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NEWS ALERT

Forum for Indian Science Diplomacy

RIS Science Diplomacy News Alert is your fortnightly update on Indian and global developments in scientific research, technological advancements, science diplomacy, policy and governance. The archives of this news alert are available at <http://fisd.in>. Please email your valuable feedback and comments to science.diplomacy@ris.org.in

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GLOBAL

[Screening Technique to Accelerate and Improve mRNA Therapies](#)

A team of researchers at the Georgia Institute of Technology and Emory University's School of Medicine have developed a system to make pre-clinical nanoparticle studies more predictive. Their multiomic nanoparticle delivery system is called single-cell nanoparticle targeting-sequencing, or SENT-seq which could represent an important advance. The SENT-seq technique allowed the team to identify cell subtypes that demonstrate particularly high or low nanoparticle uptake, and the genes associated with those subtypes. So, in addition to testing the efficacy of a drug and how certain cell subtypes react to nanoparticles, they can identify which genes are involved in the successful uptake of LNPs. The data suggests that these different cell subsets have distinct responses to nanoparticles that influence how well an mRNA therapy works. The ability to simultaneously read out high-throughput nanoparticle delivery and the cellular response to nanoparticles can lead to better mRNA therapies.

[Smartphone-based AI test for Early-stage Kidney Disease](#)

FDA has approved a test for early detection of kidney disease into the home, requiring only a patient's existing smartphone and an artificial intelligence-powered app to run. The Minuteful Kidney test was developed by Healthy.io and uses a standard albumin-to-creatinine ratio (ACR) test, which is typically used as one of the first indicators of kidney damage. The test kit is sent by post, and the Minuteful Kidney app guides patients through

the process of collecting a urine sample, swabbing it with a dipstick and placing the sample strip on the designated colour board. From there, the patient takes a photo of the strip on their phone's camera, and the app does the rest. It uses colorimetric analysis, computer vision and artificial intelligence technologies to analyze the sample and return immediate results, automatically providing individuals and their healthcare providers with an assessment of albumin levels. The test can help every person at risk dramatically decrease their probability of undergoing dialysis. The test has been adopted by the U.K.'s National Health Service and helped more than 540,000 NHS patients and saved the healthcare system around 2.5 million hours of dialysis per year. It has also been used at the International Space Station.

Lead-in-Water Causes Adverse Fetal Health Outcomes

Lehigh University and Bentley University health economics researchers have published the first study to confirm a causal relationship between lead-in-water and adverse fetal health outcomes. The researchers used data on the exact home addresses of pregnant women living in the City of Newark together with information on the spatial boundary separating areas within the city serviced by two water treatment plants. Their study is based on an external change in the water's pH level that caused lead to leach into the drinking water of one plant's service area, but not the other's, to identify the causal effect of prenatal lead exposure on fetal health. Among the findings: prenatal lead exposure increased the chance of low-birth-weight by 18 percent and increased the probability of preterm birth by 19 percent. According to the American Academy of Pediatrics, there is no safe threshold for lead exposure that has been identified for children. Lead collects over time in the human body through repeated exposure and is stored in the bones alongside calcium and can be mobilized during pregnancy into the fetus, and lead in a mother's blood can also cross the placenta, exposing the fetus to lead poisoning. Prenatal lead exposure has been associated with impaired neural development putting children at risk for cognitive impairment later.

Microparticles Could be Used to Deliver 'Self-Boosting' Vaccines

MIT researchers have developed microparticles that can be tuned to deliver their payload at different time points, which could be used to create "self-boosting" vaccines. Using these particles, which resemble tiny coffee cups sealed with a lid, researchers could design vaccines that would need to be given just once, and would then "self-boost" at a specified point in the future. The particles can remain under the skin until the vaccine is released and then break down, just like resorbable sutures. This type of vaccine delivery could be particularly useful for administering childhood vaccinations in regions where people don't have frequent access to medical care.

