

# Science Diplomacy Alert

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

## G20 Rio Declaration: Navigating Global Challenges Together

Focus



The G20 Rio Declaration emphasises upon harnessing the potential emerging technologies to reduce inequalities and facilitate digital inclusion. The Declaration has also highlighted expansion of Digital Public Infrastructure to enhance digital access, reduce inequalities and support innovation. Sneha Sinha writes.

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## SCIENCE POLICY & DIPLOMACY

### International S&T Cooperation



Communications, Space and Technology Commission would focus on sustainable use of orbital resources and integration of advanced data analytics for space data analysis.

#### China Ships Modules for International Thermonuclear Experimental Reactor

The shipment consists of forty eight blanket shield block modules which are employed in neutron shielding and heat conduction management within the tokamak fusion reactor.

#### Vietnam, Canada Sign MoU for S&T Cooperation

The MoU lays down the terms for establishing a Canada-Vietnam Innovation Centre which shall facilitate bilateral cooperation in innovation and entrepreneurship.

#### China, South Africa, African Union and Brazil Launch New S&T Initiative

The Initiative on International Cooperation in Open Science shall work towards creating “an open, fair, impartial and nondiscriminatory environment for global S&T development”.

#### Saudi Arabia, Brazil to Initiate Space Sustainability Study

The study led by Brazil’s National Telecommunications Agency and the Saudi Communications, Space and Technology Commission would focus on sustainable use of orbital resources and integration of advanced data analytics for space data analysis.

### Emerging Tech & Governance



#### Semiconductor Packaging: CHIPS for America Announces 300 billion Dollars

The funds will be invested in semiconductor packaging facilities in the states of Georgia, California and Arizona to work on advanced substrates. In semiconductor manufacturing these allow for a seamless assembly of multiple chips.

#### G20 Troika Issue Joint Communique on DPI, AI and Data Governance

The declaration issued by India, Brazil and South Africa, underlined the importance of inclusive digital transformation in achieving SDGs, common design principles for technology systems and equitable data governance.

#### Emerging Tech Governance Highlighted in G20 Rio Declaration

Aspects including open innovation, international cooperation in bioeconomy and ethical and responsible use of AI find mention within the 22-page declaration.

#### Japan Plans Special Budget for Semiconductors

The government reportedly has allocated 1.5 trillion yen for R&D and an additional 471.4 billion yen for supporting domestic advanced chip production.

## Events & Meetings



### **UNESCO, MeitY Organise Event on AI Ethics in New Delhi**

The event held on 14 November 2024 brought together diverse stakeholders to discuss “Safety and Ethics in AI. The event was organised under the AI Readiness Methodology Initiative through which both entities aim to arrive at “crafting an India-specific AI policy report”.

### **World Internet Conference Held in China**

Held during 19-20 November, 2024 in Wuzhen, the WIC was organised around the theme "Embracing a People-centered and AI-for-good Digital Future – Building a Community with a Shared Future in Cyberspace."

### **NATO Holds Seminar on the Security Implications of Climate Change**

The seminar held during 19-21 November 2024 in Rome, Italy, was organised under NATO’s Science for Peace and Security Program. The discussions focused on climate change impacts in the Euro-Mediterranean Region.

### **29th UN Climate Change Conference Held in Baku**

Held during 11-22 November, over 200 state-parties to the UNFCCC arrived at an agreement to annually prove 300 billion dollars to developing countries by 2035.

## INDIAN SCIENCE NEWS

### **Centre for Human-Centric AI Launched at IIT Madras**

Launched by the IIT Madras Pravartak Technology Foundation, the centre would focus on activities including “technology development, aiding entrepreneurship development, human resource development, and international collaborations”.

### **SpaceX Launches India’s GSAT-N2 Satellite**

The communication satellite launched from Florida “is expected to play a pivotal role in meeting the growing demand for broadband services and in-flight connectivity across India”.

### **India, Japan Discuss Means to Improve High-Tech Partnership**

Discussions held during India’s Foreign Secretary, Vikram Misri’s Tokyo visit reportedly discussed tech partnership models that can help improve Japanese firms’ access to Indian markets.

### **GoI Launches One Nation One Subscription Project**

Under the project, the government has allocated 6000 crore rupees to help scholars in public-funded institutions access expensive journals by obliging them to provide a single fee.

### **India Australia Sign Agreement on Space Cooperation**

The Implementation Agreement signed between ISRO and the Australian Space Agency enables cooperation for crew and crew module recovery for India’s upcoming Gaganyaan human spaceflight mission.

### **India, Guyana Sign Key Agreements on S&T Cooperation**

The two countries signed health, hydrocarbons and agriculture and for deploying the Unified Payments Interface in Guyana.

