noting the increasing need, worldwide, for trained and qualified personnel;
  2. Stresses the importance of adequate human resources development and capacity building to support nuclear energy related activities during construction, commissioning and operation including long-term operation, performance improvements, effective radioactive waste management and decommissioning;

3. Requests the Secretariat to promote collaboration among interested Member States for strengthening excellence in nuclear power plant operation and to establish effective collaboration mechanisms such as technical working groups for safe, secure, efficient and sustainable operation of nuclear power plants and also for application of management systems in the nuclear industry to exchange information on relevant experiences and good practices in safe and effective nuclear power plant operation;
4. Requests the Secretariat to continue its support to interested Member States, in particular through strengthening their knowledge, experience and capacity in management of ageing and plant life management, and welcomes the organization of the 4th International Conference on Nuclear Power Plant Life Management (PLiM), in France, in 2017;
5. Encourages the Secretariat to disseminate best practices and experience through the publication of technical documents with respect to learning and development, leadership, safety culture, organizational culture, stakeholder involvement, decision-making and management, including the need to maintain an appropriate organizational structure while nuclear power plants are in permanent shutdown, or in transition to decommissioning;
6. Acknowledges the growing interest in the application of advanced instrumentation and control systems and encourages the Agency to provide further support to interested Member States;
7. Recognizes the need to enhance further the support for grid and nuclear power plant interfaces, grid reliability and water usage, and recommends that the Secretariat collaborate with Member States that have operating nuclear power plants on these matters; and
8. Encourages the Secretariat to identify and promote best practices and lessons learned, through Technical Documents and Guides, with respect to procurement and supply chain issues, including bidding and contract evaluation processes, and also to support experience sharing related to quality control and quality surveillance activities related to nuclear construction, component manufacturing, and modifications, with respect to fitness for service issues and independent nuclear training accreditation.

#### 4.

#### **Agency activities in the development of innovative nuclear technology**

##### The General Conference.

- (a) Recalling its previous resolutions on the Agency's activities in the development of innovative nuclear technology,
- (b) Conscious of the need for sustainable development and of the potential contribution of nuclear power to meet the growing energy needs in the 21st century and mitigating climate change,
- (c) Noting the progress achieved in a number of Member States in the development of innovative nuclear energy system technologies and the high technical and economic potential of international collaboration in the development of such technologies,
- (d) Noting that the membership of the Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), which was launched in 2000, is continuing to grow and now comprises 41 Member States and the European Commission,
- (e) 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's Programme and Budget and the INPRO Subprogramme Plan,

(f) Noting that the INPRO Subprogramme Plan identifies activities in areas of global and regional nuclear energy scenarios, innovations in nuclear technology and institutional arrangements including such key collaborative projects as *Roadmaps for a Transition to Globally Sustainable Nuclear Energy Systems* (ROADMAPS), the project on *Key Indicators for Innovative Nuclear Energy Systems* (KIND), the project on *Cooperative Approaches to the Back End of the Nuclear Fuel Cycle: Drivers and Legal, Institutional and Financial Impediments* and other collaborative projects on specific issues of interest related to innovative nuclear reactor and fuel cycle concepts and designs,

(g) Noting that the scope of INPRO includes activities to support interested Member States in developing national long-range sustainable nuclear energy strategies and related nuclear energy deployment decision making, including nuclear energy system assessments (NESAs) using INPRO methodology, the INPRO Dialogue Forum and regional training on nuclear energy system modelling, including collaborative scenarios, and sustainability assessment using the INPRO methodology,

(h) Noting with appreciation that INPRO has successfully completed the collaborative project on *Synergistic Nuclear Energy Regional Group Interactions Evaluated for Sustainability* (SYNERGIES) and the Secretariat has drafted a final report of this project,

(i) Noting the progress of other national, bilateral and international activities and initiatives, and their contributions to joint research and development work on innovative approaches to nuclear energy deployment and operation,

(j) Recognizing that a number of Member States are planning to license, construct and operate prototypes or demonstrations of fast neutron systems, high temperature reactors and other innovative reactors and integrated systems within the next decades, and noting that the Secretariat is fostering this process through the provision of international fora for the exchange of information, thus supporting interested Member States to develop innovative technology with enhanced safety, proliferation resistance and economic performance,

(k) Welcoming the increased participation at the meeting, organized in November 2015, to "present and share important information on the interest and status of technology developments in the area of molten-salt and molten-salt cooled advanced reactors" and welcoming the meeting that will take place in November 2016, and

