

Nuclear technology for combating climate change

Outcomes of the 2018 IAEA Scientific Forum

By Brianna Hartley



(Photo: F. Nassif/IAEA)

How to tackle climate change is at the centre of debates among policymakers and scientists alike, but one thing that experts across disciplines agreed on at the 2018 IAEA Scientific Forum was that nuclear technology *is* part of the solution.

“It is up to us to make the case for nuclear technology and communicate it widely,” said Princess Sumaya bint El Hassan, President of the Royal Scientific Society of Jordan, at the opening session of the 2018 Scientific Forum on Nuclear Technology for Climate: Mitigation, Monitoring and Adaptation during the 62nd IAEA General Conference. “We must make the notion of nuclear technology for climate clear, accessible and palatable to all. It is our duty to ensure that the wider world is aware of this and the importance of nuclear technology in combating climate change is recognized.”

During the Forum, held from 18 to 19 September 2018, thought leaders including economists, scientists and high-level officials from more than 20 countries discussed ways of expanding the use of nuclear technology for monitoring, mitigating and adapting to the impact of climate change.

Nuclear power can help limit greenhouse gas emissions

With energy production accounting for two-thirds of greenhouse gas emissions, presenters highlighted how nuclear power — a clean, reliable and affordable low-carbon energy source — can simultaneously reduce emissions while securing sufficient energy generation to drive economic growth.

“We need to build on science and facts, but we also need to use proven technologies right now,” said Agneta Rising, Director General of the World Nuclear Association. “With nuclear energy, not only will you decarbonize, but you will grow your economy at the same time.”

Along with these benefits, nuclear power nevertheless comes with certain challenges. Apart from financial and technical aspects, many nations say public acceptance is a major barrier, explained Malcolm Grimston, Senior Research Fellow at Imperial College London.

“Why is the safest large-scale energy source regarded as the most dangerous by significant numbers of people?” said Grimston. His presentation analysed how the nuclear

“We must make the notion of nuclear technology for climate clear, accessible and palatable to all.”

—Princess Sumaya bint El Hassan,
President, Royal Scientific Society,
Jordan



(Photo: F. Nassif/IAEA)

industry communicates with the public and concluded that the industry should “treat this like a normal industry with normal issues” to improve public acceptance.

Accurate data on climate change

Collecting accurate data on climate change helps scientists and decision makers understand what issues they are dealing with and what action is needed to address it, explained presenters during the Forum’s session focused on monitoring and measuring climate change.

“People want to take action. They want to know what emissions they can cut, where they can cut them, and, most importantly, if these actions have an impact,” said Oksana Tarasova, Chief of the Environment and Research Division of the World Meteorological Organization.

Speakers during the session highlighted the versatility and precision of isotopic techniques for data collection: from identifying the origin of and measuring greenhouse gas emissions in the atmosphere and oceans, to studying freshwater and agricultural resources to make management more sustainable.

“This knowledge is important to provide better evidence for sound policy making, but many countries are not yet able to apply it,” said Tarasova, calling for increased training in these methods.

Adapting to a changing environment

Climate change is wearing down the planet while unleashing more extreme

environmental conditions, making it harder for people to grow food, conserve natural resources and fend off harmful insects. Its impact is felt across homes, ecosystems and economies worldwide. But, according to speakers in the Forum’s session on the impact of climate change on health and food security, nuclear technology can help scientists find climate-smart ways to deal with these effects.

“We have to set up systems that are able to cope with different challenges,” said Natalia Alekseeva, Team Leader for National Climate Change Action at the Food and Agriculture Organization of the United Nations (FAO). “For example, using nuclear techniques for new breeds of plants that are drought-resistant and consume less water or fertilizer and other chemicals helps to redesign agriculture systems in a way that is more robust and more sustainable.”

Experts discussed how nuclear and isotopic techniques have helped preserve water and soil resources and control insect pests, as well as improve livestock production and health. They explained the ways in which nuclear technology has also helped in overcoming climate-related challenges to ensure food safety and boost food security, which in turn improves nutrition and health.

Nuclear technology cannot solve climate change issues on its own, said Ilmi Hewajulige, Senior Deputy Director and Principal Research Scientist at the Industrial Technology Institute at Sri Lanka’s Ministry of Science and Research. “But we can use this technology as a tool to combat a lot of climate change issues.”