

# Science Diplomacy Alert

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

## Focus

## India Cuba Science and Technology Cooperation: Unlocking New Frontiers



India and Cuba recently commemorated the 65th anniversary of the bilateral relationship. The occasion was marked by the signing of several MoUs pertaining to trade, education, cultural cooperation, development partnership. Building on previous and existing agreements, India and Cuba S&T cooperation in healthcare innovation, pharmaceuticals, biotechnology and emerging technologies like artificial intelligence hold potential for inclusive development of AI and its governance and strengthening healthcare capacity. Given both countries' interests in alternative sources of energy and disaster resilience, there is ample scope of working closely on these especially through the Global Biofuel Alliance and Coalition of Disaster Resilient Infrastructure. Sneha Sinha writes.

## SCIENCE POLICY & DIPLOMACY

### International S&T Cooperation



#### Brazil Strengthens Agricultural Cooperation with Africa

The initiative reinforces Brazil's commitment to international cooperation and the development of innovative solutions for the future of global agriculture, further solidifying its position as one of the key players in the global food security arena.

#### UAE and South Korea Discuss Space Cooperation

The meeting underscores the growing relationship between South Korea and the United Arab Emirates in scientific and technological domains. As both nations seek to enhance their presence in space exploration, the partnership could lead to groundbreaking achievements for respective countries and the global community.

#### Israel and Albania Sign Health Cooperation Agreement

Israel and Albania signed a MoU to strengthen cooperation in health and medical innovation, largely focusing on joint projects on digital health, medical research, emergency preparedness and technological development.

#### IQVIA Asia Pacific and NUS to Collaborate on Longevity Medicines and Personalized Health Solutions

Data science company IQVIA Asia Pacific and the National University of Singapore (NUS) have signed an MoU to focus on personalised health innovations, public education, policy shaping, and global partnership to enhance healthcare outcomes.

## South Korea and Romania to Strengthen Health Cooperation

In a bilateral meeting, South Korea's Health Minister Cho KyooHong and Alexandru Rafila, Minister of Health of Romania discussed key areas of mutual interest, including strengthening cooperation in ICT-based healthcare systems, medical training, and partnerships in the pharmaceutical, biotech, and medical device industries.

## EU Innovation Fund Backs Largest CCS Facility in Europe

EU Innovation Fund has announced its support to develop the largest and most cost-efficient full-chain Carbon Capture and Storage facility in Europe. The project's initial phase is known as Danube Removals.

## 3D Photonic-electronic Platform Paves Way for Next-generation AI Hardware

This will unlock unprecedented levels of performance, making this technology a cornerstone of future computing systems across applications, from large-scale AI models to real-time data processing in autonomous systems.

## Big Tech Companies Submit Input on AI Action Plan to White House

Companies including Open AI and Google submitted inputs to The White House Office of Science and Technology Policy on an AI action plan. OpenAI called for freedom to innovate in the U.S. national interest, Google has advocated for US to adopt policies that "preempt a chaotic patchwork of state-level rules on frontier AI

## Emerging Tech & Governance



## Events & Meetings

### ESA Council Decisions Boosts Space Cooperation With Japan, Africa & Brazil



ESA and Japan Aerospace Exploration Agency JAXA have extended their cooperation on using synthetic aperture radar satellites in Earth science and applications. The Council also approved ESA and signing a new ten-year framework agreement for a strategic partnership on climate action as well as strengthening ties on the [Moon and Mars exploration](#). The ESA- Brazil cooperation was extended to ten years. A new MoU was also signed with the African Union

## MoEFCC and Harvard University's Conference on Building a Climate Resilient Future

Several technical sessions focused on adaptation and resilience under themes like: Climate Science and its implications on Water & Agriculture, Health, Work, and Built Environment, aiming to generate tangible outputs, thus contributing towards scientific evidence to global initiatives.