### **India, EU Finalise Work Plan for Clean Energy Cooperation**

The work plan adopted for implementation during the third phase of the India-EU Clean Energy and Climate Partnership 2025-2028 has identified priority areas including green hydrogen, offshore wind energy, energy efficiency and climate diplomacy.

### **Karnataka Releases Draft Space Policy**

The policy outlines four areas: skill development, incubation, innovation, and research and intends to support Micro, Small and Medium Enterprises.

### **New Indigenous Antibiotic for Drug-resistant Pneumonia Launched**

The drug developed by Wockhardt Ltd. has been called Nafithromycin (trade name Miqnaf). It would help fight drug-resistant community-acquired bacterial pneumonia (CABP) in adults.

## G20 Rio Declaration: The Path Towards Navigating Global Challenges Together

Sneha Sinha,  
Consultant, RIS

The G20 Brazil Leaders' Summit held on November 19 2024 in Rio de Janeiro marked the end of the G20 Presidency of Brazil, and the passing of the presidency to South Africa. The [Declaration](#) comes at a time of ongoing conflicts and wars which has caused immense human suffering and catastrophe. Given the geopolitical, socio-economic, climate and environment related challenges and crises, the Declaration focused on sustainable development, social and digital inclusion, climate action, addressing global inequalities and reform of global governance institutions.

The key motto 'Building a just world and a sustainable planet' was highlighted in the Declaration. Placing inequality at the core of the agenda, the Declaration called for urgent action, which is socially just, environmentally sustainable and economically sound, with respect to Sustainable Development. Further, it stressed the need for social inclusion and importance of food security and nutrition. Additionally, another key feature of the Declaration was its emphasis on harnessing the potential of digital and emerging technologies to reduce inequalities, recognising the significance of digital inclusion. Building on India's G20 Presidency, Brazil prioritised expansion of Digital Public Infrastructure to enhance digital access, reduce inequalities and support innovation. Mainstreaming gender equality and decent work can also be seen a key achieve of the Brazil presidency. The declaration additionally, reaffirmed commitment towards the Paris Agreement and underlined the importance of climate finance, sustainable and just ener-

gy transition, biodiversity conservation, climate-resilient infrastructure, etc. It also underscored the need for increased international cooperation for scaling up climate finance and investment for developing countries, further building on the New Delhi Leaders' Declaration. The Brazil Presidency also recognised the significance of sustainable production and consumption patterns, endorsing the idea of Lifestyles for Sustainable Development (LiFE), which also found space in the India's G20 Leaders' Declaration.

The Declaration also called for global economic stability and advocated for reforming international financial institutions to further strengthen their support to emerging economies, and measures to address global debt vulnerabilities in low income countries. It also called for action towards reforming global governance, especially the United Nations. Thus, advocating for an inclusive global governance and multilateralism which is more poised to achieve common goals, tackle common challenges especially from a Global South perspective. There was also emphasis on equitable access to emerging technologies and its responsible governance, with special mention of the Artificial Intelligence.

The Brazilian Presidency highlighted the need for coordinated action to tackle climate change, and move towards just energy transition. It also underlined the need for comprehensive reform in global governance institutions and promoting ethical and equitable development and governance of emerging

technologies like artificial intelligence.

As the G20 presidency moves to South Africa, it will be crucial to see if the focus on implementation gains further momentum, and moves towards addressing issues of inequalities and access faced by the Global South. The developing countries' troika has strongly put forth these issues in G20, and it would be important for South Africa to further consolidate the position of the Global South and hand-over the Presidency to the United States in 2025. The theme "solidarity, equality, and sustainability" focusing on SDGs, adopted by South Africa is set to further international cooperation to ensure equitable access and sustainable development for all.



## Leaftronics Can Combat the Growing E-Waste Problem

**The problem:** Printed Circuit Boards used in electronics are made from glass fiber-reinforced epoxy resin, a material which is neither recyclable, nor biodegradable. Use of such materials have resulted in over 60 million tons of electronic waste being generated annually.

**Leaftronics:** The innovative approach looks to design electronics based on the natural structure of leaves. This results in “biodegradable electronic substrates with enhanced properties and offers a sustainable, efficient, and scalable solution to the global-waste problem”.

**Possibilities:** The realisation of leaftronics would allow high-performance electronic devices to be sustainable and could mark a major step towards achieving a circular electronics economy.



