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CONTENTS

National Research Foundation Bill, 2023 to go to Parliament
US Department of Energy releases plan for access to research

SCIENCE POLICY AND DIPLOMACY
PM Modi's visit to USA boosts technology cooperation
High Seas Treaty approved by Intergovernmental Conference
Bonn Climate Change Conference makes little progress
EU set to propose mass exit from Energy Charter Treaty

SCIENCE & TECHNOLOGY

GLOBAL

Solar-driven photoreactors to generate hydrogen on rooftops

A research team led by the Karlsruhe Institute of Technology (KIT) in Germany has developed panel-like photoreactors that use a water-splitting photocatalyst to produce hydrogen on rooftops or dedicated solar farms.The proposed systems mimic the photosynthesis process and use a photocatalyst to drive the required chemical reaction for the electrolysis. The photoreactors use commercially available potassium iron(III) oxalate as the photocatalytic system.The photoreactor is made of hundreds of parallel reaction channels, with each of them embedding a V-shaped concentrator and a tube-like cavity. The V-shaped concentrator harvests light from various incident directions and drives it into a tube-like, mirrored cavity, enclosing the reaction volume. The microstructured polymer panels are coated with aluminum for high reflectivity enabling optimal operating conditions and efficient light transport to the photocatalyst over the entire course of the day.The researchers believe that this system configuration may lead to the manufacturing of low-cost, high-efficiency in the near future. The material cost of the reactor system is roughly 22 $ m2. Further optimization of the photoreactor should address the manufacturing of the key components in polymers and the consideration of aspects such as aging of polymers and optical coatings, as well as challenges such as dust accumulation in the rather complicated surface of the photoreactor aperture.

New AI tool for detecting heart attacks

University of Pittsburgh researchers have developed a new machine learning model that uses electrocardiogram (ECG) readings to diagnose and classify heart attacks faster and more accurately than current approaches. Almost two-thirds of heart attacks are caused by severe blockage, but do not have the telltale ECG pattern. The new tool helps detect subtle clues in the ECG that are difficult for clinicians to spot and improves classification of patients with chest pain. The researchers compared their model to three gold standards for assessing cardiac events: experienced clinician interpretation of ECG, commercial ECG algorithms and the HEART score, which considers history at presentation — including pain and other symptoms — ECG interpretation, age, risk factors—such as smoking, diabetes, high cholesterol — and blood levels of a protein called troponin. The model outperformed all three, accurately reclassifying 1 in 3 patients with chest pain as low, intermediate or high risk. The algorithm will help providers identify people having a heart attack and those with reduced blood flow to the heart in a much more robust way compared with traditional ECG analysis. In the next phase of this research, the team is optimizing how the model will be deployed.

Edible, transparent composite packaging

Scientists at The Chinese University of Hong Kong (CUHK) have developed an edible, transparent and biodegradable material with considerable potential for application in food packaging, using bacterial cellulose (BC) – an organic compound derived from certain types of bacteria which is a sustainable, easily available, and non-toxic solution to the pervasive use of plastics. The impressive tensile strength and high versatility of BC are the key to its potential. BC can be produced through microbial fermentation, which eliminates the need for harvesting trees or crops. The researchers found that by incorporating certain soy proteins into the structure and coating it with an oil-resistant composite, they could create an edible, transparent, and robust BC-based composite packaging. This approach has a high feasibility for scale-up. It does not require specific reaction conditions like chemical reactions, but rather a simple and practical method with mixing and coating.This approach offers a promising solution to the challenge of developing sustainable and environmentally friendly packaging materials that can replace single-use plastics on a large scale.The study demonstrated that the plastic alternative could be completely degraded within 1-2 months. Unlike other bio-derived plastics such as polylactic acid, the BC-based composite does not require specific industrial composting conditions to degrade.The team is working to enhance the versatility of modified BC films, making them suitable for a wider range of applications. Specifically, they are focused on developing a thermosetting glue that can create strong bonds between bacterial cellulose, allowing it to be easily moulded into various shapes when heated,