## Global Ministerial Dialogue on Science Diplomacy Organised by UNESCO

The Dialogue aims to foster high-level commitment to science diplomacy; explore innovative science diplomacy initiatives; agree on a common framework to advance shared goals; and highlight ongoing initiatives and opportunities in science diplomacy. The key output of the Ministerial Segment will be a joint Ministerial Statement on *Science Diplomacy in a Rapidly Changing World: Building Peace in the Minds of Men and Women*. To celebrate the World Water Day and the launch of the United Nations World Water Development Report, the UNESCO Regional Bureau for Science and Culture in Europe, also organised "[The Role of Science Diplomacy in Water Supplies](#)" on 21 March.

## UN Institute of Disarmament Research Holds Conference on AI, Security and Ethics

Held during 27-28 March 2025 in Geneva, the Conference saw multiple stakeholders engage in discussions on the governance of AI in security and defence. The conference, open to all, was organized as part of the Roundtable for AI Security and Ethics- an initiative led by UNIDIR in partnership with Microsoft.

## Healthy Cities Summit Held in Paris

Held during 18-21 March 2025, the annual summit brought together representatives from over 60 cities to discuss strategies for preventing non-communicable diseases and injuries. Three cities: Córdoba, Argentina, Fortaleza, Brazil and Greater Manchester, UK were honoured for their achievements in public health.

# INDIAN SCIENCE NEWS

## India's First Homegrown Aerosol Lidar to Help Climate Monitoring and Enhance Air Pollution Detection

Developed by the Dehradun-based Instruments Research and Development Establishment (IRDE), a unit of DRDO, the aerosol lidar system uses light detection and ranging (lidar) to remotely sense and profile atmospheric aerosols, providing information on their concentration, distribution, and properties, crucial for studying their impact on climate and air quality.

## IISc Uses Photoacoustics to Detect Blood Glucose

In the current study, the team exploited this approach to measure the concentration of a single molecule, namely glucose. They used polarised light – a light wave that oscillates only in a specific direction. “As many commonly used drugs are chiral in nature, such a technique can have wide-ranging applications in healthcare and diagnostics.”

## Space Technology Incubation Centre at NIT Rourkela Inaugurated

ISRO chairman Dr V Narayanan inaugurated the STIC which is designed to strengthen the academic foundation, develop high-quality human resources and build infrastructure at academic institutions to support the Indian space programme.

## UP Signs MoU with iFOREST to Explore Tech Solutions to Address Pollution and Climate Change

The collaboration will focus on key environmental challenges, including air pollution control, waste management, and climate change mitigation, while encouraging the growth of green energy and industries and sustainable cities in UP. iFOREST will conduct solution-oriented research, provide training programmes, and assist the directorate in implementing key govt initiatives.

## IIT Guwahati Develops AI-Powered Robots for Border Surveillance

Indian Institute of Technology (IIT) Guwahati researchers have developed advanced robots to man international borders, offering AI-powered surveillance and uninterrupted, real-time monitoring across challenging terrains.

## Controlled Thermionic Emissions Holds Promise for Next-generation Semiconductor Applications

The research redefines thermionic emission physics by leveraging quantum-engineered materials. These superlattices offer unprecedented control over electron transport, unlocking new possibilities for high-efficiency energy and electronic technologies.

## India Cuba Science and Technology Cooperation: Unlocking New Frontiers

Sneha Sinha,  
Consultant, RIS

In a [meeting](#) on 17 March 2025 between Deputy Prime Minister of Cuba, H.E. Dr. Eduardo Martínez Díaz and Union Minister Dr. Jitendra Singh, discussions revolved around further expanding the science and technology cooperation between the two countries, particularly in biotechnology and bio-manufacturing. The meeting was held to commemorate the 65th [anniversary of bilateral diplomatic relations between India and Cuba](#) which has been marked by several visits of heads of state/government, ministerial visits and high-level meetings between delegations of both countries.