(l) Noting with appreciation the Director General's report on Agency activities in the development of innovative nuclear technology contained in document GOV/2016/34-GC(60)/5,

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 in building long-term national nuclear energy strategies and in long-term sustainable nuclear energy deployment decision-making through NESAs, based on the INPRO methodology, and nuclear energy scenario analyses;
3. Encourages the Secretariat to consider further opportunities to develop, coordinate and integrate the services it provides to Member States, including broad energy planning and long-term nuclear energy planning, economic analysis and technico-economic assessments, NESAs and assessments of

transition scenarios to sustainable nuclear energy systems using, inter alia, the analytical framework developed by the INPRO Section;

4. Encourages interested Member States, the Secretariat, and the INPRO Section in particular, to further develop and evaluate various nuclear energy scenarios and roadmaps, based on synergistic collaboration among involved countries, that could lead to sustainable nuclear energy development in the 21st century, and to help define collaborative pathways to such development;

5. Requests the Secretariat to promote collaboration among interested Member States in developing innovative, globally sustainable, nuclear energy systems and to support the establishment of effective collaboration mechanisms to exchange information on relevant experiences and good practices;

6. Encourages the Secretariat to elaborate summary key indicator sets, consistent with the INPRO methodology, and judgement aggregation methods to further examine the application of multi-criteria decision analysis to develop comparative evaluation approaches to consider benefits and associated costs and potential risks in nuclear energy system performance that may be achievable using innovative nuclear energy technologies;

7. Encourages the Secretariat to study cooperative approaches to the back-end of the nuclear fuel cycle with a focus on the drivers and institutional, economic and legal impediments to ensure effective cooperation among countries towards the long-term sustainable use of nuclear energy;

8. Invites Member States and the Secretariat, to examine the role that technological and institutional innovations can play in improving nuclear power infrastructure and enhancing nuclear safety, security and non-proliferation and to exchange information, including through the INPRO Dialogue Forum;

9. Invites all interested Member States to join, under the aegis of the Agency, in the activities of INPRO in considering issues of innovative nuclear energy systems and 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, and also by identifying common topics of interest for possible collaborative projects;

10. Encourages the Secretariat to further its efforts on distance learning/training on development and evaluation of innovative nuclear technology for students and staff of universities and research centres, and to further develop tools supporting this activity that supports efficient delivery of services to Member States;

11. Notes with appreciation that the INPRO section jointly with the Planning and Economic Studies Section has prepared a new Nuclear Energy Series report on “Modelling Nuclear Energy Systems with MESSAGE: A User’s Guide”, published in March 2016, and is using it as a reference document in learning and training activities carried out by both sections;

12. Encourages the Secretariat and interested Member States to complete the revision of the INPRO methodology, taking into account the results of NESAs performed in Member States and lessons learned from the Fukushima Daiichi accident, while noting updates to the INPRO manuals dealing with infrastructure, economics, depletion of resources and environmental stressors;

13. Recognizes ongoing efforts by the Secretariat and interested Member States to conduct comprehensive case studies for deployment of factory-fuelled small modular reactors as follow on to the already published preliminary study on transportable nuclear power plants (TNPPs);

14. Recommends that the Secretariat continue to explore opportunities for synergy between the Agency's activities (including INPRO) and those pursued under other international initiatives in areas relating to international cooperation in peaceful uses of nuclear energy, safety, proliferation resistance and security issues and, in particular, supports collaboration among INPRO, appropriate TWGs, the Generation IV International Forum (GIF), the International Framework for Nuclear Energy Cooperation (IFNEC) and the European Sustainable Nuclear Industrial Initiative (ESNII) with regard to innovative and advanced nuclear energy systems;
15. Invites interested Member States that have not done so to consider joining INPRO and 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;
16. Encourages the Secretariat to continue, through the consolidation of available resources and additional assistance from interested Member States, regular training and workshops on innovative nuclear technologies and their underlying science and technology to exchange knowledge and experience in the area of innovative, globally-sustainable nuclear energy systems;
17. Notes the role of research reactors in supporting the development of innovative nuclear energy systems;
18. Calls upon the Secretariat and Member States in a position to do so to investigate new reactor and fuel cycle technologies with improved utilization of natural resources and enhanced proliferation resistance, 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, taking into account, inter alia, economic, safety and security factors;
19. Recommends that the Secretariat continue to pursue, in consultation with interested Member States, activities in the areas of innovative nuclear technologies, such as alternative fuel cycles (e.g. thorium, recycled uranium) and Generation IV systems including fast neutron systems, supercritical water-cooled, high-temperature gas cooled and molten salt nuclear reactors, with a view to strengthening infrastructure, safety and security, fostering science, technology, engineering and capacity building via the utilization of existing and planned experimental facilities and material test reactors, and with a view to strengthening the efforts aimed at creating an adequate and harmonized regulatory framework so as to facilitate the licensing, construction and operation of these innovative reactors;
20. Welcomes the extrabudgetary funds provided to the Secretariat's activities for the development of innovative nuclear technology and encourages Member States in a position to do so to consider how they can further contribute to the Secretariat's work in this area; and
21. 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 sixty-first (2017) regular session under an appropriate agenda item.

