

Science Diplomacy Alert

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

Towards Global Cooperation: India-Germany in Science and Beyond

Focus



The partnership between the two countries is based on their strengths in S&T and the commitment to leverage innovation for tackling contemporary challenges. The bilateral cooperation also aligns with their goals to lead in science diplomacy. Sneha Sinha writes. [Continued on Page 3.](#)

SCIENCE POLICY & DIPLOMACY

International S&T Cooperation



Moonlight Program: Europe Announces Satellite Constellation to Support Moon Missions

The five satellite-constellation shall enable precise, autonomous landings and surface mobility while facilitating high-speed communication and data transfer between earth and the moon.

ITER Chooses L&T to Deploy Vacuum Vessel Components

L&T shall assemble complex components within the vacuum vessel, a double-walled steel container that houses fusion reactions within the ITER's tokamak magnetic fusion reactor.

Turkey and Malaysia Strengthen S&T Cooperation

During Malaysian Science, Technology and Innovation Minister's recent visit to Turkey, the two nations identified "renewable energy, biotechnology, aerospace and space technology" as priority areas for cooperation.

Chile and Cyprus Sign Artemis Accords

Chile signed the accords on 25 October 2024, while Cyprus inked the same two days ahead of Chile. The total number of signatories to the Accords which proscribe principles guiding sustainable lunar exploration now stands at 47.

Emerging Tech & Governance



US Finalises Restrictions Barring Investments in China in AI, Semiconductors

The rules serve to limit US citizens, permanent residents and companies from investing in China's AI, semiconductors and quantum computing sectors.

AI Regulation and Diplomacy Take Centre-Stage in the USA's New National Security Memorandum

The memorandum lays down strict restrictions against tasking AI with high-stakes decision-making in defence and intelligence applications. It further directs federal agencies to secure and diversify semiconductor supply chains.

BRICS Kazan Declaration Highlights AI and Digital Economy Cooperation

The declaration stresses upon fostering Intra-BRICS dialogue and consultations on AI and emphasises upon the need for equitable data governance.

World Telecom Standardization Assembly Adopts New Resolutions on AI and DPI

The International Telecommunications Union adopted six new resolutions on sustainable digital transformation, vehicular communication, strategic planning, AI and Digital Public Infrastructure.

Events & Meetings



Indonesia's National Research and Innovation Agency Holds Event on Science Diplomacy

The one-day seminar was held in Jakarta on the topic "Increasing the Role and Contribution of BRIN's Research Results and Strengthening Indonesia's Science Diplomacy Strategy".

UN Biodiversity Conference Begins in Colombia

The meeting of state parties to the UN Biodiversity Convention commenced in Cali on 21 October 2024. The conference would take stock of their commitment to the ambitious conservation targets set in 2022.

Arctic Circle Assembly Held in Reykjavík

Held during 17-19 October, the event included around 250 sessions including a Polar Dialogue which focused on scientific cooperation in the Arctic, the Antarctic and the Himalayas.

IAEA Holds International Conference on Small Modular Reactors

The meeting assessed the joint implementation of the construction of the ITER reactor and took stock of the progress with respect to Russia's contributions related to procuring and manufacturing certain components.

INDIAN SCIENCE NEWS

ISRO and DBT Sign MoU on Space Biotechnology Cooperation

The cooperation would benefit India's Gaganyaan human space programme and strive to augment human health research and develop relevant technologies intended for societal applications.

India-Mexico Tech Leaders' Roundtable Held in Guadalajara

Chaired by Nirmala Sitaraman, the roundtable held discussions on the topic "Strengthening Technological Cooperation Between India and Mexico".

Indian Scientists Pioneer a Major Advance in Quantum Magnetometry

The researchers employed techniques to enhance magnetic field response in thermal rubidium atoms. The method can help render atomic clocks highly precise.

India Hands Over Rooftop Solar Systems to Sri Lanka

The handover was executed as part of a USD 17 million dollar project which seeks to deploy 25MW rooftop solar systems across 5000 Sri Lankan religious institutions.

ISRO Launches its 'First-ever' Space Club in Saudi Arabia

Inaugurated across ten schools in Saudi Arabia, the project aims to encourage space science education and engage Indian students in the Gulf region.

Three New AI Centres of Excellence Inaugurated

The CoEs which will be set up by 2029 shall focus on agriculture, health and sustainability respectively. They seek to emerge as global solution providers contributing to public good.