Additionally, several MoUs were signed between the two countries which focus on bilateral trade, sports, cultural exchange, education, etc. Development partnership is another pillar of India-Cuba bilateral relation, including the Indian Technical & Economic Cooperation (ITEC) programmes. Science and technology, renewable energy, biotechnology and health are significant areas of cooperation between the two countries, including traditional medicine homeopathy. Last year, cooperation in the field of sharing digital solutions and medical products regulations was signed between India and Cuba. Both countries are committed to climate change and environmental concerns, as a result energy cooperation is an important pillar of their cooperation. Further, [Cuba is a full and founding member of the International Solar Alliance](#), which reiterates its commitment to renewable sources of energy. India's vision of Green Growth and net-zero carbon economy as well as National Policy on Biofuels aligns with India's commitment towards sustainable development. Given both countries' interests in alternative sources of energy

and disaster resilience, there is ample scope of working closely on these especially through the Global Biofuel Alliance and Coalition of Disaster Resilient Infrastructure.

India's biotechnology sector has seen rapid progress and the bioeconomy is expected to grow to USD 200 billion by 2030. The Biotechnology for Economy, Environment, and Employment (BioE3) Policy aims to advance biomanufacturing facilities, bio-foundry clusters and bio-AI hubs. New scheme of biomanufacturing and bio-foundry was announced during the Union Budget 2025. The National Biopharma Mission (NBM)-Innovate in India (i3) aims to boost India's capabilities in biopharmaceuticals, vaccines, biosimilars, medical devices, and diagnostics by fostering collaboration between industry and academia. India has also made progress in affordable healthcare, innovation and the pharmaceutical industry. Cuba's universal healthcare system, advances in vaccine development and biotechnology provide great scope for cooperation between both countries. India and Cuba have several shared interests in healthcare and biotechnology. Senior officials from both countries participated in the recent discussion and expressed keen interest in expanding cooperation in these areas.

India and Cuba have been exploring cooperation in Artificial Intelligence (AI), recognizing the transformative role of AI in healthcare, agriculture, biotechnology and renewable energy, capacity building as well as underlining collaboration for inclusive AI governance. Cuba participated at the India-AI Global Summit held in New Delhi last year, and reiterated the need for an inclusive development of AI.

In February 2025, [the first bilateral course on Artificial Intelligence](#), within the framework of ITEC was held at the Center for Development and Advanced Computing (C-DAC) in New Delhi. It was noted that the course would help in building capacity of Cuban technicians in emerging technologies. Cuba's interest in holding other courses in areas such as robotics, renewable energies, health and Ayurveda was also underlined.

Since January 2023, India has convened [three editions of Voice of the Global South Summit](#) which brings together developing countries to deliberate on priorities and concerns and exchange ideas and solutions from a Global South perspective. At VoGSS Cuba has raised issues of higher education and social and economic development in the Global South, and the need to defend its interests in multilateral fora. As members of Group of 77 (G77), both countries advocate and are committed to social and economical development of the Global South, and South-South cooperation in areas like health, education and sustainable development.

Building on previous and existing agreements, India and Cuba S&T cooperation in healthcare innovation, pharmaceuticals, biotechnology and emerging technologies like artificial intelligence hold potential for inclusive development of AI and its governance and strengthening healthcare capacity. Cuba's increasing interests in India's traditional medicine has also emerged as a significant area for collaboration. Additionally, India and Cuba cooperation in vaccine development, medicine, and health will also pave the way for affordable and accessible healthcare for the Global South.

## 3D Nanotech Blankets New Path to Clean Drinking Water



**The Problem:** Despite being a great alternative energy source, solar fuel systems that utilize  $\text{TiO}_2$  nanoparticles are often power-limited because they can only undergo photocatalysis, or create chemical reactions, by absorbing non-visible UV light. This can cause significant challenges to implementation, including low efficiency and the need for complex filtration systems.

**3D Nanotech Blankets:** Team constructed thin fiber-like strips of titanium dioxide ( $\text{TiO}_2$ ), a compound often utilized in solar cells, gas sensors and various self-cleaning technologies.