Step Forward in Fabricating Artificial Heart

Bioengineers from Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) have developed the first biohybrid model of human ventricles with helically aligned beating cardiac cells, and have shown that muscle alignment does, in fact, dramatically

increases how much blood the ventricle can pump with each contraction. This advancement was made possible using a new method of additive textile manufacturing, Focused Rotary Jet Spinning (FRJS), which enabled the high-throughput fabrication of helically aligned fibers with diameters ranging from several micrometers to hundreds of nanometers. Developed at SEAS by Kit Parker's Disease Biophysics Group, FRJS fibers direct cell alignment, allowing for the formation of controlled tissue engineered structures. The researchers compared the ventricle deformation, speed of electrical signalling and ejection fraction between ventricles made from helical aligned fibers and those made from circumferentially aligned fibers. They found on every front, the helically aligned tissue outperformed the circumferentially aligned tissue. The team also demonstrated that the process can be scaled up to the size of an actual human heart and even larger, to the size of a Minke whale heart. Besides biofabrication, the team also explores other applications for their FRJS platform, such as food packaging.

COVID-19

COVID-19 (WORLD)

Nanoparticle Vaccine Protects Against a Spectrum of COVID-19 Variants

Researchers at the California Institute of Technology discovered a new type of vaccine that provides protection against a variety of SARS-like betacoronaviruses, including SARS-CoV-2 variants, in mice and monkeys. The vaccine works by presenting the immune system with pieces of the spike proteins from SARS-CoV-2 and seven other SARS-like beta coronaviruses, attached to a protein nanoparticle structure, to induce the production of a broad spectrum of cross-reactive antibodies. When vaccinated with this so-called mosaic nanoparticle, animal models were protected from an additional coronavirus, SARS-CoV, that was not one of the eight represented on the nanoparticle vaccine. Such broad protection is needed because it is difficult to predict which virus or viruses among the vast numbers in animals will evolve in the future to infect humans to cause another epidemic or pandemic. The effort is to make an all-in-one vaccine protective against SARS-like betacoronaviruses regardless of which animal viruses might evolve to allow human infection and spread. The vaccine would also protect against current and future SARS-CoV-2 variants without the need for updating.

Inhalable COVID-19 Vaccine Shows Promise in Rodent Model

US Researchers have created an inhalable COVID-19 vaccine that is shelf stable at room temperature for up to three months, targets the lungs specifically and effectively, and allows for self-administration via an inhaler. The researchers also found that the delivery mechanism for this vaccine - a lung-derived exosome called LSC-Exo - is more effective at evading the lung's mucosal lining than the lipid-based nanoparticles currently in use, and can be used effectively with protein-based vaccines. The vaccine uses exosomes (Exo) secreted from lung spheroid cells (LSCs) which are more effective at delivering mRNA and protein cargo to bronchioles and deep lung tissue than synthetic liposome particles. Next, the researchers created and tested an inhalable, protein-based, virus-like particle (VLP)

vaccine by decorating the exterior of LSC-Exo with a portion of the spike protein from the SARS-CoV-2 virus (the Receptor Binding Domain or RBD) . In rodent models, the RBD-decorated LSC-Exo vaccine (RBD-Exo) elicited production of antibodies specific to the RBD, and protected the rodents, after two vaccine doses, from infection with live SARS-CoV-2. Additionally, the RBD-Exo vaccine remained stable at room temperature for three months. There are still challenges associated with large-scale production and purification of the exosomes, but this is a promising vaccine worthy of further research and development. A patent right has been exclusively licensed to Xsome Biotech, an NC State startup company.

COVID-19 (INDIA)

[New Omicron Sub-variant BA. 2.75 Detected in India](#)

Director-General of the World Health Organization (WHO) has said that a new sub-variant of the highly transmissible Omicron variant of the COVID-19 has now been detected in India. The variant, BA.2.75 is present in at least 10 countries. The global health body assured that it is closely monitoring the strain. It is yet to be determined if the new variant is more clinically severe than its predecessors. He further informed that this surge in the global Covid tally is being caused by the sub-variants of the Omicron strain. The BA.4 and BA.5 variants are driving waves in Europe and the United States. WHO said that is still 'too early to know' if this sub-variant has properties of additional immune evasion or indeed of being more clinically severe.