INDIA

Omicron-specific mRNA-based Booster vaccine developed

Drug Control General of India (DCGI) has granted Emergency Use Authorization (EUA) for an / Omicron-specific mRNA-based Booster vaccine developed using the indigenous platform technology by Gennova Biopharmaceuticals Ltd., Pune. GEMCOVAC®-OM is an Omicron-specific mRNA-based Booster vaccine developed using the indigenous platform technology by Gennova. GEMCOVAC®-OM is a thermostable vaccine, which does not require ultra-cold chain infrastructure used for other approved mRNA-based vaccines, making it easy for deployment pan India. It is delivered intra-dermally using a needle-free injection device system. When administered intradermally in participants as a booster,it generated significantly higher immune responses.The clinical outcome demonstrates the need for variant-specific vaccines for desired immune response.This is India's first mRNA-based platform technology and can be used to make other vaccines in a relatively short developmental timeline.

New low cost technology reduces textile effluent pollution

NIT Warangal along with Prime Textiles, Rampur have developed a pilot-scale textile effluent treatment plant using biosurfactants (BS), cavitation (a process in which pressure variations in a liquid can in a short period of time cause countless small cavities to form and then implode--C), and membrane (M) technology. A textile and apparel industry, located in the Hanumakonda district of Telangana has been able to treat its textile wastewater at a very reasonable cost, thanks to this technology. The biosurfactant that is used in a Moving Bed Biofilm Reactor (MBBR) was extracted from microorganisms isolated from textile effluent and textile effluent contaminated soil by MUJ.The use of BS helped in dye removal and was effective in reducing operational time and cost (with respect to other biological treatment methods). Cavitation (C), an advanced oxidation process (AOP), aided in reducing installation cost as well as reducing

carbon footprint.The ability of the technology to generate oxidizing radicals in-situ, significantly reduced the reliance on external oxidizing agents. On the other hand, modifying the membrane (M) surface using boehmite sol synthesized using sol-gel process, decreased the pore size from micro-scale to nano-scale and led to a significant improvement in its performance. After optimizing individual systems, a pilot-scale setup has been set up at the Prime Textiles premises. The pilot plant of 200 Litres Per Day capacity removes pollutants and the treated water can be utilized for agricultural activities, and cleaning purposes. This joint effort has led to the transfer of technology and two patents.

Water-soluble coating to replace plastic in disposable paper

A team of researchers from the Indian Institute of Technology Roorkee(IIT R), has developed a coating for disposable paper that is water soluble and will be used in various applications with requirements of food freshness retention and replaces plastic coatings commonly used in food-grade packaging papers and paperboards.The innovative coating formulation aims to eliminate the use of plastic in disposable paper and paperboard products, contributing to a cleaner and more sustainable society. By enabling the recycling of disposable products, this technology has a significant positive impact on the environment, improving waste material collection and reducing the burden on landfill sites.This technology will be a significant milestone in reducing solid municipal waste and transforming disposable paper and paperboard materials into recyclable ones, which is currently a considerable challenge. The technology addresses environmental concerns and resolves recycling issues associated with disposable paper waste, converting it into value-added products. IIT Roorkee has transferred the technology to M/s M S Papers, New Delhi for commercial application.

Planar Trefoil Knot Antenna of Compact in Size to Fit in PCBs

The Indian Institute of Technology Kanpur (IITK) has announced the development of 'Planar Trefoil Knot Antennas,' which can be a breakthrough for the communication industry. The novel invention has been granted an Indian Patent.The capability of the new antenna to produce both omnidirectional and directional patterns gives it an edge over the market alternatives. This invention could have a wide range of applications, contributing to the advancement of wireless systems and meeting the growing demand for smart antennas.The market segments that stand to benefit from this technology include telecommunication, healthcare, consumer electronics, aerospace, defense, and more. The 'Planar Trefoil Knot Antennas' technology presents an antenna that finds unique applications in WIFI, WLAN, RFID, indoor communication systems, radar systems, and more. Compared to existing bulky 3D knot antennas available in the market, this invention offers a compact and cost-effective solution that can be easily integrated into PCBs, occupying less space.

