

# **Ministerial Conference on Nuclear Science and Technology: Addressing Current and Emerging Challenges**

**Vienna, 28-30 November 2018**

## **Concluding Summary by the Co-Chairs of the Conference**

1. The International Atomic Energy Agency (IAEA) Ministerial Conference on Nuclear Science and Technology was held in Vienna, Austria from 28-30 November 2018, attended by 54 ministers, high-level ranking officials and experts from 137 States and 15 international organizations, with approximately 1100 participants.

2. The Conference provided an opportunity for high-level dialogue amongst the participants on nuclear science and technology and allowed Ministers to share their national experiences, while experts illustrated high-impact innovations that can be integrated into national strategies of Member States to contribute to the achievement of development goals.

3. The Conference was co-chaired by HE Ms Epsy Campbell Barr, Vice-President and Minister of Foreign Affairs of Costa Rica, and HE Mr Kiyoto Tsuji, Parliamentary Vice-Minister for Foreign Affairs of Japan. Keynote addresses were delivered by HRH Crown Princess Victoria of Sweden and Mr. Thomas Reiter, Interagency Coordinator, European Space Agency (ESA).

4. The Conference addressed a broad range of themes which focused on the use of nuclear science and technology for improving the quality of life; addressing challenges related to climate change; strengthening gender inclusiveness and capacity development in nuclear science and technology. The last element of discussion during the Conference focused on exploring avenues to arrive at positive outcomes for the main identified challenges.

5. The outcome of the Conference was a strong political commitment reflected in a ministerial declaration covering concrete actions in relation to the applications of nuclear science and technology and their potential to meet a wide variety of basic socio-economic and human development needs and the important role of the IAEA in this regard.

### ***Improving Quality of Life***

6. The Conference discussed the factors that impact the quality of life such as food and agriculture, nutrition, human health, industry and water resources.

7. The contribution of nuclear science and technology applications to the wellbeing of people and society was recognised by the Conference, and the role of the IAEA at the forefront in the development of nuclear techniques and their delivery to its Member States through the Technical Cooperation Programme was highlighted.

8. The Conference recognized the various applications of nuclear techniques in the prevention, detection, diagnosis and treatment of major diseases. New frontiers in diagnostic techniques were examined including cutting-edge clinical applications and technologies, as well as the use of nuclear techniques to identify diseases in their early stages, and to assess the location and spread of disease in the body.

9. The Conference recognised the important role of nuclear technology in the medical diagnosis of non-communicable diseases (NCDs) such as cancer and cardiovascular, infectious and neurological diseases, including dementia. The benefits derived from the peaceful application of nuclear science and technology in human health was a crosscutting theme throughout the Conference. The role of innovative tools, artificial intelligence, molecular targeting for accurate diagnosis and enhanced therapy were some of the specific aspects covered in the Conference.

10. The Conference noted that nuclear techniques have a unique role to play in industry, specifically, in increasing and optimising industrial processes; ensuring safety of buildings and structures; and innovating new and cutting-edge materials for high performance industrial applications.

11. The unique contribution of nuclear techniques in exploring and preserving history and cultural artefacts was also highlighted.

### ***Addressing Climate Change Challenges***

12. The Conference brought to the forefront the significant role played by the IAEA in developing, promoting and adapting nuclear and isotopic techniques to address challenges related to the impact of climate change, such as extreme weather events resulting in accelerated land degradation, floods, water scarcity, reduced crop yields or invasion of insect pests.

13. The Conference recognized the added value of nuclear techniques, providing key information on natural processes which, in turn, assists policy-makers with decision-making to establish strategies for adaptation to climate change, while preserving the sustainability of soil and water resources.

14. The Conference highlighted the diverse uses of nuclear and isotopic techniques in a number of activities that monitor and mitigate the impact of climate change. The Conference further noted that climate change strategies require both monitoring and mitigation given the crosscurrents between global environmental hazards and economic resources. The Conference noted the role of the IAEA in improved monitoring of the climate system through isotopic analyses of greenhouse gases, measuring ocean acidification and its impact on marine ecosystems, and detecting marine biotoxins in seafood.

15. The Conference noted that several Member States consider nuclear power as a low carbon energy source that contributes to mitigate the impact of climate change and to the achievement of their Sustainable Development Goals.

### ***Nuclear Science and Technology Applications: Sustaining, Enabling and Empowering***

16. The Conference emphasized the importance of diversity and inclusiveness and noted that scientific and technological sectors, including the nuclear sector, remain male-dominated. It was further noted that targeted and sustained efforts are required to achieve progress, including education and training, awareness raising and outreach, and encouraging changes to organisational culture in order to achieve a balanced participation of both genders in nuclear science and technology.

17. The Conference recognised that while policy initiatives were important, raising awareness and addressing systemic barriers for women in science and technology was crucial to changing the mindsets of people and society, and especially encouraging young women to pursue science and technology. The role of the IAEA in encouraging the development of the next generation of young women in science through the training of teachers, laboratory managers, and others of influence in Member States were emphasized.

18. The Conference recognised the need to strengthen capacity building in nuclear science and technology applications in various areas such as agriculture, food safety, water management, industrial processes, and medical applications, including radiation oncology and nuclear medicine.

19. The Conference stressed the need to encompass the safety and regulatory aspects in a holistic manner in all nuclear science and technology applications. The need to build capacity in radiation safety and emergency preparedness was also highlighted.

20. The sustainable education, training and institutional infrastructure in Member States is vital to achieve the sustainable and safe and secure use of nuclear science and technology were emphasized.

21. The need for joint efforts and synergies with partners to support capacity building and innovation efforts in the application of nuclear science and technology was also recognised.

22. One of the key messages was the need for enhanced synergies between education and research, and a sustainable strategy involving end users, the research community and policymakers.

### ***The Way Forward***

23. The Conference highlighted the importance of mainstreaming peaceful applications of nuclear science and technology at the highest level of national development discourse to draw maximum benefit in achieving sustainable development goals.

24. The Conference examined approaches to the way forward in the peaceful applications of nuclear science and technology, including-technology adoption, adaptation and dissemination, innovation for sustainability, and economic stability. Central in this regard is benefitting from the experiences of IAEA Member States and considering both national and regional perspectives.

25. The Conference recognised the various contributions that nuclear science and technology could make to contribute to the socio-economic development of Member States. The role that Governments play in creating sustainable policy space to implement technology and means to overcome the technological paradox of technological capabilities vis-à-vis the adoption of new technologies was noted. The importance of innovation and a sustainable work force to implement the technology was a recurring theme throughout the Conference.

26. The need to adapt existing nuclear applications to the fast-evolving needs of Member States were also highlighted and, in that context, the progress made in the ReNuAL project were acknowledged.

27. The Conference recognized the importance of giving due consideration to safety and security as a facilitating environment for promotion of peaceful applications of nuclear science and technology.

### ***Conclusion***

28. The Conference concluded that the work of the IAEA has provided meaningful support to Member States' efforts aimed at achieving targets established in national and multilateral development frameworks including those related to poverty reduction, access to healthcare, the provision of potable water and access to sanitation, improved nutrition and safe food, environmental remediation, climate action and efforts to monitor and reverse the impact of ocean acidification. It was therefore agreed that the IAEA should intensify its efforts to support Member States in identified areas of interest, in particular through the Technical Cooperation Programme.