

Science Diplomacy Alert

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

India-Sweden S&T Cooperation: Priorities and Prospects



India-Sweden bilateral S&T cooperation focuses on sharing best-practices, dialogue, capacity building and knowledge exchange, and exploring cooperation in areas of air pollution control, waste management, waste-to-energy, waste-water treatment and circular economy. Sneha Sinha writes.

[Continued on Page 4.](#)

SCIENCE POLICY & DIPLOMACY

International S&T Cooperation



[Valneva and Serum Agreement to Make Chikungunya Vaccine Accessible Across Asia](#)

With this agreement, Valneva's single shot chikungunya vaccine would become accessible in India and other Asian countries, subject to local regulatory approvals.

[US to Update its MTCR Export Control Policies for India](#)

The US is in the process of finalising a national security memorandum that will update America's export control policies under the Missile Technology Control Regime (MTCR) which is likely to facilitate more cooperation between India and US companies in the space sector.

[IAEA to Strengthen Nuclear Cooperation with Paraguay for Development](#)

IAEA Director visited Paraguay to strengthen nuclear cooperation for development in areas including food security, clean energy and cancer treatment.

[India and Sweden Strengthen Ties for Sustainable Development](#)

Driven by a shared vision of a sustainable and resilient future, this partnership reflects the potential of international cooperation in addressing environmental challenges.

[Russia to Distribute mRNA Cancer Vaccine for Free](#)

Russia's mRNA cancer vaccine preclinical trials have shown promise in suppressing tumour development and potential metastases. The vaccine will be distributed for free to patients.

[India and Japan Space Startups to Study Laser-equipped Satellite to Tackle Space Debris](#)

Tokyo-based Orbital Lasers and Indian robotics company InspeCity will jointly study use of laser-equipped satellites to remove debris from orbit.

Emerging Tech & Governance



Google and Anthropic Cooperate to Improve Gemini AI

Google is reportedly using Anthropic's AI model Claude to compare and improve the responses of its own AI, Gemini.

Reserve Bank of India Sets Up Committee on Use of AI in Finance Sector

An eight-member committee has been set up to study regulatory and supervisory approaches on artificial intelligence in the financial sector globally and identify potential risks.

Advance in Quantum Computing and Communication

Northwestern University engineers successfully demonstrate quantum teleportation over a fiber optic cable already carrying Internet traffic, simplifying the infrastructure required for advanced sensing technologies or quantum computing applications.

Events & Meetings



Digital Ethics Summit 2024 Recognises AI's Socio-technical Nature

At TechUK's Digital Ethics Summit, public officials, industry and civil society discussed the ethical challenges associated with the proliferation of artificial intelligence tools.

UNGA Concludes 79th Session

In addition to adopting a draft resolution titled Programme of Action for Landlocked Developing Countries for the Decade 2024–2034, a draft on the UN Convention on Cybercrime were adopted.

Conference on Advances in Sustainable Engineering Held in Hyderabad

Held during 27-29 December 2024, the conference was held on the theme Leveraging Sustainable Technology and Innovations in the Digital World. It was organised by the Matrusrri Education Society and co-sponsored by IEEE Hyderabad.

INDIAN SCIENCE NEWS

DST-AICTE Announce UG Course on Quantum

The Department of Science and Technology and All India Council for Technical Education announced the course which will integrate theoretical knowledge with hands-on lab experience to deepen graduates' understanding of quantum technologies.

IIT Guwahati Develops Tech to Convert Methane, Carbon Dioxide into Eco-friendly Biofuel

The biological process uses a type of methanotrophic bacteria to develop bio-methanol under mild operating conditions with no expensive catalysts and toxic by-products and achieving 87 per cent reduction in harmful emissions.

TDB-DST Supports Development and Commercialization of 'Agnibaan'

'Agnibaan' is a highly customizable two-stage launch vehicle capable of delivering payloads of upto 300 kg to orbits at 700 km altitude. This will make satellite launches more accessible, efficient, and affordable.

