Understanding the world's water resources

By Yukiya Amano, Director General, IAEA

Water is a precious resource upon which life on earth depends. Yet we know remarkably little about how much of it we have, exactly where it is and how long supplies will last. Of all the earth's fresh water, 98% is hidden underground. To protect it from threats such as overextraction and pollution and manage it sustainably for future generations, we must study our groundwater in-depth.

The IAEA supports national experts in this quest by promoting the use of isotopic techniques and transferring scientific know-how. Data collected using these techniques help to improve water management policies.

Supporting Member States in managing and protecting their water supplies is part of our Atoms for Peace and Development mandate. We encourage countries to take full advantage of nuclear techniques to improve all aspects of the lives of their people and care for the environment. Preserving water resources is a vital element of this.

This edition of the *IAEA Bulletin* covers the use of nuclear techniques in the field of isotope hydrology and the work of the IAEA to make these techniques available to our Member States. It provides an overview of the science (page 4) and showcases countries where our combined efforts are making a difference. For instance, on page 6, we describe how Argentinian isotope hydrologists have been gathering data for policy-makers to design improved water management models across the country.

Authorities in Kuwait highlight their plans for more sustainable water use with the support of the IAEA (page 9), while researchers in the Philippines explain how they confirmed that groundwater in the north of their country was safe to drink (page 12). On page 14, we trace the origin of polluted water in Mauritius and, on page 16, uncover rich bodies of water hiding underground in the semi-arid region of the Sahel.

This edition of the *IAEA Bulletin* also includes a section on technology, showcasing methods in isotope hydrology that the IAEA has developed for Member States. These include the tritium/helium-3 dating technique (page 20) used to establish the precise age of young water, and the isotope-enabled water balance model (page 24), which can help scientists to predict the effects of climate change on water resources.

You can learn about the role of isotope hydrology in protecting the environment during fracking (page 22), and how the IAEA tests the ability of laboratories around the world to analyse water (page 26), while page 18 introduces the global isotope monitoring network that the IAEA has developed in cooperation with the World Meteorological Organization.

This year's International Symposium on Isotope Hydrology is the 15th of its kind. It brings together leading water and environmental professionals from around the world to advance understanding of the immense benefits of isotope hydrology in helping the world respond to our rapidly changing global environment.

I hope that this edition of the *IAEA Bulletin* will give you an insight into this wide-reaching and fascinating application of nuclear technology.

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—Yukiya Amano, Director General, IAEA

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