## 5.

### **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, secure and efficient use is an issue of great importance, 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) Stressing that primary responsibility for nuclear safety and security rests with States and their regulatory agencies, licensees and operating organizations in order to achieve the protection of the public and environment, and that a strong infrastructure is necessary to execute this responsibility,
- (d) Encouraging the Secretariat to develop stronger support for the creation and development of a knowledgeable future owner/operator,
- (e) Commending the Secretariat's effort to provide support in the areas of human resource development, which continues to be a high priority to 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,
- (f) Noting the Secretariat's effort to provide support in the area of stakeholder involvement, which continues to be of utmost importance to Member States that are considering and planning for the introduction of nuclear power,
- (g) Recognizing the continued value of the Agency's Integrated Nuclear Infrastructure Review (INIR) missions, which provide expert and peer-based evaluations, in helping requesting Member States to determine their nuclear infrastructure development status and needs,
- (h) Noting the 19 INIR missions performed since 2009, among them the missions performed in Bangladesh, Poland and Morocco, welcoming the planned missions in Kazakhstan, Malaysia and Ghana, and further noting that additional countries thinking of launching or re-embarking on nuclear power programmes are considering requesting INIR missions,
- (i) Welcoming the establishment of Integrated Work Plans (IWPs), which provide an operational framework for the delivery of Agency assistance in support of national nuclear programmes, thereby facilitating optimized assistance by the Agency to embarking countries,
- (j) Noting the publication of Nuclear Energy Series reports and the organization of a wide range of conferences, technical meetings and workshops on topics related to infrastructure development,
- (k) Recognizing the Nuclear Energy Management School and other training courses on management and leadership and on construction management, and mentoring programmes implemented under the Agency's auspices, in China, the Czech Republic, France, Japan, the Republic of Korea, the Russian Federation, Sweden, the United Kingdom and the United States of America, as effective platforms for leadership development,
- (l) Taking note of the Secretariat's cooperation with the International Framework for Nuclear Energy Cooperation (IFNEC),
- (m) Recognizing the Regional Conference on the Prospects for Nuclear Power in the Asia Pacific Region, co-organized by the Agency and IFNEC in Manila, Philippines, from 30 August to 1 September 2016, and the Workshop on Listening and Learning from Stakeholders, co-organized by the Agency and IFNEC in February 2016,

- (n) Noting the importance of coordination of activities within the Agency for nuclear infrastructure development,
  - (o) Noting the joint efforts of the Nuclear Infrastructure Development Section (NIDS) and INPRO in developing innovative infrastructure approaches for future nuclear energy systems,
  - (p) Commending the Technical Working Group on Nuclear Power Infrastructure (TWG-NPI) that provides guidance to the Agency on approaches, strategy, policy and implementing actions for the establishment of a national nuclear power programme,
  - (q) Recognizing the importance of encouraging effective workforce planning for operating and expanding nuclear power programmes, worldwide, and the increasing need for trained personnel, and
  - (r) 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(55)/RES/12.B.4 as reported in document GC(60)/5;
  2. Encourages the Secretariat to facilitate broad international participation at all technical meetings, workshops, training courses and conferences on nuclear infrastructure development sponsored by in kind support from Member States;
  3. Encourages Member States to ensure the development of the appropriate legislative and regulatory frameworks, which are necessary for the safe introduction of nuclear power;
  4. Encourages Member States embarking on nuclear power programmes to conduct a self-evaluation based on IAEA Nuclear Energy Series No. NG-T-3.2 to identify gaps in their national nuclear infrastructure and to invite an INIR mission and relevant peer review missions, including site design safety reviews, prior to commissioning the first nuclear power plant, and to make public their INIR mission reports in order to promote transparency and to share best practices;
  5. Notes the work of the Nuclear Infrastructure Development Section and its internal coordination and holistic approach to nuclear infrastructure development, and encourages the Secretariat to strengthen and tailor the services provided to countries introducing new nuclear power programmes, while taking into account the results of assessments of infrastructure requirements, such as INIR mission outcomes;
  6. Invites Member States to make use of INIR follow-up missions to assess progress and determine whether recommendations and suggestions were successfully implemented;
  7. Requests the Secretariat to continue to learn lessons from INIR missions and to enhance the effectiveness of its activities;
  8. Urges Member States to develop Action Plans to address the recommendations and suggestions provided by the INIR missions and encourages them to participate in the development of IWPs;
  9. Encourages the Secretariat to finalize the development of Phase 3 (before commissioning) INIR missions, with willing newcomers or expanding Member States close to commissioning;
  10. Encourages the activities undertaken by the Secretariat to promote cooperation between newcomer countries and those with established nuclear power programmes;

