Forum for Indian Science Diplomacy

*Issue 163 | 1-15 August 2025*

# Science Diplomacy Alert

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

Focus

## India-Philippines S&T Cooperation: Fostering Innovation, Sustainability and Beyond

The recent India-Philippines Programme of Cooperation (2025-2028) symbolises an initiative that goes beyond bilateral engagement, aiming towards regional development goals and highlighting the vital role of S&T in shaping resilient, sustainable and inclusive futures. Sneha Sinha writes

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## SCIENCE POLICY & DIPLOMACY

### International S&T Cooperation

#### Moldova Joins International Solar Alliance

Moldova Becomes the 107th member of the ISA by handing over its ratification to the Ambassador of Moldova to India in New Delhi on 4 August 2025.

#### IIT BHU Hosts Japanese Delegates to Boost Indo-Japan Academic Collaboration

Delegates from Japan's Sakura Science Programme visited IIT BHU to strengthen research and academic collaboration. The visit included discussions on joint projects under initiatives like JST, JSPS, and the LOTUS Programme.

#### South Korea and Vietnam to Enhance S&T Cooperation

At the Summit, the leaders of South Korea and Vietnam pledged deeper collaboration in S&T, signing multiple MoUs across nuclear and renewable energy, infrastructure, finance and high-tech innovation.

#### India-Brazil Strategic Partnership

Leaders of the two countries reaffirmed their commitment to further strengthen India-brazil Strategic partnership. They encouraged enhanced cooperation in trade, technology, energy, defence, agriculture, health and people-to-people ties.

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### Emerging Tech & Governance


#### Union Cabinet Approves Two Semiconductor Projects in Odisha

The two major semiconductor projects worth Rs 4.009 crore in Bhubaneshwar's Info Valley. SiCSem Pvt. Ltd. will build India's first commercial silicon carbide fab and 3D Glass

Solutions Inc will set up advanced glass-substrate 3D packaging units.

### AI Language Model to Target 'Undruggable' Disease Proteins Re-engineered

AI designed small, drug-like molecules that can bind to and break down harmful proteins in the body. The breakthrough could lead to new treatments for diseases that have long resisted traditional drug development, including certain cancers, brain disorders, and viral infections.

### IndiaAI and National Cancer Grid Launch CATCH Grant Programme

This initiative seeks to support the development and deployment of innovative AI solutions to strengthen cancer screening, diagnostics, treatment support, and healthcare operations. It will provide up to ₹50 lakh per project to selected teams comprising technology innovators and clinical institutions.

### New AI Breakthrough Could Speed Up Fusion Energy Development

An AI-driven tool named HEAT-ML can predict 'magnetic shadows' inside fusion reactors in milliseconds. This can accelerate the design and safe operation of fusion systems like SPARC by quickly identifying areas needing thermal protection.

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## Events & Meetings

### ICMR-NIIH Hosts SHINE Programme for Next-Gen Scientists

Under the Science & Health Innovation for the Nextgen Explorers Programme, Class IX schools students were hosted. The initiative was part of a nationwide open-day event conducted by the Department of Health Research (DHR) and the Indian Council of Medical Research (ICMR), in alignment with "One Day As a Scientist".

### WHO-IRCH Workshop to Align Global Standards for Herbal Medicines

The Ministry of AYUSH and WHO Launched a three-day workshop at PCIM&H in Ghaziabad, focusing on the safety, regulation, efficacy and intended use of herbal medicines. The event brought together experts from WHO and Observer States for regulatory convergence and hands-on standardisation training.

## INDIAN SCIENCE NEWS

### IISC Develops Breakthrough Imaging Molecule for Safe, Low-Cost Tumour Detection

IISc Researchers have created 'GPC', an imaging molecule that detects superficial tumours using photoacoustic tomography without harmful radiation. It mimics glucose uptake, enhancing high-contrast 3D imaging using safe near-infrared light.

### JNCASR Advances Promising Molecule to Treat Alzheimer's

The molecule, TGR63 significantly reduced amyloid plague buildup and reversed cognitive decline in Alzheimer's-model mice, showing potential to halt and possibly reverse dementia symptoms.

### India Reaches 100 GW Solar PV Module Manufacturing Capacity under ALMM

India's solar PV module manufacturing capacity accredited on the Approved List of Models and Manufacturers has surged from just 2.3 GW in 2014 to 100 GW on 13 August 2025.