[Novel Mechanism to Inactivate SARS-CoV-2](#)

Researchers from IISc have reported the design of a new class of synthetic peptides that can not only block the entry of SARS-CoV-2 virus entry into cells but also clump the virions (virus particles) together, reducing their ability to infect. This novel approach provides an alternative mechanism to render viruses like SARS-CoV-2 inactive, promising a new class of peptides as antivirals. Protein-protein interaction can be hampered by synthetic peptide that mimics, competes with, and prevents the binding. The team exploited this approach to design peptides that can bind to and block the spike protein on the surface of SARS-CoV-2 virus. This binding was further characterised extensively by cryo-electron microscopy (cryo-EM) and other biophysical methods. The designed peptides are helical, hairpin-shaped, each capable of pairing up with another of its kind, forming what is known as a dimer. Each dimeric 'bundle' presents two 'faces' to interact with two target molecules. The team decided to test a peptide called SIH-5 to target the interaction between the Spike (S) protein of SARS-CoV-2 and ACE2 protein, the SARS-CoV-2 receptor in human cells. The S protein is a trimer – a complex of three identical polypeptides. Each polypeptide contains a Receptor Binding Domain (RBD) that binds to the ACE2 receptor on the host cell surface. This interaction facilitates viral entry into the cell. The SIH-5 peptide was designed to block the binding of the RBD to human ACE2. When a SIH-5 dimer encountered an S protein, one of its faces bound tightly to one of the three RBDs on the S protein trimer, and the other face bound to an RBD from a different S protein. This 'cross-linking' allowed the SIH-5 to block both S proteins at the same time. The researchers showed that SIH-5 inactivated the

viruses efficiently by cross-linking the spike proteins from different virus particles. Tests of the peptide for toxicity in mammalian cells in the lab showed it to be safe. When hamsters were dosed with the peptide and subsequently exposed to a high dose of SARS-CoV-2, they showed decreased viral load as well as much less cell damage in the lungs compared to hamsters exposed only to the virus, demonstrating the promise of this class of peptides as antivirals. See <https://www.nature.com/articles/s41589-022-01060-0>.

INDIA–SCIENCE & TECHNOLOGY

India Calls for StarUps in ‘Carbon Neutral’ Building Construction

Union Minister of State (I/C) Science & Technology, Dr Jitendra Singh called for promoting StarUps in ‘carbon neutral’ building construction and linking them with industry to help India achieve 500GW non-fossil energy capacity by 2030, as promised by Prime Minister Narendra Modi at the COP26 meeting. Dr. Jitendra Singh urged real estate developers, builders, industry, and academia to find innovative, affordable solutions that adapt to India’s climatic zones and unique needs, address extreme weather events, and reduce risk to lives and property. The Minister reiterated that PM Modi has extended full-fledged support to StartUps and even called upon them to tackle challenges facing the country including the climate challenge.

New Material Converts Infrared Light to Renewable Energy

Researchers from Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Centre for Nano Science and Engineering, Indian Institute of Science and the University of Sydney have discovered a novel material that can emit, detect and modulate infrared light with high efficiency, making it useful for solar and thermal energy harvesting as well as for optical communication devices. The material is called single-crystalline scandium nitride (ScN) that can emit, detect, and modulate infrared light with high efficiency. They used a scientific phenomenon called 'polariton excitations' that occur in tailored materials when light couples with other phenomena. The discovery has significant potential in the strategic arena of defence and space as well as the power sector.

