

Science Diplomacy Alert

A fortnightly newsletter on S&T, Science Policy and Diplomacy

Focus

International Quantum Year 2025: Opportunities for Science Diplomacy



The growing global interest in quantum science and technology has recently culminated in the UN General Assembly designating 2025 as the International Year of Quantum Science and Technology (IQY). This marks an important step towards building public awareness on the risks and benefits of quantum tech. The IQY lays the groundwork for creating a discourse that supports the responsible development and use of quantum applications, while ensuring that the governance mechanisms focus on equitable distribution of benefits. Anupama Vijayakumar writes.

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SCIENCE POLICY & DIPLOMACY

International S&T Cooperation



[Restrictions Imposed on US National Oceanic and Atmospheric Administration](#)

NOAA's National Marine Fisheries Service has reportedly ordered its employees to restrict contact with foreign nationals. The restrictions are expected to dampen international cooperation on issues including tsunami tracking and international agreement on seafood catch limits.

[South Korea, European Commission Enhance S&T Ties](#)

The meetings held between Yoo Sang-im, South Korea's Science and ICT Minister and EC representatives sought to expand the former's engagement as associate member of the Horizon Europe and EU's Basic Research Support Programme.

[UK Prime Minister Outlines Nuclear Energy Plans](#)

Speaking at the UK National Nuclear Laboratory, Lancashire PM Sir Keir Starmer revealed plans to deploy nuclear power plants in England and Wales. He further noted that the planning rules would be revised to facilitate this.

[Vietnam Formally Approves Nuclear Power Development Plan](#)

The plan shall guide Vietnam's efforts to deploy a nuclear power plant by the next decade. The Ninh Thuan I nuclear power plant with two reactors at 1,200 megawatts each is expected to be deployed between 2030 and 2035.

Finland, European Space Agency to Collaborate on Earth Observation Supersite

The facility is expected to “bolster ESA's mission to deliver precise satellite data over high latitudes”, with Finnish companies contributing cutting-edge technologies. The groundwork for the facility has begun at Sodankyla, Lapland.

Google Rescinds Pledge Against Using AI for Building Weapons

Google has reportedly revised the principles guiding its development of AI. The new principles put out by the company makes no reference to its previous position on not developing AI systems that hurt people or violate international norms.

Cambodia Makes Progress in AI Readiness Assessment

The preliminary results and recommendations of the “UNESCO’s Ethics of AI Readiness Assessment in Cambodia” was discussed at a multistakeholder consultation. The exercise is expected to help Cambodia adopt AI and boost its digital economy.

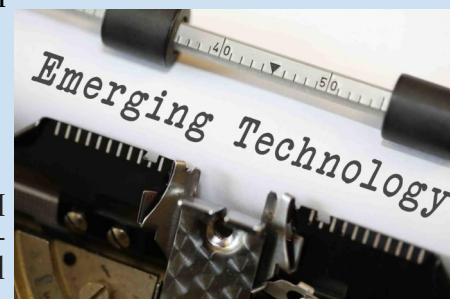
Geospatial Tech for Food Security: FAO, UNOOSA Report Makes Key Recommendations

The report seeks to guide policymakers on various applications on geospatial tech for farming, forestry, land-use and climate change management. It recommends actions including improved international coordination for space missions focused on agriculture and the setting up of a centralized UN imagery procurement hub.

62 Countries Adopt Communique on Inclusive and Sustainable AI

The adoption of the document concluded the AI Action Summit, a multistakeholder forum co-chaired by India and France in Paris during 10-11 February 2025. It outlines main priorities including sustainability, accessibility, safety and security.

Emerging Tech & Governance



Events & Meetings

CITES Standing Committee Holds 78th Meeting

The Standing Committee of the Convention on International Trade in Endangered Species of Wild Fauna and Flora met Geneva, Switzerland during 3-8 February 2025. The meeting took stock of aspects including the reports of the Plants and Animals Committees July 2024 meetings, trade in medicinal and aromatic plants and the engagement of Indigenous peoples.

International Telecommunications Union Celebrates 160th Anniversary

Established in 1865, the ITU has played a pivotal role in building governance mechanisms starting with telegraph, radio and television, satellites and internet, mobile and AI. The ITU plans on commemorating the occasion through various initiatives during 1 January 2025-31 December 2025.

