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IAEA Scientific Forum 2025

Atoms for Water

IAEA Headquarters, Vienna, Austria

Tentative Programme

Water is fundamental to human life, economic development, food security and environmental sustainability. Climate change, land use change, population growth, declining water quality, food and energy demands, and economic development affect the amount and distribution of water. Globally, approximately 3.8 trillion cubic metres of water are needed annually for drinking water, agriculture and food production, energy generation and economic development.

Demand for freshwater is increasing by 64 billion cubic metres per year, and new mechanisms for generating potable water are needed. In this regard, nuclear energy is offering countries — in particular those in arid regions — a clean energy alternative to produce potable water through desalination. But water supply is globally uneven. Urgent and targeted action is needed to ensure that the world's population has equitable and sustainable access to water in the coming decades. A sharp increase in extreme hydrological events such as severe flooding and drought over the last 50 years has impacted supply and accounts for an estimated $4.3 trillion in economic losses worldwide.

The 2025 Scientific Forum aims to: (1) showcase **innovative ways** of using nuclear sciences, not only to better understand the origin, amount, distribution and quality of our shared water resources, but also to support and implement practical solutions; (2) foster **partnerships** and reflect on the importance of water as a global common good to be managed sustainably and equitably for all; and (3) **mobilize resources** to support the adoption of nuclear methods and approaches that ensure global water sustainability.

The forum will seek to:

- Address the idea of water as a global common good.
- Reflect on key acceleration mechanisms to improve water sustainability.
- Explore innovative nuclear science-based approaches to understand and address the growing global crisis of declining water quality.
- Emphasize the critical role of nuclear sciences in understanding connections along the entire water cycle continuum and the impact of hydrological alteration.
- Underline the importance of strengthening technical capacities in Member States to generate data for identifying solutions to water problems.
- Foster strategic partnerships and mobilize resources to support the application of nuclear techniques for sustainable and equitable water management, reinforcing the recognition of water as a global common good.

Tuesday, 16 September 2025

9:30–11:00

Opening Session

IAEA Director General Rafael Mariano Grossi will open the Scientific Forum 2025 with high-level speakers. They will explore how nuclear science and technology innovations can support effective and sustainable management of the world's water systems.

11:00–11:30

Break

11:30–12:30

Session 1: Strengthening Water Resilience and Global Sustainability

This session will explore five key accelerators — data and information, capacity development, governance, financing, and innovation — for advancing global water sustainability, while highlighting the role of nuclear sciences and technologies.

12:30–13:30

Break

13:30–15:00

Session 2: Quality Unknown — the Invisible Water Crisis

This session will address the accelerating global decline of water quality and will explore how nuclear and radiation based technologies can help track, reduce and treat pollutants such as microplastics and pathogens.

15:00–15:30

Break

15:30–17:00

Session 3: Climate and Hydrological Variability

This session will examine how climate variability exerts significant pressure on global water systems, increasing the frequency of extreme weather events, and will highlight the role of the IAEA's data networks in assessing these changes and guiding actions to sustain and optimize water resources.

Wednesday, 17 September 2025

9:30–11:00

Session 4: The Role of the IAEA

By building capacity, facilitating international cooperation and delivering technical expertise, the IAEA helps Member States address growing water challenges. This session will reflect on how the IAEA helps Member States manage and protect water resources through initiatives such as Nuclear Technology for

Controlling Plastic Pollution (NUTEC Plastics) and the Global Water Analysis Laboratory (GlowAL) Network, as well as coordinated research projects and technical cooperation.

11:00–11:30

Break

11:30–13:00

Closing session: Partnerships and Resource Mobilization

The closing session, led by Director General Grossi, will feature a high-level panel summarizing findings and discussing steps to maximize nuclear and radiological techniques in water management, including strategies for partnerships and resource mobilization. It will address global water crises, their impact and the IAEA's role in tackling these issues, emphasizing the importance of nuclear innovation and sustainable financing to support these interventions.