Anusandhan National Research Foundation Announces Two New Initiatives

The Prime Minister Early Career Research Grant (PMECRG) supports researchers in pursuing research that can help enhance India's position as a global S&T leader. The **Mission** for Advancement in High-Impact Areas -Electric Vehicle (MAHA- EV) seeks to boost domestic capacity in EV components.

IIT Delhi Researchers Develop New Method to Produce Perovskite Solar Cells

The method offers opportunities to manufacture PSCs without using anti-solvents. This helps lower the cost of manufacturing PSCs which are said to be more sustainable and economically viable.

India and Germany Sign Three MoUs on S&T Cooperation

The MoU were signed during Chancellor Olaf Scholz's visit to India. They broadly focus on mutual augmentation of innovation and startup ecosystems, renewable energy and advanced materials respectively.

Towards Global Cooperation: India-Germany in Science and Beyond

Sneha Sinha,
Consultant, RIS

India established diplomatic ties with the Federal Republic of Germany after the Second World War. With over 70 years of bilateral relations, Germany has emerged as an important partner in Europe. Since 2000, India and Germany has a 'Strategic Partnership' which was further deepened through the launching of the Intergovernmental Consultations in 2011, which is the head of governments level discussions exploring prospects of greater engagement and cooperation. Initiatives like the German Academic Exchange Service (DAAD) and Alexander von Humboldt Foundation have further strengthened bilateral ties and significantly influenced the Indian academic landscape, through establishing long term research networks and building skilled human resources.

Such initiatives and efforts have continued emphasising on this significant long-standing bilateral partnership marked by shared goals and values, and mutual trust. In February 2023, the Chancellor of the Federal Republic of Germany, H.E. Mr Olaf Scholz made his first visit to India. Further, the meeting signified shared aims including reformed multilateral institutions, and towards rules-based international order and multilateralism. The [discussions](#) focused on clean energy and technology to name a few.

Subsequently, the Chancellor attended the G20 Leaders' Summit in September 2023 in New Delhi. Building on these, during 24-25 October 2024, Scholz made his third visit to India to strengthen strategic ties between Germany and India. During the visit, Prime Minister Narendra Modi and Federal Chancellor co-chaired 7th India-Germany Inter-Governmental Con-

sultations in New Delhi. The delegation included Ministers and senior officials from both sides. The role of engaging several stakeholders to advance the Indo-German strategic partnership was highlighted.

Development cooperation has been seen as a key feature of partnership, with Germany being India's second largest development cooperation partner. Further, the multifaceted partnership between the two countries aims to focus on several areas including science, technology, innovation, emerging technologies, biodiversity, climate change, etc. further adding to the efforts undertaken previously like the launch of "India-Germany Vision to Enhance Cooperation in Innovation and Technology" in December 2022. This year also marks the 50 years of institutionalisation of Indo-German cooperation in Science & Technology, research and innovation which was marked by the signing of the [Inter – Governmental Agreement on Cooperation in Scientific Research and Technological Development](#).

In this context, three MoUs on science, technology and research were signed to boost innovation and solutions to global problems. The MoUs focused on augmenting innovation and incubation ecosystems in emerging fields like artificial intelligence, semiconductors, biotechnology, renewable energy, carbon capture, green hydrogen, and research in photon science, material science, biology and nanotechnology, etc. Space and space technologies was also identified as an important area of cooperation. The role of Indo-German Science and Technology Centre bilateral industry-academia strategic research and development partnerships was recognised. India's expertise in Digital

Public Infrastructure and its IT industry was viewed as strengths to drive digital transformation and innovation for both countries. Recognising the significance of emerging and critical technologies in sustainable development, the discussions also focused on leveraging AI, IoT for achieving Sustainable Development Goals as well for disaster risk resilience. Thus, the recent dialogue can be viewed as a forward step towards further strengthening the long standing S&T partnership between India and Germany. Given the growing importance of emerging technologies, the discussions focused on collaboration in key technologies and digital platforms and leveraging these for tackling socio-economic issues. The joint statement also underlined the need for an inclusive and balanced governance of AI. Further, discussions focused on issues of sustainability and green innovation.