UNESCO Officially Inaugurates International Quantum Year

The International Quantum Year was kicked off officially at an event held in UNESCO, Paris, during 4-5 February 2025. UNESCO and various partners including CERN plan on organising more than 100 events around the world to build awareness on the implications of quantum science and technology.



India, France Organise Second Roundtable on Collaborative AI

Held on the sidelines of the Paris AI summit, the roundtable brought together, industry leaders, policymakers and academics. Responsible AI development, data interoperability, and international collaboration were among the key issues which were discussed.

UNESCO World Wetlands Day 2025

Celebrated annually on 2 February since 1971, the World Wetlands Day aims to raise awareness on the wetlands as critical ecosystems. The theme for 2025 is “Protecting Wetlands for Our Common Future”.

INDIAN SCIENCE NEWS

Cryogenic Engine Vacuum Test for LVM₃ Conducted by ISRO

The Indian Space Research Organisation successfully conducted the ignition trial of the indigenous CE20 cryogenic engine that will power the upper stage of its Launch Vehicle Mark-III (LVM-III). The CE20 engine is a critical component of future ISRO missions, including the human spaceflight programme. The test focused on evaluating the ignition process under vacuum conditions, ensuring operational reliability in space.

Alloy-based Catalyst for Efficient Generation of Green Hydrogen

Researchers at the Centre for Nano and Soft Matter Sciences (CeNS) in Bengaluru, have developed a novel high-entropy alloy (HEA) catalyst called PtPdCoNiMn (consisting of Platinum, Palladium, Cobalt, Nickel and Manganese). This advancement could pave the way for cleaner, more affordable hydrogen production, benefiting industries and renewable energy technologies.

IIT Madras and ISRO Develop SHAKTI-based IRIS Semiconductor Chip

The ‘IRIS’ (Indigenous RISC-V Controller for Space Applications) Chip was developed from the ‘SHAKTI’ processor baseline. This development was part of the effort to indigenize semiconductors used by ISRO for its applications, Command and Control Systems and other critical functions aligning with its march towards ‘Atmanirbhar Bharat’ in Space Technologies.

France and India decide to jointly develop advanced nuclear reactors

India and France have agreed to jointly develop advanced modular reactors and small modular reactors (SMRs) for civil use. The other two MoUs inked include renewal of an MoU between department of atomic energy (DAE), India, and CAE, France, concerning cooperation with the Global Center for Nuclear Energy Partnership (GCNEP); and an agreement between DAE and CEA on cooperation between GCNEP, India, and the Institute for Nuclear Science and Technology, France.

Australia-India Strategic Research Fund for Research Projects in Quantum, Biotech, and Beyond

AISRF Round 16 funds up to AU\$1 million per project, prioritizing quantum computing and communications among six focus areas to strengthen Australia-India research collaboration. The AU\$4 million program supports joint research, personnel exchanges, and commercialization efforts, fostering innovation in quantum algorithms, error correction, and secure communication. Beyond funding, AISRF intends to support global recognition of Australian and Indian quantum research, strengthen industry ties, and increase women’s participation in STEM.

India Advancing Smart Materials and Energy Storage

Researchers at the Raman Research Institute (RRI) have made a significant advancement in understanding the transport properties of ultra-cold atoms within a quantum system. It could lead to the development of smart, high-conductivity materials and enhance the design of next-generation batteries.

International Quantum Year, 2025: Opportunities for Science Diplomacy

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Quantum science and technology have been increasingly featured in the global policy discourse as a tool to address various societal challenges and achieve sustainable development goals. In this context, governments around the world are looking to craft policy measures intended to leverage the potential of this emerging field to evolve solutions pertaining to health, food security, water and climate resilience. In recent times, quantum tech has further become a central concern for science diplomacy and science and technology cooperation among leading players. The growing global interest in the field has recently culminated in the United Nations Educational Scientific and Cultural Organization (UNESCO) designating 2025 as the [International Year of Quantum Science and Technology \(IQY\)](#). The IQY was officially inaugurated at an event held at the UNESCO headquarters, Paris during 4-5 February, 2025.