11. Welcomes the development of the competency framework for embarking countries and the update of the nuclear infrastructure bibliography, as a useful tool to help Member States plan technical cooperation and other assistance;
12. Welcomes the Secretariat's efforts in the production of a series of e-learning modules, based on the 19 infrastructure issues defined by the Agency's Milestones approach, of which 15 have already been released on line, supporting capacity building in both countries embarking on new nuclear programmes and countries expanding their nuclear programmes;
13. Encourages the Secretariat to continue providing training related to the development of the 'knowledgeable customer' concept;
14. Invites all Member States that are considering or planning for the introduction or expansion of nuclear power to provide, as appropriate, information and/or resources to enable the Agency to apply its full spectrum of tools in support of nuclear infrastructure development;
15. Calls on the Secretariat to facilitate, as necessary, 'soft coordination' among Member States for the more efficient implementation of multilateral and bilateral assistance to countries considering or planning for the introduction or expansion of nuclear power;
16. Welcomes the activities undertaken by Member States, both individually and collectively, to cooperate on a voluntary basis in nuclear infrastructure development and encourages further such cooperation;
17. Welcomes the extrabudgetary funds provided to the Secretariat's activities for the infrastructure development support to Member States and encourages Member States, in a position to do so, to consider how they can further contribute to the Secretariat's work in this area; and
18. 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 sixty-first (2017) session under an appropriate agenda item.

### **C.**

#### **Nuclear knowledge management**

##### The General Conference,

- (a) Recalling its previous resolutions on nuclear knowledge management,
- (b) Noting the importance of establishing and strengthening governance processes to advance knowledge management within organizations and having systems in place to measure the success of knowledge management programmes,
- (c) Emphasizing the increasing importance of the role of the Agency in providing information and good practices in the safe and efficient utilization of nuclear technology for peaceful purposes including information and knowledge for the general public,
- (d) Recognizing that preserving and enhancing nuclear knowledge and ensuring the availability of qualified human resources are vital to the continued safe, economic and secure utilization of all nuclear technologies for peaceful purposes,
- (e) Recognizing that nuclear knowledge management involves both education and training for succession planning as well as the preservation or growth of existing knowledge in nuclear science and technology,

- (f) Noting the important role that the Agency plays in assisting Member States in the establishment, preservation and enhancement of nuclear knowledge and in implementing effective knowledge management programmes at national and organizational levels,
  - (g) Recognizing the importance of knowledge management in all areas of the Secretariat's activities and programmes, and the cross-cutting inter-disciplinary and inter-departmental nature of many knowledge management issues and initiatives,
  - (h) Acknowledging the importance of adequate nuclear knowledge in understanding and applying safety principles in the design, construction, licensing, operation, life extension, closure and decommissioning of nuclear facilities,
  - (i) Aware of continuing concerns about risks of knowledge loss for operating facilities,
  - (j) Aware of the benefits of utilizing nuclear knowledge management approaches to support long-term operation of nuclear facilities, disposal of radioactive waste, decommissioning projects, environmental remediation projects, and the need to improve learning from incidents and events,
  - (k) Noting the increased interest of Member States in the development and use of modern plant information models and guidelines to support nuclear knowledge management, including design knowledge, throughout the entire life cycle of facilities and projects,
  - (l) Acknowledging the utility of collaborations towards development and adoption of integrated national and regional strategic planning approaches to strengthen and make sustainable university nuclear education programmes,
  - (m) Recognizing the benefits of collaboration between the Agency, universities, industry, national laboratories and government institutes, and the role that international and national human resource and knowledge development (HRKD) networks play in facilitating this collaboration,
  - (n) 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 benefitting from opportunities relating to education and training and to nuclear knowledge preservation and enhancement,
  - (o) Noting the successful installation of the Cyber-Learning Platform for Nuclear Education and Training (CLP4NET) in the Middle East, Asia, Africa and Latin America to support regional efforts in introducing modern e-learning technology for nuclear education and training,
  - (p) Noting the success of the Nuclear Energy Management (NEM) School and the Nuclear Knowledge Management (NKM) School, both held annually at the International Centre for Theoretical Physics (ICTP) in Trieste and the highly-valued continuous cooperation between the IAEA and the ICTP, and
  - (q) Further noting the sustainable outcomes the NEM School hosted by the United Arab Emirates and Japan in 2015, as well as the regional NEM Schools held in Japan in July 2016, the Russian Federation in September 2016, and the upcoming NEM School in South Africa in October 2016, and welcoming the continued interest of other Member States to host regional NEM Schools,
1. Commends the Director General and the Secretariat for their significant, interdepartmental efforts in addressing issues of preservation and enhancement of nuclear knowledge, in response to relevant General Conference resolutions;

