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NEWS ALERT

Forum for Indian Science Diplomacy

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SCIENCE POLICY AND DIPLOMACY

GLOBAL

MIT Engineers Develop Ultralight Fabric Solar Cells

MIT engineers have developed ultralight fabric solar cells that can quickly and easily turn any surface into a power source. These durable, flexible solar cells, which are much thinner than a human hair, are glued to a strong, lightweight fabric, making them easy to install on a fixed surface. They can provide energy on the go as a wearable power fabric or be transported and rapidly deployed in remote locations for assistance in emergencies. They are one-hundredth the weight of conventional solar panels, generate 18 times more power-per-kilogram, and are made from semiconducting inks using printing processes that can be scaled in the future to large-area manufacturing. Because they are so thin and lightweight, these solar cells can be laminated onto many different surfaces. For instance, they could be integrated onto the sails of a boat to provide power while at sea, adhered onto tents and tarps that are deployed in disaster recovery operations, or applied onto the wings of drones to extend their flying range. This lightweight solar technology can be easily integrated into built environments with minimal installation needs.

NUS Researchers Develop New Testing Method for Cancer

Scientists from the National University of Singapore (NUS) have discovered a novel low-cost method of testing for cancers. Called the Heatrich-BS assay, this new test sequences clinical samples that have been heated to isolate cancer-specific signatures found in a patient's blood. The new method provides a promising non-invasive alternative to tissue biopsies. It costs around S$50 from start to finish, compared to other sequencing methods that can cost up to S$1,000 to conduct. The Heatrich-BS assay has been trialed at the National Cancer Centre in Singapore, monitoring patients with colorectal cancer. By comparing the results of their blood analysis with CT scans that imaged the size of patients' tumours, the team found that there was a high correlation between how much cancer-specific DNA was detected in a patient's blood sample and the size of their tumours over time. The assay may also help accelerate future academic research, helping scientists study different subtypes of cancer for a low cost and therefore improving the development of future cancer diagnoses and therapies. The team is exploring ways to commercialise their assay by partnering with pharmaceutical and biotechnology companies that can help bring the Heatrich-BS assay to market.

Blood Test Can Detect 'Toxic' Protein Before Alzheimer's Symptoms Emerge

A team led by researchers at the University of Washington has developed a test that can measure levels of amyloid beta oligomers in blood samples. Their test - known by the acronym SOBA (soluble oligomer binding assay) could detect oligomers in the blood of patients with Alzheimer's disease, but not in most members of a control group who showed no signs of cognitive impairment at the time the blood samples were taken. However, SOBA did detect

oligomers in the blood of 11 individuals from the control group. Follow-up examination records were available for 10 of these individuals, and all were diagnosed years later with mild cognitive impairment or brain pathology consistent with Alzheimer's disease. Essentially, for these 10 individuals, SOBA had detected the toxic oligomers before symptoms surfaced. exploiting a unique property of the toxic oligomers.

Soft, Robotic and Implantable Ventilator Developed

The MIT team has developed a soft, robotic, and implantable ventilator that is designed to augment the diaphragm's natural contractions. At the heart of the system are two soft, balloon-like tubes that can be implanted to lie over the diaphragm. When inflated with an external pump, the tubes act as artificial muscles to push down on the diaphragm and help the lungs expand. The tubes can be inflated at a frequency to match the diaphragm's natural rhythm. The researchers demonstrated the implantable ventilator in animal models, and showed that in cases of compromised diaphragm function, the system was able to significantly improve the amount of air that the lungs could draw in. The new proof-of-concept design aims to one day boost the diaphragm's life-sustaining function and improve lung capacity for people with diaphragm dysfunction. The team is working to optimize various aspects of the system, with the goal of someday implementing it in patients with chronic diaphragm dysfunction.

CRISPR Technology Improves Huntington's Disease Symptoms

Researchers at University of California San Diego School of Medicine, with colleagues elsewhere, used RNA-targeting CRISPR/Cas13d technology to develop a new therapeutic strategy that specifically eliminates toxic RNA that causes HD. They used viral vehicles to deliver the therapy to neuronal cultures, which were developed from stem cells derived from patients with HD and found that the approach not only targeted and destroyed mutant RNA molecules, but also cleared out toxic protein buildup. They also demonstrated that expression of other human genes was generally not disrupted by the therapy. The team found that the therapy improved motor coordination, attenuated striatal degradation and reduced toxic protein levels in a mouse model of HD. The improvements lasted for at least 8 months without adverse effects and minimal off-target effects on other RNA molecules.