The UN has historically followed a practice of designating weeks, years or decades to create awareness and draw policy attention to certain important topics or events. Such proposals are often put forth by member-states and actualised through resolutions adopted by the UN General Assembly (UNGA). The IQY was adopted vide UNGA resolution A/RES/78/287 passed on 7 June 2024. The resolution emphasises quantum science and tech as “vital to economic advancement” while recognizing how its potential applications could help address concerns related to food, water and health along with supporting “sustainable cities, communities and communications”. It further underlines the need to scale up and mobilise means for boosting innovation in the field, particularly in developing countries. In this regard, it calls for 2025 to be earmarked for three purposes: first, to observe activities intended toward increasing public awareness on the applications of quantum tech. Secondly, to foster international collaboration and scientific cooperation among institutions, researchers and innovators and thirdly to focus on the application of quantum science and technology for sustainable development.

2025 holds particular significance from the point of view of the history of quantum sciences. The year marks the 100th anniversary of German scientist Werner Heisenberg publishing his theory reinterpreting quantum mechanics in the [Umdeutung paper](#). The paper published in September 1925 is widely regarded in the scientific community as having reinterpreted the theories of quantum mechanics and is widely regarded as the modern day origin of the field, which [studies](#) the nature of matter at microscopic scales. Phenomena that occur from interactions at the microscopic levels can help boost existing technologies. For instance, the application of quantum computing and encryption is ushering in a new revolution in the larger field of information and communication technologies. The superior processing ability of quantum computers has particular significance for the prospects of powering rapid advances in the realm of artificial intelligence (AI). Quantum encryption on the other hand has been noted to render communications hack proof thereby bolstering cybersecurity. Ultra-precise measurements enabled by quantum metrology can further help improve the accuracy of Position, Navigation and Timing systems such as GPS and facilitate the availability of better internet services.

Despite paving the way forward for applications that create both benefits and risks for society, the field of quantum sciences and technology is often perceived as being highly complex. The IQY herein marks an important step towards building public awareness on the same. It also lays the groundwork for creating a discourse that supports the responsible development and use of quantum applications, while ensuring that the governance mechanisms focus on equitable distribution of benefits. The IQY also presents opportunities for interdisciplinary research and would help attract investments that would generate economic and social benefits for humanity.

The IYQ lays the groundwork for creating a discourse that supports the responsible development and use of quantum applications, while ensuring that the governance mechanisms focus on equitable distribution of benefits. The IYQ presents major opportunities for science diplomacy.

Through building awareness and simplifying what is perceived as a complex field of science, it offers an opportunity for advocates of science diplomacy to look beyond academia and engage the public as stakeholders. Major entities including industry

leaders, universities, and research institutions have already partnered with UNESCO to pursue quantum applications for the benefit of the society. Science diplomacy to further the goals outlined under IYQ can further look to highlight areas including quantum literacy. Harnessing such opportunities for science diplomacy can potentially pave the way forward for ethical development, responsible use and upholding sustainability towards ensuring that quantum applications work to benefit and uplift humanity.

ADVANCES IN S&T

Filipino Researchers Identify Taal Ash as New Radiation Shield



The Problem: Radiation shielding is vital for areas using ionizing radiation to diagnose illnesses, detect structural flaws, or sterilize food. Conventional protective materials like concrete and lead can be expensive, and their production may harm the environment.

Taal Ash: In 2020, Taal Volcano erupted to release ash that blanketed parts of the country. Through comprehensive testing, researchers at Ateneo de Manila University and National University- Mall of Asia Campus revealed a unique application for the large volumes of Taal volcanic

ash (TVA) that blanketed parts of the Philippines. The TVA-based geopolymer mortar contains iron-rich minerals that help reduce radiation penetration. High-electron and denser material, such as TVA, has stronger efficiency in blocking hazardous X-rays and gamma rays

Future Prospects: TVA can act as a barrier against ionizing radiation, potentially providing more sustainable shielding in industries and medical facilities. Volcanic ash-based construction materials could offer a lightweight, eco-friendly alternative.

World's 1st hybrid Quantum Supercomputer in Japan

Quantum Centric Supercomputing: IBM defines quantum-centric supercomputing as an approach that combines quantum computing with traditional high-performance computing to create a computing system that will be capable of solving highly complex real-world problems". The hybrid combination has the potential to mitigate errors and control noise, a problem that otherwise affects quantum computers.