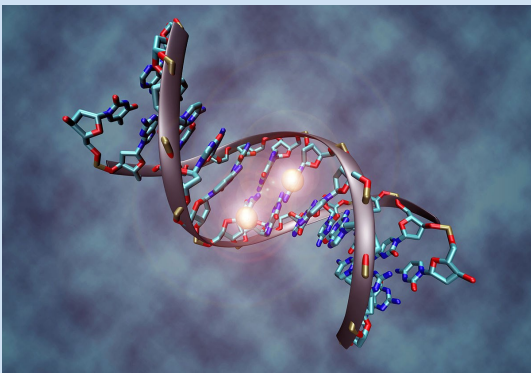
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## Enhanced Understanding on DNA Enzyme Can Help Create Next-Gen Antibiotics

**DNA Gyrase:** The researchers from Durham University, Jagiellonian University (Poland) and the John Innes Center used a cryo-electron microscope to study the DNA gyrase, a vital bacterial enzyme and key antibiotic target. Only present in bacteria, it plays a crucial role in supercoiling DNA a key process in ensuring bacterial survival.

**Details Discovered:** The DNA gyrase operates akin to a winding elastic band which twists or “supercoils” to stabilise bacterial DNA. The enzyme protects the DNA in a figure of eight loop, proceeding to reseal the DNA after breaking and passing DNA strands through them.

**Possibilities:** The deeper understanding can allow researchers to design new antibiotics that can precisely target and block gyrase. This could lead to next generation antibiotics which can efficiently stop bacterial infections



## INSIGHTS & RESOURCES

### Participatory AI: Study Details Novel Approach to AI Governance

A new study published by the IIT Madras in collaboration with the Vidhi Centre for Legal Policy and Research and the Centre for Responsible AI (CeRAI) under the Wadhvani School of Data Science has highlighted the Participatory approach to AI governance (PAI). Key insights drawn from the [first](#) and [second](#) part of the study have been summarised below:

- The paper understands PAI as “centred around users, non-user affected persons, and other stakeholders working with technical designers and developers in the design process”. It essentially makes room for the public to become an important stakeholder in AI governance.
- As an approach, participatory design originates in Scandinavian countries which sought to improve worker’s involvement in the digitisation and computerisation processes implemented during the 1970s and the 1980s.
- Adoption of PAI holds several benefits including citizen empowerment and improves trust. It further allows for issues such as bias to be addressed at the root and facilitates feedback mechanisms that can help with course correction.

- The study delves into various participatory decision making models which can accommodate relevant stakeholders' involvement in shaping AI systems' design, implementation, and oversight through four case studies on facial recognition and healthcare.
- The case study on use of Facial Recognition Technologies identifies lawmakers, civil society, private players and representatives from the affected population as key stakeholders. The ways in which they can participate at various levels ranging from decisions on the data used in training models to distribution of CCTVs are also discussed.
- The case study on healthcare identifies doctors, patients, administrators and developers as key stakeholders to be involved based on whether AI is being employed in an administrative or diagnostic role. PAI in a healthcare scenario further emphasises upon representation as a means of mitigating bias and reducing risks.

## Key Science Diplomacy Success Stories Featured in New UNCTAD Publication

The UN Commission on Trade and Development has published a new paper on Global Cooperation in Science, Technology and Innovation for Development. The paper explores ways to improve STI cooperation at the global and regional levels. Key highlights have been summarised below:

- The paper utilises the National Innovation Systems (NIS) approach which consists of four parameters: **Strategic Planning, STI enablers, R&D and Innovation** for assessing global S&T collaboration. It presents NIS as the ideal approach for conceptualising complex factors that shape trends in innovation.
- The paper alludes to successful models of science diplomacy as references for facilitating inclusive international innovation while helping countries address their unique needs. It underlines the potential for S&T collaboration under a regional framework such as the ASEAN for addressing regional level challenges.
- Insights drawn from successful examples of collaborative research such as the European Organization for Nuclear Research (CERN) which works on a partnership-oriented approach have also been highlighted.
- The Consultative Group on International Agricultural Research (CGIAR) has been termed “a useful reference on how to work with the Global South to co-identify, co-create and co-deliver solutions to global food security priority challenges”.
- The paper notes that international S&T collaboration could benefit from aligning standards and regulations, IPR regimes and international trade rules. The International Telecommunication Union's efforts with respect to harmonising standards and ensuring telecommunication compatibility has been presented as a reference point.
- Assessing key research international collaborations, the paper highlights existing collaborations which focus on cooperative scientific research, data sharing and creation of public goods, while presenting key insights drawn from the functioning of the International Science Council and the Global Biodiversity Information Facility.
- It entails key recommendations including the establishment of a multilateral technology foresight and assessment mechanism, strengthening research networks and fostering investments in STI and public private partnerships.

We welcome your comments and valuable suggestions. Please write to us for receiving publications, updates

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