Light Combat Aircraft (LCA) completing seven years service

On 01 July 2023, the indigenous Light Combat Aircraft (LCA) will complete seven years of service in the Indian Air Force. Christened Tejas in 2003, the aircraft is a multi- role platform that ranks amongst the best in its class. It has been designed to undertake the Air Defence, Maritime Reconnaissance and Strike roles. The Tejas offers carefree handling and enhanced manoeuvrability further enhanced with its Multi-Mode Airborne radar, Helmet Mounted Display, Self-protection suite and Laser Designation Pod.The first IAF Squadron to induct the Tejas was No 45 Squadron, the 'Flying Daggers'. In May 2020, No 18 Squadron became the

second IAF unit to operate the Tejas.The IAF has placed an order for 83 LCA Mk-1A which will have updated avionics, as well as an Active Electronically Steered Radar, updated Electronic Warfare suite and a Beyond Visual Range missile capability. The new variant will be capable of firing a plethora of weapons from increased stand-off ranges.The LCA MK-1A will see a substantial increase in the overall indigenous content of the aircraft. Contracted deliveries of the aircraft are expected to commence in February 2024.

Guidelines on Information Security Practices issued

Recognising the significance of a secure and trustworthy digital environment, the Government of India has formulated policies aimed at ensuring safe & trusted and secure cyber space for its users. It remains fully aware of the growing cyber threats and attacks present in today's digital world. The Indian Computer Emergency Response Team (CERT-In) has released guidelines on information security practices for all government institutions, public sector enterprises, and other government agencies. These guidelines are a roadmap for the Government entities and industry to reduce cyber risk, protect citizen data and continue to improve the cyber security ecosystem in the country. They will serve as a fundamental document for audit teams, including internal, external, and third-party auditors, to assess an organisation's security posture against the specified cybersecurity requirements.The guidelines include various security domains such as network security, identity and access management, application security, data security, third-party outsourcing, hardening procedures, security monitoring, incident management, and security auditing.These "Guidelines on Information Security Practices" for Government Entities for Safe & Trusted Internet are available at https://www.cert-in.org.in/guidelinesgovtentities.jsp

Nanocoating to improve solar module output

Indian startupTrinano Technologies has developed nanocoatings for solar modules that can increase their power output by up to 4% and lower the temperature by up to 3 C compared to non-coated panels. The nanocoating is environmentally friendly and chemically stable. It is designed to improve light trapping, anti-reflection, and self-cleaning properties.The coating can last for more than five years and reduces panel maintenance and cleaning (especially water-based) costs.The nanocoatings underwent extensive testing in research universities and labs in India and Thailand, confirming the improvements in panel output and temperature. The technology's patent application has been submitted in India and other countries. The coating process, performed with a portable coating machine and 6 kg frames, allows for application on existing panels without their removal from service. It involves solid-phase deposition without the use of liquid. In contrast, commercially available coatings, made of organic materials, are liquid and applied using paint, brush, or spray methods, but they decompose and deteriorate within two years. The nanocoatings are suitable for monocrystalline, polycrystalline, and thin-film solar panels in both ground-mount and rooftop applications. Potential customers include solar panel manufacturers and solar plant owners.

G-20 AND GLOBAL CHALLENGES

G20 Education Working Group and Ministerial Meeting

The G20 Education Working Group (4th meeting) and the Ministerial meeting in Pune ended on 22 June with an outcome document and Chairs summary. On technology aspects, the document in particular emphasized the transformative potential of digital technologies as an

enabler for context appropriate, inclusive, equitable and accessible quality education and training and as a tool to support face-to-face education. It stressed the need to work collectively to develop technology ecosystems and learning resources, including in local languages, wherever applicable, that are affordable and easily accessible and commitment to overcome the digital divide for all learners by addressing barriers to accessible, equitable, inclusive, ethical, privacy-protected, and secure technological infrastructure.It highlighted the importance of ethical practices in the use of digital technologies in education, fostering open educational resources, and strengthening interoperability of digital resources, wherever appropriate, in ways that leverage the benefits of data and analytics in education while protecting privacy and security. It seeks to promote collaborations among higher education institutions in G20 member states and invited countries to facilitate joint academic and research initiatives in education and training, including through Joint/Dual, Twinning degree programmes; mobility of students, faculty and staff; expanding access to scholarly knowledge; sharing of research, evidence, and resources among educational institutions as appropriate and continued collaborations of institutions in accordance with countries' respective priorities, laws and regulations.