Reimei Quantum Supercomputer: Developed at the Riken Institute, Tokyo, the hybrid platform combines the Reimei, a 20-qubit quantum computer with Fugaku, which is the world's sixth fastest supercomputer. Reimei uses "trapped-ion qubits". The technique allows scientists to control the quantum state of ions in an electromagnetic field, which can act as qubits which store information.

Future Prospects: The method employed in Reimei has significant applications for error and noise reduction in qubits. Similar hybrid platforms can effectively serve as "a stopgap until quantum computers grow large and reliable enough".



Arctic Research Cooperation in a Turbulent World

The recently published paper by researchers at the Harvard University focuses on current scientific understanding of the regional and global impacts of Arctic climate change, highlighting that Arctic research addresses the needs of Arctic peoples and communities, and the importance of sustaining Arctic cooperation in challenging geopolitical times.

- The Arctic faces issues like coping with the growing and socioeconomically uneven impacts of climate change; finding an appropriate balance between economic development and conservation; and coordinating governance across local, regional, and international boundaries.
- Increasing populism and distrust of government, renewed great-power competition, rising geopolitical tensions, and fears about the stability of the rules-based international order. These issues are complex, interconnected, and compounding each other.
- Arctic research cooperation has created a strong foundation for people-to-people relationships and multilateral governance mechanisms that can still be leveraged. The research offers observations that can inform how research cooperation advances in the Arctic and how the Arctic might be a model for other regions.
- Arctic can serve as a model for how to sustain research cooperation on issues of common concern during difficult and uncertain times, but success will require investments in the next generation of Arctic policy-makers and researchers and a commitment to the institutions that support Arctic research cooperation and diplomacy.

Science Technology Innovation in India's Union Budget 2025

India's Union Budget saw a focus on science, technology and innovation. Some key announcements included:

- The Department of Science and Technology (DST) being the nodal ministry driving a 20000 cr fund for Research, Development and Innovation Scheme witnessed a sharp increase from Rs 8,029.01 crore to Rs 28,508.90 crore. DST's 3 Central Sector Schemes combined into one *Vigyan Dhara in August 2024 to enhance fund utilisation and synchronisation*.
- The Anusandhan National Research Foundation (2023) saw an allocation of 2000 cr which aims to seed, grow and promote R&D and foster a culture of research and innovation throughout India.
- Deep Tech Fund of Funds would be explored to catalyse the next generation start-ups as part of this initiative.
- 10,000 fellowships under the Prime Minister's Research Fellowship scheme, over the next five years were proposed.
- The National Geospatial Mission was introduced with an outlay of Rs 100 crore for 2025-26 to develop foundational geospatial infrastructure and data and will be funded under the Pradhan Mantri Gati Shakti, or the National Master Plan for Multi-modal Connectivity. The initiative is expected to modernise land records, enhance urban planning and improve the design of infrastructure projects

- The Department of Biotechnology has been allocated Rs 3,446.64 crore, a hike of Rs 986.51 crore over RE of Rs 2460.13 cr. DBT's New Unified scheme, which launched in September 2024 (combining previous 2 Central Sector Schemes on R&D and industrial and entrepreneurship development), named the Biotechnology Research Innovation and Entrepreneurship Development was allocated 2300 cr with new components on Biomanufacturing and Biofoundry.
- The Department of Scientific and Industrial Research has received an allocation of Rs 6,657.78 crore against RE Rs 6,350.54 crore. The Council of Scientific and Industrial Research has been allocated Rs 6,600 crore for 2025-26.
- Rs. 20,000 Cr allocation for the Department of Atomic Energy's Nuclear Energy Mission to support the deployment of 5 Small Modular Reactors (SMR) by 2033.
- In addition to a 4.87 per cent increase to the total allocation to Department of Space, the customs duty for components used in manufacturing launch vehicles and related technologies has been brought to zero.
- Rs. 500 Cr allocation to Ministry of Electronics and IT for establishing a Centre of Excellence in AI for Education in addition to a Rs. 2000 Cr. Allocation made to the India AI mission.

We welcome your comments and valuable suggestions. Please write to us for receiving publications, updates and notices regarding seminars, conferences, etc. Contact us at science.diplomacy@ris.org.in.

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