### India's First Animal Stem Cell Biobank Launched at NIAB Hyderabad

Equipped with a stem cell culture unit, 3D bioprinter, bacterial culture lab, cryostorage, autoclave rooms, advanced air handling systems, and uninterrupted power backup, the laboratory will advance research in disease modelling, tissue engineering, and reproductive biotechnology.

### Chennai-based Space Startup Build World's Largest Single-Piece 3D Printed Inconel Rocket Engine, Secures U.S. Patent

Agnikul Cosmos has created approximately one metre long single-piece rocket engine using inconel, with no welds, joints or fasteners, marking a breakthrough in additive manufacturing for aerospace design and production.

## ADVANCES IN S&T

### Ultrasound Breakthrough Degrades Common Plastic Pollution in Water

**The problem:** Bisphenol (BPA), widely used in plastics (about 10 billion kg produced annually) contaminates water and poses health risks like endocrine disruption and developmental harm. Exposure to BPA has been shown to have negative effects on fetal development and has been linked to the development of a range of serious health conditions in adults.

**The Method:** Researchers at the Glasgow University have found a new way to remove a common pollutant from water using controlled waves of ultrasound, without the use of additional chemicals. The system, developed by chemists from the University of Glasgow, can scrub up to 94 per cent of the traces of Bisphenol A (BPA) from samples of contaminated water by using ultrasound to create conditions similar to the surface of the sun in bubbles of contaminated water.

**Future Prospects:** The team aims to scale up the prototype for water treatment plants and industrial wastewater systems, offering a simpler and more self-contained solution without secondary waste. Beyond BPA, researchers are exploring applicability to other persistent pollutants like PFAS and are already engaging with water companies to pursue industry adoption.

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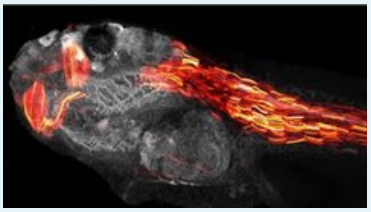

### AI Meets CRISPR for Precise Gene Editing

**The Problem:** CRISPR/Cas9 'gene scissors' sometimes lead to unintended or imprecise DNA repairs, which can introduce errors or disrupt genomic integrity. Ensuring safe, reliable and clinically useful gene editing demands improved control over cellular repair outcomes.

**The Method:** The research team from the University of Zurich, Ghent University, and ETH Zurich created 'Pythia' an AI tool that stimulates DNA repair patterns to design tiny microhomology-based repair templates that guide precise edits. Tested across human cell cultures, tadpoles, and living mice (including non-dividing brain cells), Pythia-enabled edits were highly accurate and effectively targeted both small point mutations and whole-gene integration.

**Future Prospects:** The predictive power of Pythia opens avenues for developing safer and more effective gene therapies, especially from neurological diseases. By coupling large-scale

AI predictions with real biological systems, this method sets a foundation for translating AI-guided genome editing into clinical applications across biotechnology and medicine.

## INSIGHTS & RESOURCES

### Third UN Conference on Landlocked Developing Countries Held

The Conference was held in Awaza, Turkmenistan during 5-8 August, 2025. Under the theme "Driving Progress Through Partnerships," the four-day conference convened Heads of State, Senior UN officials, development partners, and private sector leaders to address the unique challenges faced by LLDCs—including high trade costs, infrastructure gaps, and climate vulnerabilities—while charting a bold path forward through the Awaza Programme of Action (2024–2034). The Key outcomes include:

- Endorsement of the Awaza Programme of Action and Adoption of the Awaza Political Declaration
  The Awaza Political Declaration outlines a unified vision for enhancing transit connectivity, digital transformation, and climate resilience in LLDCs. Anchored in the Awaza Programme of Action, it focuses on five priority areas:
  - Structural economic transformation
  - Trade and regional integration
  - Transport and infrastructure development
  - Climate adaptation and disaster risk reduction
  - Mobilizing financing and partnerships

- **Strengthened Global Solidarity** The Declaration calls for increased investment by multilateral development banks, deeper South-South cooperation, and stronger integration of LLDC needs in global trade and climate agendas.

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