G20 Tourism Track adopts Goa Roadmap for achieving SDGs

The Fourth Tourism Working Group meeting of G20 and the G20 Tourism Ministers' meeting was held in Goa. Ministers of G20 countries and delegates from G20 countries, invitee countries and International organisations attended the meeting. The meeting endorsed the "Goa Roadmap for Tourism as a Vehicle for Achieving the Sustainable Development Goals", developed by the United Nations World Tourism Organization (UNWTO). The roadmap aims to position tourism as a central pillar of the 2030 Agenda for Sustainable Development.

The roadmap places great significance on 'green tourism'. Embracing 'digitalisation' is emphasised by the roadmap. It highlights the transformative benefits that digital technologies can bring to the tourism industry. By leveraging digital advancements, the tourism sector can adapt to changing demands and foster sustainable growth. The Tourism Ministerial Meeting in Goa also released an outcome document and chair's summary.

IN BRIEF

Removing radioactive cesium ions from nuclear wastewater

Pusan National University researchers developed a new calcium (Ca^{2+})-doped ion exchanger for the removal of radioactive cesium ion (Cs^{+}) from acidic nuclear powerplant wastewater. One of the major by-products of the nuclear fission process used for power generation is 137Cs (an isotope of cesium), a radioactive element that has a half-life of 30 years and is often removed from nuclear powerplant (NPP) wastewater via selective adsorption using ion exchangers. However, this process is severely hindered in acidic wastewater.The team used potassium calcium thiostannate (KCaSnS), a new layered calcium (Ca^{2+})-doped chalcogenide ion exchanger.It utilizes the typically problematic H^{+} ions in acidic wastewater to enhance the cesium ion (Cs^{+}) adsorption process. Essentially, the Ca^{2+} ions from KCaSnS are leached out by H^{+} and Cs^{+}, making way for Cs^{+}. The team found that the Cs^{+} adsorption capacity at pH 2 (strongly acidic)increased to 620 mg/g. These results establish KCaSnS as a promising candidate for the removal of radioactive ions from NPP wastewater.

Natural molecule may help prevent plaque and cavities

A team led by Ben-Gurion University Israel has discovered that 3,3′-Diindolylmethane (DIM), a naturally occurring molecule also known as bisindole, reduces the biofilms that produce plaque and cavities by 90%. The molecule is also found to have anti-carcinogenic properties. Mouth bacteria such as S. mutans are believed to be one of the primary actors that generates plaque, attacks enamel and causes cavities. The scientists found that the bisindole (DIM) disrupted that process by 90%. The molecule has low toxicity, and could be added to toothpastes and mouthwashes to greatly improve dental hygiene

Tuberculosis therapy enhanced with nanoparticles.

Researchers at KIT, Germany have succeeded in producing nanoparticles with extremely high concentrations of antibiotics. Concentration of the antibiotic is up to 99% of the total weight of the particles. The nanocarriers can be dispersed in water. When inhaled, the aerosol enters the depth of the lungs. They tested the effectiveness of the nanoparticles with good results in both the lab and the living organism. The amorphous nanoparticles for inhalation contain a Bedaquilin concentration of 69% or a BTZ-043 concentration of 99%. Both antibiotics are effective against multi-resistant tuberculosis bacteria. Surfactants make the highly lipophilic antibiotics disperse in water. Dispersions with 4.0 mg of Bedaquilin / ml or 4.2 mg BTZ-043 / ml remain stable for several weeks. When tested in mice, the effectiveness of nanoparticle dispersions exceeded that of conventional BTZ-043 solutions for pulmonary inhalation by 50%. The nanocarriers proved to be capable of overcoming various biological barriers. High concentrations were measured in the lungs, but not in the liver and spleen.