Cellular 'Glue' to Regenerate Tissues, Heal Wounds and Regrow Nerves

Researchers at UC San Francisco (UCSF) have engineered molecules that act like "cellular glue," allowing them to direct in precise fashion how cells bond with each other. They engineered cells containing customized adhesion molecules that bound with specific partner cells in predictable ways to form complex multicellular ensembles. Researchers designed their adhesion molecules in two parts. One part of the molecule acts as a receptor on the outside of the cell and determines which other cells it will interact with. A second part, inside the cell, tunes the strength of the bond that forms. The two parts can be mixed and matched in a modular fashion, creating an array of customized cells that bond in different ways across the spectrum of cell types. Their work reveals flexible molecular adhesion code that determines which cells will interact, and in what way. This could be transformative and can be harnessed to direct how cells assemble into tissues and organs.

Microparticles Could Help Prevent Vitamin A Deficiency

MIT researchers have now developed a new way to fortify foods with vitamin A, which they hope could help to improve the health of millions of people around the world. In a new study,

they showed that encapsulating vitamin A in a protective polymer prevents the nutrient from being broken down during cooking or storage. In a small clinical trial, the researchers showed that when people ate bread fortified with encapsulated vitamin A, the bioavailability of the nutrient was like when they consumed vitamin A on its own. The technology has been licensed to two companies that hope to develop it for use in food products.

Progress in Nuclear Fusion Energy

Researchers at Lawrence Livermore National Laboratory (LLNL) National Ignition Facility (NIF), the world's largest and most energetic laser system conducted the first controlled fusion experiment on 5 December to reach energy breakeven, meaning it produced more energy from fusion than the laser energy used to drive it. The experiment applied 2.05 megajoules (MJ) of energy to the target, resulting in 3.15 MJ of fusion energy output, demonstrating for the first time a most fundamental science basis for inertial confinement fusion energy. The pursuit of fusion ignition in the laboratory is one of the most significant scientific challenges ever tackled by humanity. Many advanced developments are still needed to achieve simple, affordable inertial fusion energy (IFE). The system at LLNL uses a series of powerful laser beams to create temperatures and pressures like those in the cores of stars and giant planets, and inside exploding nuclear weapons.

COVID-19

COVID-19 (WORLD)

China Fights COVID-19 Surge

People queued outside fever clinics at China's hospitals for COVID-19 checks on 12 December, a new sign of the rapid spread of symptoms after authorities began dismantling stringent curbs on movement. China has dropped testing prior to many activities, limited quarantine and is preparing on 12 December to de-activate a mobile app used to track the travel histories of a population of 1.4 billion people. Authorities continue to urge mask-wearing and vaccinations, particularly for the elderly. In recent weeks, local cases have been trending lower since a late November peak of 40,052, official figures show, however. The 11 December tally of 8,626 was down from 10,597 new cases the previous day. But the figures may reflect the dropping of testing requirements, while Chinese health experts have warned of an imminent surge and have said the current outbreak could peak in a month, though the end of the pandemic might be three to six months away.

Covid May Have Leaked from China's Wuhan Lab

Dr Andrew Huff, a scientist, who worked at China's Wuhan Institute of Virology, has now made a claim that Covid was a "man-made" virus that leaked from what is now a controversial research lab. China continues to deny the allegations against the Wuhan lab. Andrew Huff, an epidemiologist, wrote a new book, "The Truth About Wuhan," in which he claimed that Covid leaked from the Wuhan Institute of Virology in China two-plus years ago and blamed authorities for the "biggest US intelligence failure since 9/11". Huff said that the pandemic was the result of the US government's funding of research into coronaviruses in China and further claimed that China's gain-of-function experiments were carried out with lax security, which led to a leak

at the Wuhan lab. WHO has called for a continued scientific and collaborative approach to be taken towards tracing the origins of Covid-19.