Foldscope Microscope Help Farmers to Detect Plant and Soil Health

A portable and affordable microscope is empowering Chhattisgarh farming communities in in-situ diagnosis and digital cataloging of plant-pathogenic fungi.

IIT-Delhi Starts 6-months Certificate Programme on Generative AI

The programme will offer advanced AI methodologies, with a focus on Large Language Models (LLMs). It will explore Reinforcement Learning with Human Feedback (RLHF), Vision-Language Models (VLMs), and responsible AI deployment.

ISRO Launches SPADEX Mission

The demonstration mission shall employ two satellites: SDX01(chaser) and SDX02 (target) to test out technologies including rendezvous, docking and undocking.

ADVANCES IN S&T

Alternate Technology ‘BICCU’ Proposed by Aarhus University

The problem: Globally, CO₂ from flue gases is the biggest contributor to higher concentrations of greenhouse gases in the atmosphere. It is mixed with other gases and therefore difficult to remove without major additional costs.

BICCU: New form of bio-integrated carbon capture and utilization (BICCU), reuses carbon directly in the circuit, avoiding many of the conventional intermediate process steps. The researchers at AU use microorganisms that both remove and convert CO₂ from the flue gases directly in the capture unit instead of having to apply high heat.

Future Prospects: The microbiological approach can create a greater incentive for carbon capture, because the costs are much lower, and because the CO₂ is transformed into new products.



NTU Scientists Develop 3D Concrete Printing Method to Capture Carbon

The problem: High carbon footprint of cement. The material is responsible for 1.6 billion metric tonnes of carbon dioxide (CO₂) or about eight per cent of global CO₂ emissions.

3D concrete printing: The process involves injecting steam and CO₂, captured as the by-products of industrial processes, into the mixing concrete, which then directly incorporates and stores the CO₂ in the concrete structure.

Future Prospects: The innovation represents a promising contribution towards achieving global sustainable development goals and reducing the industry’s reliance on conventional energy-intensive processes like reinforced concrete construction.

India-Sweden S&T Cooperation: Priorities and Prospects

Sneha Sinha,
Consultant, RIS

The [diplomatic relations between India and Sweden](#) have grown over the last 75 years with regular political engagements and trade. Both countries closely cooperate on several multilateral and global issues, and innovation, technology, investment and R&D remain at the core of the diplomatic ties. Sweden is a global leader in innovation, ranking second in the Global Innovation Index 2024. Sweden is also one of the members of the Arctic Council. During the last decade, there has been an upswing in relations between India and Sweden with over ten head of state/government, inter-ministerial meetings. Although the diplomatic ties have continued, the visit of the Indian Prime Minister to Sweden during the First India Nordic Summit in Stockholm in April 2018 needs special mention, which led to the adoption of the Joint Action Plan with the signing of the Joint Innovation Partnership. This can be seen in light of the longer commitment of the two countries to dialogue and cooperate on issues of mutual and global concerns. Through the action plan, India and Sweden agreed to initiate a multi-stakeholder innovation partnership for a sustainable future, and tackle societal challenges like climate change and sustainable development through innovation. The importance of research and innovation in the partnership can be seen in the continuance of the Innovation Days. The 11th India Sweden Innovation Day with the theme 'Accelerating Green Growth for Inclusive Transition' was held in October 2024. The first high level Dialogue on Innovation Policy was co-chaired by Prime Minister Modi and the King of Sweden in December 2019.

Given Sweden's expertise in clean technologies, [India-Sweden bilateral S&T cooperation](#) focus on sharing best-practices, dialogue, capacity building and knowledge exchange, and exploring cooperation in areas of air pollution control, waste management, waste-to-energy, waste-water treatment and circular economy, has been integral to the partnership. Additionally, research and innovation cooperation and collaboration in space, health, life sciences, and smart, sustainable and renewable energy has been equally significant. There have been bilateral agreements, joint working groups, and innovation collaboration in these areas. In this background, environment ministers met in Nairobi in 2022. India-Sweden Industrial R&D Program is jointly funded by Sweden's

innovation agency (VINNOVA) which aims to strengthen its innovative capacity for sustainable growth and the Department of S&T, India to foster industry R&D partnerships in clean technologies and smart manufacturing. The development of electric vehicle (EV) infrastructure is also a key area of collaboration between the two nations. Apart from these, there are institutional collaborations and academic exchanges between India and Sweden. Majority of the Indian diaspora in Sweden are IT professionals.