RESOURCES & EVENTS

United Nations Sustainable Development Cooperation Framework

NITI Aayog and the United Nations in India have signed the Government of India - United Nations Sustainable Development Cooperation Framework 2023-2027. It is built on four strategic pillars derived from the 2030 Agenda – People, Prosperity, Planet and Participation. The four interlinked pillars have six outcome areas focusing on Health and Well Being; Nutrition and Food Security; Quality Education; Economic Growth and Decent Work; Environment, Climate, WASH and Resilience; and Empowering People, Communities, and Institutions. Showcasing Indian models of development globally will be central to the effort.The implementation, monitoring and reporting of GoI-UNSDCF 2023-2027 will be co-led by Government of India and the United Nations, India through a Joint Steering Committee.

Russia, China block move for new Antarctic marine protected areas

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) failed to agree on a roadmap for the creation of three new marine protected areas (MPAs) in East Antarctica, the Weddell Sea and the Antarctic Peninsula. Russia and China resisted new protected areas.The proposals were to create the sanctuaries around Antarctica to counter climate change and protect fragile ocean ecosystems would safeguard nearly four million more square kilometers (1.5 million more square miles) of ocean from human activities.There are two MPAs in Antarctica now: one around the South Orkney Islands, comprising an area of 94,000 square kilometers, created in 2009, and one of 2 million square kilometers in the Ross Sea region, established in 2016. The CCAMLR, which regulates fisheries, is comprised of 26

member countries plus the EU. They include the United States, Russia, China, the UK, France, India, Japan, host Chile, Brazil and South Africa.

National Research Foundation Bill, 2023 to go to Parliament

The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, approved the introduction of the National Research Foundation (NRF) Bill, 2023 in the Parliament. The approved Bill will pave the way to establish NRF that will seed, grow and promote Research and Development (R&D) and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.The bill, seeks to establish NRF, an apex body to provide high-level strategic direction of scientific research in the country as per recommendations of the National Education Policy (NEP), at a total estimated cost of Rs. 500 billion during five years (2023-28). The Department of Science and Technology (DST) will be the administrative Department of NRF which will be governed by a Governing Board consisting of eminent researchers and professionals across disciplines. Since the scope of the NRF is wide-ranging – impacting all ministries - the Prime Minister will be the ex-officio President of the Board and the Union Minister of Science & Technology & Union Minister of Education will be the ex-officio Vice-Presidents. NRF's functioning will be governed by an Executive Council chaired by the Principal Scientific Adviser to the Government of India. NRF will forge collaborations among the industry, academia, and government departments and research institutions, and create an interface mechanism for participation and contribution of industries and State governments in addition to the scientific and line ministries. It will focus on creating a policy framework and putting in place regulatory processes that can encourage collaboration and increased spending by the industry on R&D. The bill will also repeal the Science and Engineering Research Board (SERB) established by an act of Parliament in 2008 and subsume it into NRF which has an expanded mandate and covers activities over and above the activities of SERB.

US Department of Energy releases plan for access to research

The U.S. Department of Energy (DOE) has released a plan to ensure the Department's Federally funded research is more open and accessible to the public, researchers, and journalists as part of a broader effort by the Biden-Harris Administration to make government data more transparent. With 17 National Laboratories and scores of programs that fund university and private research, DOE directly supports thousands of research papers per year, and, when this plan goes into effect, those findings will be available immediately and at no cost. The new plan describes the steps DOE will take to enable equitable access to the unclassified and unrestricted results of its multi-billion dollar annual investments in climate, energy, environment, and basic and applied research and development. Key elements of the new DOE public access plan will include elimination of any "embargo" period before the public gains free access to journal articles or final accepted manuscripts resulting from federal funding; immediate access to scientific data displayed in or underlying publications and expanded access to scientific data not displayed in publications; and broad adoption of persistent identifiers (PIDs) for research outputs, organizations, awards and contracts, and people. Most requirements and guidance will be in place by the end of 2024 with implementation by the end of 2025. Key changes include the requirement to submit accepted manuscripts or open access journal articles immediately upon publication and an increased focus on immediate and broader sharing of scientific data