COVID-19 (INDIA)

Omicron Variant CH.1.1 with Delta Mutation Detected

Omicron offshoot CH.1.1 has emerged in India, specifically in Maharashtra. INSACOG data shows that 17 samples with the subvariant were detected in India. Of them, a total of 16 were from Maharashtra and one was from Gujarat. This variant CH1.1. has acquired a Delta mutation, which could make it more pathogenic. One mutation R, proposed to be associated with increased cell fusion and pathogenicity in animal models, is hypothesised to explain severe illness associated with the Delta variant that has been identified in CH.1.1 sequences. However, pathogenicity in Delta may be a property of other mutations and interactions among them. Further data is needed before any increased pathogenicity property can be attributed to the CH.1.1. CH.1.1 has independently acquired the same set of key mutations at BQ.1.1, a descendent of the mild Omicron subvariant BA.2. Scientists closely following SARS-CoV-2 mutations, CH.1.1 is one of the most immune-evasive variants and has now picked up Delta's mutation in some samples abroad.

CDSCO Approves World's First Intra-Nasal COVID Vaccine

World's first intra-nasal vaccine for COVID developed by India has got approval from the Central Drugs Standard Control Organisation (CDSCO) for restricted use in emergency situations in the age group of 18 and above. Union Minister of State (Independent Charge) Science & Technology; lauded the role of the Department of Biotechnology (DBT) and its PSU, Biotechnology Industry Research Assistance (BIRAC) for supporting the development of world's first Intranasal vaccine for COVID by Bharat Biotech International Limited (BBIL). He informed that the Product development and Clinical trials were funded by the Department of biotechnology, Government of India and BIRAC under the Mission COVID Suraksha Program. This vaccine received approval under restricted Use in emergency situations for ages 18 and above for primary 2 dose schedule, homologous booster doses. The vaccine has the double benefit of enabling faster development of variant-specific vaccines and easy nasal delivery that enables mass immunization to protect from emerging variants of concern. It promises to become an important tool in mass vaccinations during pandemics and endemics. vaccine candidates were evaluated in Phases I, II and III clinical trials with successful results. It has been specifically formulated to allow intranasal delivery through nasal drops. The nasal delivery system has been designed and developed to be cost-effective in low- and middle-income countries. This vaccine is stable at 2-8°C for easy storage and distribution. Large manufacturing capabilities have been established by Bharat Biotech at multiple sites across India, including Gujarat, Karnataka, Maharashtra, and Telangana, with operations pan India.

INDIA–SCIENCE & TECHNOLOGY

'Powerless Heating System' Developed

A new low-cost heating system which can be activated by plain water anytime anywhere and does not require any fuel or electricity to heat or power it, has been discovered. It can act as a heating solution in any location. The active heating element consists of a mixture of eco-friendly

minerals and salts, which generates exothermic energy resulting in heat on contact with water. This provides enough energy to raise the temperature of any food or beverage by 60 to 70 degrees Celsius. The weight of the heater is only 50 grams, and after every heating, the by-product (natural mineral rock) inside the heating pad can be disposed of. The rock helps in improving the fertility of the soil and is 100 per cent biodegradable. With this technology, users can heat ready-to-eat food, make instant noodles, and any beverage like tea, coffee, etc. The by-product of the heating process is a natural mineral that easily integrates into the soil without any toxic effects. These products will be of great use to military personnel, tourists, and officegoers in the northeast. This Powerless Heating Technology eliminates the need for burning forest wood for heating purposes, thus also reducing forest fires, which is a major problem in the North- Eastern parts of the country. The prototypes were successfully developed and tested. Several FMCG companies are keen to launch it in the market. Anchiale Technologies, a Gurgaon-based spin-off start-up, is scaling up this technology and has started supplying it to the Indian Navy and some food manufacturing companies. A patent for the technology has been filed. A nondisclosure agreement (NDA) has been signed with the Indian Tobacco Company (ITC) for integration of this technology in their food products.