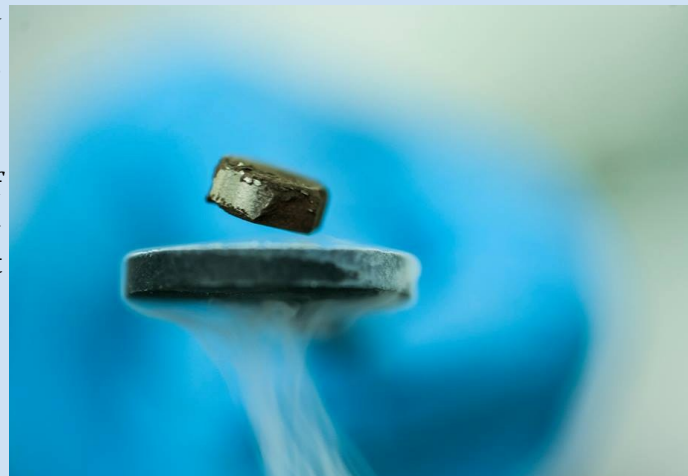
Researchers added copper to the material to improve this process, their new structures, called nanomats, were able to absorb enough light energy to break down harmful pollutants in air and water. When titanium dioxide absorbs light, electrons are formed that oxidize water and attack pollutants, slowly destroying them until they become benign. When copper is added, that process is supercharged, making it even more effective. These lightweight, easy-to-remove fiber mats can float and operate atop any body of water and are even reusable through multiple cleaning cycles.

**Future Prospects:** Nanomats are effective, researchers envision that they could be used to rid water of industrial pollutants in developing countries, turning otherwise contaminated rivers and lakes into sources of clean drinking water. Additionally, nanomats are environmentally friendly as they do not generate toxic byproducts like some solar cell systems. Nanomats could be a promising tool in many future photocatalytic applications, including long-term sustainability efforts like environmental remediation as well as solar-driven hydrogen production.

## Copper-Free High-Temperature Superconducting Oxide

**The Problem:** Despite the discovery of thousands of superconducting materials, the vast majority function only at extremely low temperatures near absolute zero (0 K), or about minus 273 deg C, making them impractical for widespread use.

**Cooper-free Superconducting Oxide:** National University of Singapore have designed and synthesised a new material, a copper-free superconducting oxide—capable of superconducting at approximately 40 Kelvin (K), or about minus 233 degrees Celsius (deg C), under ambient pressure. This new material is highly stable under ambient conditions, significantly improving its accessibility.



**Future Prospects:** This breakthrough represents a step towards the development of next-generation superconducting materials, with practical applications in modern electronics and energy-efficient technologies.

## India Hackathon on Mineral Targeting Launched

IndiaAI, an Independent Business Division (IBD) under Digital India Corporation (DIC), Ministry of Electronics & IT (MeitY), in collaboration with the Geological Survey of India (GSI), Ministry of Mines, has launched the IndiaAI Hackathon on Mineral Targeting. The initiative is aimed at leveraging AI and ML technologies to enhance mineral discovery and geological analysis. By applying AI to mineral targeting, the government aims to improve discovery, efficiency and strengthen India's mining sector while ensuring sustainable mineral exploration. The hackathon aims to:

- Identification of new potential areas for exploration of critical minerals like REE, Ni-PGE, and copper, as well as other commodities like diamond, iron, manganese, and gold within a predefined 39,000 sq. km area in the states of Karnataka and Andhra Pradesh, India.
- Emphasis on locating unrevealed & deep-seated mineralised bodies with depth modelling.
- Developing AI/ ML algorithms for data cleaning, integration, modelling, and validation.
- Generation of mineral predictive maps showing exploration targets visualised through maps, sections, etc.

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## ESA Releases Strategy Document that Emphasizes Autonomy

ESA's Strategy 2040 outlines the major goals and objectives for ESA for the next 15 years, "ensuring that space serves Europe in the most impactful and strategic way possible." The Strategy includes five goals:

- protect our planet and climate
- explore and discover
- strengthen European autonomy and resilience
- boost European growth and competitiveness, and
- inspire Europe.

Each goal has several specific objectives. The strategy will guide planning for ESA's next ministerial conference, scheduled for November, where member states will approve and fund specific programs for the next three years. While the strategy mentions international cooperation in topics such as exploration, it also highlights the need for European nations to work with one another.

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