Efficient and Affordable Smart Controllers for E-Rickshaws

A team of researchers at IIT Kharagpur has developed an indigenous, efficient affordable smart controller for e-Rickshaws. The smart controller is part of the Ministry of Electronics and Information Technology’s (MeitY) programme for indigenous development of electric vehicle subsystems. Initially, technology development for 2 and 3 wheelers has been taken up as it contributes to more than 80 per cent of the vehicles on the roads. The new smart controller also has a brushless DC Motor (BLDC) - an electric motor powered by a direct current voltage supply and commutated electronically instead of by brushes like in conventional DC motors. The technology was transferred to Brushless Motor India for commercial production.

AI Tool to Assist in Developing Individual-Specific Cancer Treatment

Scientists at IIT Madras have created a technology that can pinpoint an individual's cancer-causing genes. The Artificial Intelligence-based technology, will assist clinicians in developing individual-specific treatment plans for patients based on their DNA profiles. The tool is based on a machine learning model that divides genes into tumour suppressors, or genes that prevent the development of cancer, cancer causing oncogenes or neutral genes. The model analyses information such as the frequency with which a gene mutates, its characteristics, the types of mutations, and the quantity of detrimental mutations to find the gene that causes cancer in a person, essentially to find uncommon genes that cause cancer.

Turning Agricultural Waste into Industrial Enzymes

Researchers of Indian Institute of Technology-Madras (IIT-M) have identified a bacterium that can turn agricultural waste into industrial enzymes through a cost-effective and environment-friendly process using a bacteria called *Bacillus sp PM06*. Wheat bran was found to be the most effective substrate followed by sago waste and rice bran. The most challenging aspect of bioconversion is the development of a one-step process which includes pre-treatment, enzyme hydrolysis and microbial fermentation thus minimizing environmental impact. The research is unique because it takes a sustainable and environmentally friendly approach, producing renewable biofuels. *Bacillus sp PM06* was isolated from sugarcane waste press mud.

New Technique to Detect Malware on Mobile Phones

Scientists at the Defence Research and Development Organisation (DRDO) have proposed a new technique to detect malicious applications in mobile phones using a novel network traffic analysis-based framework that exploits cellular traffic features to detect malware. The robustness of the suggested framework, when evaluated on the standard datasets, outperforms contemporary techniques to achieve an average accuracy of 98.74 per cent. The framework conceived by the researchers consists of four blocks called traffic feature fusion, classifier score-fusion, decision criteria and reference apps update to detect malicious applications. Transmission Control Protocol (TCP), which is impervious to encrypted traffic unlike the Hypertext Transfer Protocol (HTTP), was used.

3-D print Engines for Orbital Rockets

An Indian start-up, that is seeking to build and launch its own rockets from India and abroad, has opened its first factory meant to 3-D print engines for their orbital launch vehicles. This facility of 'Agnikul Cosmos', Chennai, inaugurated recently houses a 400mm x 400mm x 400mm metal 3D-printer and a host of other machines that will enable end-to-end manufacturing of a rocket engine under one roof. The factory could produce 2 rocket engines per week. It will be building 'Agnibaan', a two-stage launch vehicle that is capable of taking payloads of 100 kg to orbits around 700 km high. In 2021, they successfully test fired 'Agnilet' a single-piece 3D printed engine, that was fully designed and manufactured in India. Powered by engines that use a combination of liquid oxygen and kerosene as fuel, the

rocket is configurable by the customer and the launch requirement will determine the number of engines used in the first stage of the rocket. Prior to an actual orbital launch, the start-up would have to perform multiple tests of their rocket stages, propulsion systems, structures, subsystems, etc., and qualify them. The start-up has raised a total funding of \$15 million.