The partnership between the two countries is based on both countries' strengths in S&T and the commitment to leverage innovation for tackling contemporary challenges. The bilateral cooperation is significant not just for enhancing bilateral ties between the countries but also to position India and Germany in promoting and advancing development and S&T cooperation, aligning with their goals to lead in science diplomacy. Thus, paving the future for global transition towards an inclusive digital and green transition. Several initiatives and efforts in this direction are underway. One such effort includes greater engagement across stakeholders, including think-tanks, foreign and security experts. In this context, India-Germany Track 1.5 Dialogue is [scheduled](#) in November 2024.

Newly Discovered Proteins Can Render Rare Earth Mining Greener

The challenge: It is extremely difficult to mine and refine Rare Earth Elements (REE) which are used in crafting critical components used in applications ranging from batteries, semiconductors and renewable energy technologies. These processes often yield toxic waste.

The solution: Researchers at the Penn State University discovered two proteins in the bacterium *Methylobacterium extorquens* that can bind to REEs. While LanM binds to light rare earth elements, LanD interacts with heavy REEs.

Future prospects: LanD in particular has been noted to hold significant potential for processing light REEs better than the methods currently in use. It can be optimised and used at larger scales to enable greener rare earth mining.



New Hydrogel Can Reduce Complications From Cataract Surgery



The procedure: In a cataract surgery, the surgeon uses a clear hydrogel to protect the cornea and keep the eye inflated. Incomplete removal of the hydrogel can cause complications ranging from eye pain to long-term vision loss.

The new hydrogel: Developed by researchers at the Johns Hopkins University, the new hydrogel turns fluorescent green under blue light. This allows the surgeon to ensure that it is removed completely.

Future Prospects: The efficacy of the gel needs to be ascertained during human trials. Scaling up the gel for clinical use and determining the optimal concentrations of dye to be used in the hydrogel have also been identified as challenges to be overcome.

INSIGHTS & RESOURCES

G20 and UNESCO Publish New Report on Gender Equality in Science

The report titled “[Changing the Equation : Securing STEM futures for women](#)” was prepared by the UNESCO for the G20 Women’s Empowerment Working Group. The report provides key insights on the state of the prevailing gender gap in STEM. It entails key recommendations for G20 countries to increase women’s participation in STEM fields.

- According to the report, the gender gap in STEM originates at the school level. To remedy this, it strongly recommends fostering inclusivity through measures such as addressing gender stereotypes and promoting gender transformative teaching.
- The report notes the percentage of women working in STEM fields in G20 countries to have plateaued at 22 per cent as of 2021, compared to 19 per cent in 2005. This state of the affairs compromises the world’s collective ability to effectively manage challenges including climate change.

- On the pay gap between males and females in STEM professions, the report reveals that the average salary of women “is at most 88 per cent of that earned by men”. In four countries, women only earn less than 75 per cent of a comparable income drawn by men.
- The report concludes that “the share of women (in G20 countries) who study and graduate in STEM fields has not changed in the past 10 years”. In this regard, India and South Africa are the only countries to have achieved numerical parity, with women accounting for 45 per cent and 47 per cent STEM graduates respectively.

New Assessments on Climate Change and its Implications

This fortnight has witnessed the release of a few pertinent expert assessments on climate change covering aspects ranging from emissions reduction to implications on health and weather.

- The [Lancet Countdown’s Ninth Report on Health](#) captures imminent health threats emanating from the ongoing climate crisis. The report presents a comprehensive assessment of data on how effects of climate change are increasing heat-related deaths, food insecurity and spread of infectious diseases.
- The [Asia-Pacific Climate Report](#) published by the Asian Development Bank summarises how climate change impacts shall affect economic growth in the Asia-Pacific region. It notes that climate change could lead to a 17% GDP drop across the region by 2070 under a high-end emissions scenario, which could rise to 41% of GDP by the end of the century”.
- The annual [GreenHouse Gas Bulletin](#) from the World Meteorological Organization (WMO) points to GHG emissions surging to a new high during 2023. Among other reasons, the increase has been attributed to an increase in forest fires during late-2023. It also calls for an improved understanding of carbon-climate feedbacks.
- The UN Environment Program has released its annual report titled “[The Emissions Gap Report 2024: No more hot air ... please!](#)”. The report prepared by expert scientists looks into how much emissions countries should target to reduce within their Nationally Determined Contributions which are to be submitted to the UNFCCC in early-2025.
- The International Atomic Energy Agency has published a report on “[Climate Change and Nuclear Energy](#)”. According to the report, the global investment in nuclear energy must increase to 125 billion USD annually.....to meet the IAEA’s high case projection for nuclear capacity in 2050. The report also focuses on financing.

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