Hybrid Aerogel to Capture Arsenic from Water

Research team at IISER Pune has developed a specialised material which they like to call 'IP-comp6'. The team developed this new material in such a way that apart from anion exchange, certain specialised binding sites in the material can interact with specific oxoanions like arsenate. To develop this material, the team employed what is referred to as a bottle-around-ship strategy in the field of materials science. This resulted in a new composite material with properties of both its components, that of a metal-organic cage and a porous aerogel material. This material is inherently cationic in nature. This material can also be modified for sequestering different kinds of oxoanions and is a promising tool for overcoming the oxo anion challenge. In order to explore the practical utility of the material, the team collected samples of natural drinking water from two different locations in West Bengal's Malda district, which are widely known as highly arsenic affected areas in India. The new hybrid material was found to reduce the arsenic levels dramatically to well below the WHO permitted level (>10 ppb) of drinking water. These findings present a new pathway for the development of a variety of advanced sorbent materials for real-world water purification.

IISc Researchers Develop Energy-efficient Computing Platforms

Researchers at the Centre for Nano Science and Engineering (CeNSE), IISc, report the development of a highly energy-efficient computing platform that offers promise in building next-generation electronic devices. the team used components called memristors that can both store data and perform computation. By designing unique memristors based on metal-organic complexes, the team could cut down the number of components needed in a circuit, greatly increasing the speed and efficiency. The molecular circuit element can capture complex logic functions within itself, facilitating in-memory computations in a smaller number of time steps and using much fewer elements than usual. The platform "outperforms" current state-of-the-art technologies by orders of magnitude. The design of the new platform reduces the number of operational steps, increasing speed and reducing error. When they built circuits that carry out mathematical operations and compared them with a typical CMOS circuit, the team found that the new platform offered 47 times higher energy efficiency and 93 times faster operating speed,

while only taking up 9 per cent of the physical footprint. Moving forward, the team plans to connect the platform to a sensor – for example, a smartphone screen that senses touch – and study how efficiently the platform processes the data it collects.

New Mechanism for Identification of Future Dysfunctional Cells

The research team from Raman Research Institute (RRI), has developed a mechanism capable of early identification of molecular changes that may lead to dysfunctional cells in the human body. This vital information, the scientists say, can be useful in detection of autoimmune diseases like autism and the early detection of cancer, thereby aid in planning better therapeutic strategies. They used nanopore devices to decipher the structures of nucleosomes which are responsible to regulate the genetic and epigenetic information within the cell's nucleus. Nucleosomes are the basic structural unit of DNA packaging. The technology using nanopore devices can be deployed to detect disease-specific biomarkers on the DNA. They can be detected even if they are present in low concentrations as observed during the early disease onset stage. This could then bridge the gap in the practice of epigenetic diagnostics. The nanopore is reliable and can carry out large-scale screenings of molecule / protein/ DNA interactions, thus providing information about any epigenetic modifications that occur within cells.

ISRO Develops Spacecraft for Gaganyaan Mission

The Indian Space Research Organisation (ISRO) has developed a spacecraft for carrying astronauts to space as part of the 'Gaganyaan' mission and the crew module that has been successfully designed is under production. This pan-world programme has been supported by Russia, Japan and agencies including NASA besides the academia and the industry. Nearly 700 industry partners are involved with the ISRO in the mission. Next year a series of tests will be undertaken with the test vehicle already developed for a couple of unmanned missions before the manned mission takes off.

New Method to Measure Strength and Flexibility of Proteins

Scientists at the Indian Institute of Science Education and Research (IISER) in Pune have discovered a device and method to determine proteins' stiffness or flexibility. This has made it easier for scientists to determine the stiffness of the protein chains that control the many different parts of the human body. It will be very useful for determining what changes are happening in proteins and how flexible or stiff they are. This will help us understand how protein structure changes in response to stimuli. It will also help us understand how to create new devices for helping people with diseases.

IN BRIEF

New Battery Technology to Reduce Energy Storage Costs

Researchers from the University of Sydney have developed a new, low-cost battery which holds four times the energy capacity of lithium-ion batteries and is far cheaper to produce which could significantly reduce the cost of transitioning to a decarbonised economy. The battery has been made using sodium-sulphur, costing much less to produce than lithium-ion. Using a simple pyrolysis process and carbon-based electrodes to improve the reactivity of sulphur and the reversibility of reactions between sulphur and sodium, has enabled improved battery performance, exhibiting super-high capacity and ultra-long life at room temperature. The Na-S

battery is also a more energy dense and less toxic alternative to lithium-ion batteries and could be a high-performing solution for large renewable energy storage systems, such as electrical grids, while significantly reducing operational costs. The lab-scale batteries (ion batteries) have been successfully fabricated and tested and it is planned to improve and commercialise the Ah-level pouch cells.