In the health sector, cooperation in drug discovery, antimicrobial resistance and digital solutions are the focus, where both countries partner in Global Antibiotic Research and Development Partnership and members to Coalition for Epidemic Preparedness Innovations (CEPI). India and Sweden cooperate through [Leadership in Mission Innovation \(MI\)](#) and [Leadership Group for Industry Tradition \(LeadIT\)](#) (launched at the UN Climate Action Summit in 2019) to accelerate clean energy innovation and drive global industrial decarbonisation efforts respectively. Sweden also supports objectives of the International Solar Alliance and collaborates on technology transfer and R&D for solar energy and efficiency. With advanced capabilities in bioenergy, Sweden could contribute to the Global Biofuel Alliance which was initiated by India due its G20 Presidency.

Apart from focus on green transition and health, India and Sweden also jointly advocate ethical AI through Global Partnership on Artificial Intelligence. Another area of close cooperation could be the Arctic. With [India's Arctic Policy](#) and strong commitment towards scientific research in polar and arctic regions, Sweden's support and joint research projects on these themes would be instrumental. Sweden also supports India's observer status in the Arctic Council to enable collaboration on climate change and polar research. Apart from these, both countries show strong commitment to global challenges and capacity building in science and related fields through several alliances and participation in mega science projects. Indian and Swedish scientists collaborate on the CERN's Large Hadron Collider experiments. This cooperation has a long way to go.

Continued on Page 5

As sustainable development, and climate action and green technologies lay at the core of India Sweden cooperation, the shared vision and commitment underlines the need for international cooperation to tackle emerging issues as well as common and global challenges. As indicated earlier, Innovation, climate action and technology, green hydrogen, health, space, arctic and polar research has been central to cooperation between India and Sweden. This cooperation has a long way to

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INSIGHTS & RESOURCES

IPBES Nexus Report: Harmonized Responses for Inter-connected Challenges

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has recently produced the Nexus report. IPBES periodically examines existing scientific knowledge on biodiversity and nature to make an assessment of their current state.

- The group examined five major challenges — climate change, biodiversity loss, food insecurity, water scarcity, and health risks — and found that they were strongly interconnected. They interact, cascade and compound each other in ways that make separate efforts to address them ineffective and counterproductive.
- Key takeaway of the report is that responses to all these challenges need to be harmonised. The report, therefore, argues that it is important to adopt synergistic approaches that deliver benefits across the spectrum.

UN Adopts Convention Against Cybercrime

193 member-states of the UN adopted a historic convention against cybercrime during the 79th Session of the UNGA which concluded during this fortnight. The treaty results out of a five year negotiation process and seeks to address various threats to cybersecurity.

- According to UN Secretary-General [Antonio Guterres](#), the new treaty will “promote a safe cyberspace” and create an “unprecedented platform for collaboration in the exchange of evidence, protection for victims and prevention, while safeguarding human rights online”.
- The Convention acknowledges the potential for Information and Communication Technologies (ICT) to be misused to enable criminal activities on an unprecedented scale, speed, and scope.
- It recognises the detrimental impacts that such activities can have on the well-being of individuals, societies and states and seeks to safeguard them from terrorism, human trafficking, financial crimes and fraud. It has also been [termed](#) a crucial means to address challenges from crimes such as online child sexual abuse.
- It places a high priority on delivering justice to the victims of cybercrime, particularly vulnerable groups and “underscores the need for technical assistance, capacity-building and collaboration among States and other stakeholders”.

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