[Indigenous Technology to Produce Hydrogen from Biomass](#)

A team of researchers at the Indian Institute of Science (IISc) has developed a technology to produce green hydrogen from biomass. India uses close to 5 million tonnes of hydrogen annually. The two-step process developed by the researchers involves conversion of biomass into syngas, a hydrogen-rich fuel gas mixture, using oxygen and steam, and generation of pure hydrogen from this mixture using a low-pressure gas separation unit. The technology can produce 100 g of hydrogen from 1 kg of biomass though the source consists of only 60 g of hydrogen. This is because in the process, steam, which also contains hydrogen, participates in the reactions. The Indian Oil Corporation Limited also helped the team in scaling up the technology to produce 0.25 tonnes of hydrogen per day for use in hydrogen-powered fuel cell buses.

IN BRIEF

[Smart Solar Window Based on Thermochromic Laminate](#)

A research group led by the Netherlands Organisation for Applied Scientific Research (TNO) has developed a new solar control window technology based on thermochromic smart glass. The glass can change its infrared transmittance when hit by incident solar radiation as the temperature increases. It does not become visibly darker, as the effect only happens in the infrared part of the solar spectrum, so it becomes less transparent for solar heat. The research group used vanadium dioxide (VO₂) as a functional material in the pigmented polymer film coating, as it changes its crystal structure and therefore its optical properties at high temperatures. The thermochromic coating was combined with a standard low-emission (low-E) coated glass. The temperature at which the material switches can be adjusted via metal ion doping and can therefore be tuned for optimum energy savings. The researchers claim the smart window can ensure energy savings of up to 8 percent in buildings, while in apartments with large window areas even higher energy savings of up to 30 percent can be reached. The thermochromic coating adds about \$6 per square meter in cost savings to standard low-E glass.

[Developing a Universal Flu Vaccine](#)

An experimental vaccine from the NIH's National Institute of Allergy and Infectious Diseases that protects against strains of influenza A virus in animal models is now moving into human studies. The shot has been shown to protect mice and ferrets from four strains of the influenza A virus, including potentially fatal strains from birds and pigs. This flu vaccine consists of inactivated whole-virus avian subtypes (H1N9, H3N8, H5N1 and H7N3) of influenza A, which makes up most flu cases and also includes multiple viral proteins that

trigger widely protective B- and T-cell responses. The vaccine, which can be administered via injection or intranasally, protected mice and ferrets from various human, pig and bird flu strains. Compared to the control animals, vaccinated animals showed significant reductions in viral titers, lung pathology and host inflammatory responses. The vaccine can be produced by current methods of production for seasonal flu vaccines, making manufacturing the candidate relatively simple and inexpensive. Additionally, no toxicity was observed in mice, ferrets or rabbits receiving the vaccine. A human initial phase 1 safety and immunogenicity study has been started.

Faster MRI Scanning Powered by AI

Philips has secured an FDA clearance for artificial-intelligence-powered software designed to speed up the MRI scanning process while still delivering high-resolution images. Dubbed SmartScan, Philips said the program can help complete scans up to three times faster with “virtually no loss in image quality,” allowing radiology departments to see more patients with the same hardware in about 97 percent of cases. That covers a wide range of clinical protocols including the use of injected contrast agents as well as diffusion weighted imaging and quantitative scans of the brain, liver, heart and musculoskeletal system. It is also compatible with implants and can capture organs in motion or even a restless patient. In addition, the AI approach helps remove noise from the source MR signal and can be used to increase image resolution by up to 65 percent. Faster scans will also help hospitals handle increasing caseloads, as more patients require precision diagnostics.

RESOURCES & EVENTS

Digital India Week 2022

The Digital India Week 2022 with the theme of ‘Catalyzing New India’s Techade’ was inaugurated by Prime Minister, Shri Narendra Modi in Gandhinagar on July 5. PM Modi lauded various digital initiatives aimed at enhancing the accessibility of technology, streamlining service delivery to ensure ease of living, and giving a boost to startups. He added that ‘Digital India has empowered people by making technology more accessible.’ Through Digital India, India has exemplified how revolutionary the correct use of technology is for the growth of humanity. India is working on the target of taking electronics manufacturing to more than \$ 300 billion in the next three-four years.