SCIENCE POLICY AND DIPLOMACY

PM Modi's visit to USA boosts technology cooperation

During his US visit from 21-23 June, Prime Minister Modi and President Biden affirmed that technology will play the defining role in deepening the bilateral partnership. Several agreements in key technology sectors were reached - (1) NASA and ISRO are to develop a strategic framework for human spaceflight cooperation by the end of 2023. NASA is to provide advanced training to Indian astronauts at the Johnson Space Center in Houston, Texas, with a goal of mounting a joint effort to the International Space Station in 2024.The leaders called for enhanced commercial collaboration between the U.S. and Indian private sectors in the entire value chain of the space economy and to address export controls and facilitate technology transfer. (2) India has also signed the Artemis Accords, which advance a common vision of space exploration for the benefit of all humankind. (3) An interagency-led Strategic Trade Dialogue has been tasked to undertake regular efforts to address export controls, explore ways of enhancing high technology commerce, and facilitate technology transfer between the two countries. (4) An MoU was signed on Semiconductor Supply Chain and Innovation Partnership and Micron Technology, Inc., is to invest up to $825 million to build a new semiconductor assembly and test facility in India with support from the Indian government. Lam Research's is to train 60,000 Indian engineers through its Semiverse Solution virtual fabrication platform to accelerate India's semiconductor education and workforce development goals, and Applied Materials, Inc.is to invest $400 million to establish a collaborative engineering center in India.(5) Two Joint Task Forces have been set up on advanced telecommunications, focused on Open RAN and research and development in 5G/6G technologies. (6) A joint Indo-U.S. Quantum Coordination Mechanism has been set up for collaboration among industry, academia, and government, and work toward a comprehensive Quantum Information Science and Technology agreement. (7) President Biden also reiterated his commitment to work with the U.S. Congress to lower barriers to U.S. exports to India of High Performance Computing technology and source code. (8) A new implementation arrangement between NSF and DST, both sides will fund joint research projects in computer and information science and engineering, cyber physical systems, and secure and trustworthy cyberspace. (9) Both sides will develop joint and international collaboration on trustworthy and responsible AI, including generative AI, to advance AI education and workforce initiatives, promote commercial opportunities, and mitigate against discrimination and bias. (10) A MoU was signed between General Electric and Hindustan Aeronautics Limited for the manufacture of GE F-414 jet engines in India, and to enable greater transfer of U.S. jet engine technology. (11) Master Ship Repair Agreements signed with Indian shipyards will allow the U.S. Navy to expedite the contracting process for mid-voyage and emergent repair. (12) The India-U.S New and Emerging Renewable Energy Technologies Action Platform will accelerate cooperation in green hydrogen, offshore and onshore wind, and other emerging technologies. (13) the leaders lauded the creation and development of the Global Biofuels Alliance, which will be launched in July 2023, with the United States as a founding member. (14) India has joined the Mineral Security Partnership (MSP), to accelerate the development of diverse and sustainable critical energy minerals supply chains globally.(15) In nuclear energy, U.S. DOE and India's DAE will work on the Kovvada nuclear project and developing next generation small modular reactor technologies in a collaborative mode for the domestic market as well as for export. (16) President Biden welcomed Prime Minister Modi's Lifestyle for Environment initiative (LiFE) as a successful national model to address the impacts of climate change,

biodiversity loss, desertification and land degradation, and resolved to work together to implement the G20 High Level Principles on Lifestyles for Sustainable Development. For more details see factsheet from white house.

High Seas Treaty approved by Intergovernmental Conference

While negotiations on the Agreement concluded successfully in early March 2023, the draft text had to undergo a technical edit by an informal open-ended working group before it could be adopted. On19 June 2023, the Intergovernmental Conference (IGC) meeting at its resumed 5 th session, finally adopted the new international legally binding instrument on marine biological diversity of areas beyond national jurisdiction (BBNJ). This is the third implementing agreement under UNCLOS, after the 1994 Agreement establishing the International Seabed Authority, and the 1995 Fish Stocks Agreement.The Agreement is timely, as threats to the Ocean continue to increase. The adoption of the new Agreement was heralded as new era for ocean governance, Although the Agreement was adopted by consensus,delegations agreed to include a footnote in the Conference Report recording the Russian Federation's statement distancing itself from the consensus. States are expected to sign the Agreement when it opens for signature on 20 September 2023. Among some key provisions are those related to the principle of equity and of the common heritage of humankind, as well as provisions related to the establishment of subsidiary bodies to guide implementation. They also lauded the establishment of a special fund for the sharing of monetary benefits derived from MGRs and digital sequence information, as well as a capacity building and the transfer of marine technology (CB&TT) Committee. The new Treaty will apply over the High Seas, over 50% of the planet, and address biodiversity in these areas vulnerable to ever growing threats, including climate change, plastic pollution, oil spills, overfishing, habitat destruction, ocean
acidification, and underwater noise.