2. Commends the Secretariat for its support to Member States in applying a comprehensive methodology and guidance for managing nuclear knowledge, including through nuclear knowledge management assistance visits and seminars in Member States;
3. Further commends the Secretariat for fostering nuclear knowledge management as a vital component of an integrated management system;
4. Encourages the Director General and the Secretariat to continue to strengthen their current and planned efforts in this area, in a holistic, interdepartmental manner, while consulting and engaging Member States and other relevant international organizations, and to further increase the level of awareness of efforts in managing nuclear knowledge, and in particular:
  - i. Requests the Secretariat to assist Member States, at their request, in their efforts to ensure the sustainability of nuclear education and training in all areas of the peaceful use of nuclear energy, including its regulation, inter alia by taking advantage of the activities of the regional networks in Asia (ANENT), Latin America (LANENT) and Africa (AFRANEST), and Eastern Europe and Central Asia (STAR-NET);
  - ii. Notes in particular the needs of developing countries or those considering or launching a nuclear power programme and in this regard, encourages Member States in a position to do so to participate in and support networking, and underlines the importance of the Technical Cooperation Programme in that context;
  - iii. Requests the Secretariat, in consultation with Member States, to further develop and disseminate guidance and methodologies for planning, designing, implementing and evaluating nuclear power programmes, including programmes for sustaining nuclear knowledge;
  - iv. Requests the Secretariat to continue to make available to Member States training programmes of the Nuclear Energy Management School and the Nuclear Knowledge Management School;
  - v. Requests the Secretariat to review the broad range of education and training programmes established by the Department of Nuclear Energy and other departments of the Secretariat, as appropriate, in order to develop the most cost-effective and sustainable combination of events to maximize effectiveness and minimize unnecessary duplication among Agency offerings;
  - vi. Requests the Secretariat to further develop and utilize e-learning material, relevant content and technologies to make nuclear education and knowledge more broadly available in a modern, effective and efficient manner, including the further development and effective use of the IAEA's CLP4NET and CONNECT platforms as e-learning repositories; and
  - vii. Encourages the Secretariat to promote the use of state of the art knowledge management technologies, including those related to the application of modern plant information models and guidelines to support knowledge management, including design knowledge, throughout the entire life cycle of facilities and projects, and support interested Member States in their further development;
5. Requests the Secretariat to continue to gather, and make available to Member States, nuclear data, information and knowledge resources on the peaceful use of nuclear energy, including the International Nuclear Information System (INIS) and other valuable databases as well as the IAEA Library and the International Nuclear Library Network (INLN);

6. Calls on the Secretariat, to continue to focus, in particular, on activities aimed at helping interested Member States assess their human resource needs and to identify ways to address those needs, inter alia by encouraging the development of new tools and opportunities to gain practical experience through fellowships;
7. Invites the Secretariat, in consultation with Member States, to further develop and disseminate guidance and methodologies for planning, designing, implementing, and evaluating nuclear knowledge management programmes and practices;
8. Requests the Secretariat to continue to develop tools and services in the area of human resource development with a particular focus on capacity building and welcomes the Third International Conference on Nuclear Knowledge Management — Challenges and Approaches, which will take place in Vienna in November 2016 to promote the sharing of experience and solutions between operating and newcomer countries;
9. Encourages the Secretariat to facilitate the establishment of effective human resource and knowledge management (HRKM) networks in developing countries, and where appropriate in collaboration with other United Nations organizations and with the support of existing such networks in developed countries;
10. 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 management when preparing and carrying out the Agency's programme; and
11. 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 sixty-second (2018) session under an appropriate agenda item.