Nuclear War and Effects on Earth Studied

A new study led by Louisiana State University researchers has used multiple computer simulations to study the impacts of regional and larger scale nuclear warfare on the Earth's systems. Nine nations currently control more than 13,000 nuclear weapons in the world. In all of the researchers' simulated scenarios, nuclear firestorms would release soot and smoke into the upper atmosphere that would block out the Sun resulting in crop failure around the world. In the first month following nuclear detonation, average global temperatures would plunge by about 7 degrees Celsius, a larger temperature change than in the last Ice Age.

Ocean temperatures would drop quickly and would not return to their pre-war state even after the smoke clears. Sea ice expansion would block major ports and block shipping across the Northern Hemisphere. The sudden drop in light and ocean temperatures would kill the marine algae, which is the foundation of the marine food web, creating a famine in the ocean. This would halt most fishing and aquaculture. The researchers simulated what would happen to the Earth's systems if the U.S. and Russia used 4,400 100-kiloton nuclear weapons. Ocean recovery is likely to take decades at the surface and hundreds of years at depth, while changes to Arctic sea ice will likely last thousands of years and effectively be a "Nuclear Little Ice Age."

Draft Bill on Regulation of Medical Devices

The Union Health ministry has released the new draft 'Drug, Medical Devices, and Cosmetics Bill-2022' that separately defines medical devices, makes provision for constitution of a separate expert group on medical devices, and calls for setting up of central and state medical device-testing laboratories on the lines of the network of drug-testing laboratories. The draft Bill also suggests that the Central government formulate rules for regulating online pharmacies. The government has sought comments, objections, and suggestions on the draft Bill over the next 45 days. The draft Bill has separate definition for medical devices that bring under its ambit diagnostic equipment, its software, implants, devices for assistance with disabilities, life support, instruments used for disinfection, and any reagents or kits. The previous 1940 Act regulated medical devices as one of the four categories of "drugs". The Bill provides for creation of a 'medical devices technical advisory board' and proposes medical device testing centres on the lines of drug laboratories in states and at the central level. The draft Bill also specifically states that the Central government must come up with rules to regulate online sale of drugs and for online pharmacies to operate "in accordance with a licence or permission issued".

James Webb Space Telescope Starts Working

The \$10 billion James Webb Space Telescope (also known as Webb or JWST), which launched in December 2021 has now started its scientific mission and is sending images. It is NASA's largest and most capable space science telescope. The telescope contains four different instruments that can combine to collect data in 17 different modes. Using these sophisticated sensors, Webb will be able to peer at some of the first stars and galaxies ever to form in the universe, in addition to studying objects here in our own solar system. NASA released the first science-quality images from the revolutionary telescope on July 12. The first year of science observations have already begun and already data of over 40 Terabytes has been taken for scientists for the first year. The data will be released to the principal investigators of programs in the next day or two, and some of it is public.

SDGs Report 2022 Indicates Reversal of Progress

The UN Department of Economic and Social Affairs (DESA) issued its annual Sustainable Development Goals Report, warning that "cascading and interlinked crises," dominated by COVID-19, climate change, and conflicts, have reversed years of progress in eradicating

poverty and hunger, improving health and education, and providing basic services, putting the 2030 Agenda for Sustainable Development “in grave danger.” Some of the report’s alarming findings include: (1) SDG 1: Between 657 and 676 million people are currently projected to live in extreme poverty in 2022, compared to the pre-pandemic projection of 581 million; (2) SDG 2: About one in ten people are suffering from hunger worldwide, with 161 million additional people having slid into chronic hunger in 2020 alone; (3) SDG 6: Meeting drinking water, sanitation, and hygiene targets by 2030 requires a fourfold increase in the pace of progress; (4) SDG 7: Progress on electrification has slowed, with 679 million projected to have no electricity access in 2030, based on current trends; (5) SDG 8: One in ten children are engaged in child labor worldwide – a total of 160 million in 2020; (6) SDG 14: In 2021, more than 17 million metric tons of plastic entered the ocean – a number projected to double or triple by 2040. In a forward to the report, UN Secretary-General António Guterres calls for “an urgent rescue effort for the SDGs” Read the report here <https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf>