Bonn Climate Change Conference makes little progress

The 58th meetings of the United Nations Framework Convention on Climate Change's Subsidiary Body for Implementation (SBI) and Subsidiary Body for Scientific and Technological Advice (SBSTA) convened from 5-15 June 2023 in Bonn, Germany. with over 5000 on-site participants. With less than six months to go before the 28th meeting of the Conference of the Parties (COP) convenes in Dubai.delegates discussed over 20 items on their respective agendas and more than 20 mandated events in the schedule, including on big ticket issues such as loss and damage, the new collective quantified goal on climate finance, and the first Global Stocktake under the Paris Agreement.Until until the penultimate day, there was lack of agreement over the agendas. Negotiations went on, but whether their outcome would be captured and forwarded to the COP in November hinged on agreement on the agenda.Heads of Delegations managed to sort out some of the disagreements, notably by removing reference to specific paragraphs in the title of the agenda item on the work programme on just transition pathways. But the proposed inclusion of an agenda item on the mitigation ambition and implementation work programme (MWP) remained problematic. The European Union and the Environmental Integrity Group had submitted a request to add it but the Like-minded Developing Countries proposed an item on item on urgently scaling up financial support from developed countries in line with Article 4.5 of the Paris Agreement. The SB Chairs will prepare an informal note capturing the discussions. Delegates also had heated debates over the recognition of the IPCC's findings. Overall, progress remained rather elusive as parties: (a)

could not agree on a host for the Santiago Network on loss and damage;(b) did not advance the development of a framework for the Global Goal on Adaptation (c) only noted an indicative draft structure of the decision on the Global Stocktake. The lack of progress at this meeting is a warning sign that COP 28 will be a difficult exercise.

EU set to propose mass exit from Energy Charter Treaty

The European Commission is readying a proposal for EU countries to jointly quit an international energy treaty, after some governments already pledged to leave over climate concerns.The 1998 Energy Charter Treaty, which has around 50 signatories including European Union countries, lets energy companies sue governments over policies that damage their investments – a system initially designed to support investments in the sector. But in recent years it has been used to challenge policies that require fossil fuel plants to shut, raising concerns in some European capitals that it is an obstacle to addressing climate change. EU countries could not agree to pass reforms to it which would have allowed government to phase out protection for fossil fuels. Pressure has mounted on Brussels to lead an EU-wide exit after Denmark, France, Germany, Luxembourg, the Netherlands, Poland and Spain announced they planned to quit the treaty. Italy left in 2016. But the proposal is likely to be opposed by countries including Cyprus, Hungary and Slovakia, which have said they would prefer to stay in an updated version of the accord. Any proposal will need backing from a reinforced majority of member states and support from the European Parliament, which has publicly backed the idea.The present treaty has a "sunset clause" that would protect existing fossil fuel investments in Europe for 20 years even after the EU quit. European officials hope that they can arrange that the treaty is not enforced between EU member states, partly neutralising the sunset clause. Switzerland plans to remain in the treaty while the UK's position is unclear. Other states in Central Asia and Japan have shown no interest in either reforming the treaty or leaving it.

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NOTE TO OUR READERS AND STAKEHOLDERS:

RIS Science Diplomacy Programme (fisd.in) is glad to present a new version of Science Diplomacy News Alerts, following India's assumption of the Presidency of the G20. A new section G20 and global challenges has been added. We request your cooperation to review the Alerts and improve its content. For this purpose, please complete the form at https://forms.gle/o4d869FxaM9t3KNw7, and submit it. Your support and cooperation is appreciated.