SCIENCE POLICY AND DIPLOMACY

[Second UN Ocean Conference Concludes](#)

Initially planned for 2020 and postponed for two years due to the COVID-19 pandemic, the second UN Ocean Conference convened in Lisbon, Portugal, from 27 June to 1 July 2022, co-hosted by the Governments of Kenya and Portugal. Stating the need to act decisively and urgently to improve the health, productivity, sustainable use and resilience of the ocean and its ecosystems, the Conference stressed that innovative actions based on science, along with international cooperation, are essential for finding solutions. It expressed commitment to halting and reversing the decline in the health of the ocean’s ecosystems and biodiversity, and to protecting and restoring its resilience and ecological integrity in the Lisbon Declaration. The final UN Global Ocean Treaty negotiations are due in August 2022. Forty-nine governments, including the European Union and its 27 member states, have committed to finalizing an ambitious treaty in 2022. The Conference generated billions of dollars in voluntary commitments, with approximately 50 high-level pledges, which need to be translated into meaningful assistance. India committed to a Coastal Clean Seas Campaign and will work toward a ban on single use plastics. France and Costa Rica announced their offer to co-host the third UN Ocean Conference in 2025. For details see <https://enb.iisd.org/2022-un-ocean-conference-summary>

[Sustainable Use of Wild Species for World Food Needs](#)

An "Assessment Report on the Sustainable Use of Wild Species" highlights by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) points out that wild species of plants and animals, relied on by the world’s poorest for food, must be used more sustainably in order to achieve global development goals. Billions of people in developed and developing nations alike depend on wild flora and fauna for their daily food and energy needs, and often their livelihoods, but the accelerating global biodiversity crisis, which sees a million species of plants and animals facing extinction,

threatens these contributions to people. One in five people rely on wild plants, algae, and fungi for their food and income; 2.4 billion rely on fuel wood for cooking and about 90 per cent of the 120 million people working in capture fisheries are supported by small-scale fishing. The responsible use of these resources could make a “very significant contribution” to realising the UN’s Sustainable Development Goals. The report highlights how a number of other factors are putting pressure on wild species and the communities that use them, including land- and seascape-changes, climate change, pollution, and invasive alien species. The report also calls for action to stem illegal trade in wild species, which represents the third largest class of all illegal trade with estimated annual value of up to US\$199 billion. Timber and fish make up the largest share. The report contains input from 85 international experts from 33 countries, including researchers from the natural and social sciences and holders of indigenous and local knowledge, as well as 200 contributing authors. [https://ipbes.net/media_release/Sustainable Use Assessment Published](https://ipbes.net/media_release/Sustainable_Use_Assessment_Published)

RIS and GSEJ Invite Papers for Science Diplomacy Review Special Issue

The Science Diplomacy Review (SDR) is a peer-reviewed and open access journal published by the Forum for Indian Science Diplomacy (FISD) based at Research and Information System for Developing Countries (RIS), an autonomous independent policy research think tank with India’s Ministry of External Affairs. SDR’s special issue titled ‘*New Dimensions of Science Diplomacy for the Twenty-First Century*’ will be published in collaboration between RIS and the Centre for Global Science and Epistemic Justice (GSEJ) at the University of Kent, UK. We invite contributions that unpack the idea of ‘science diplomacy’ through examinations on past and emerging experiences. Authors may submit full length research articles (4,000-5,000 words) as well as shorter articles and commentaries (1,500-3,000 words). Papers that focus on non-state actors and/or from the Global South perspectives, and papers with novel research methods are particularly welcome. The last date for submission of the full paper is 2 August 2022. The details are available at <http://fisd.in>.

We welcome your comments and valuable suggestions. Please write to us for receiving publications, updates and notices regarding seminars, conferences etc.

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