Perovskite Solar Cells Tough Enough to Match Silicon

Researchers led by Oxford University have demonstrated a new way to create stable perovskite solar cells, with fewer defects and the potential to finally improve silicon's durability. By removing the solvent dimethyl-sulfoxide and introducing dimethylammonium chloride as a crystallisation agent, the researchers were able to better control the intermediate phases of the perovskite crystallisation process, leading to thin films of greater quality, with reduced defects and enhanced stability. Large groups of up to 138 sample devices were then subjected to a rigorous accelerated ageing and testing process at high temperatures and in real-world conditions. Formamidinium-caesium perovskite solar cells created using the new synthesis process significantly outperformed the control group and demonstrated resistance to thermal, humidity and light degradation. This development could make perovskite-silicon tandem devices a much more realistic candidate for becoming the dominant next-generation solar cell. The researchers estimate that the new cells age by a factor of 1.7 for each 10°C increase in the temperature they are exposed to, which is close to the 2-fold increase expected of commercial silicon devices.

A New Organic Framework with Useful Properties

Researchers from Tokyo University have succeeded for the first time in creating a new porous solids known as three dimensional (3D) covalent organic frameworks (#D COFs) with unique structure. This new COF, i.e., TUS-84, has a double interpenetrating structure with well-defined voids. The synthesized 3D COF has excellent hydrogen, carbon dioxide, and methane adsorption properties that reinforces its prospects in carbon capture and clean energy applications. The development of appropriate COFs also facilitates the recovery of metal resources and noble gases, such as argon, in an energy-efficient way. This contributes to the improvement of resource and energy problems. The novel 3D COF is efficient in drug delivery applications. Tests using ibuprofen, a common nonsteroidal anti-inflammatory drug showed an extended drug release performance of about 35 per cent after 5 days. This facilitates the delivery of sustained concentrations of drug over a prolonged period. As a result, dose frequency could be reduced, and more consistent control of long-lasting, chronic pain could be possible. Future 3D COFs with unique topologies could have applications across a wide range of fields, from medicine to environmental remediation.

Better, Cheaper Cathodes for Lithium-ion Batteries

Researchers at the Department of Energy's Oak Ridge National Laboratory have developed a better new method for producing energy-dense cathodes. Their method avoids use of Cobalt, Nickel, and Ammonia. Instead of continuously stirring cathode materials with chemicals in a reactor, their hydrothermal synthesis approach crystalizes the cathode using metals dissolved in ethanol. The ethanol is safer to store and handle than ammonia, and afterward it can be distilled and reused. The hydrothermal synthesis method is also much faster, the time required to make particles and prepare for the next cathode batch drops from as many as a few days to 12 hours.

In addition, the material produced has more uniform, round, tightly packed particles that are ideal for a cathode and is better at maintaining stability throughout the battery charge cycle. The new material can be seamlessly integrated into existing battery manufacturing processes. A patent is pending on the technology, which is ready to be scaled up for commercial production by industry. This cathode material can give more energy and decrease the cost of electric car batteries.

RESOURCES & EVENTS

Cyberattack on Top Indian Hospital

The leading hospital in India, the All India Institute of Medical Sciences, was the victim of a cyberattack on 23 November that crippled its operations for nearly two weeks. Online registration of patients resumed after the hospital was able to access its server and recover lost data. The hospital worked with federal authorities to restore the system and strengthen its defenses. It's unclear who conducted the attack on or where it originated. The attack was followed by a series of failed attempts to hack India's top medical research organization, the Indian Council of Medical Research on 30 November. This raised further concerns about the vulnerability of India's health system to attacks at a time when the government is pushing hospitals to digitize their records. Healthcare workers could not access patient reports because the servers that store laboratory data and patient records had been hacked and corrupted.

GEF Approves USD 64.7 Million for Projects

The 63rd meeting of the Global Environment Facility (GEF) Council and the 33rd meeting of the Council of the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF) adopted Work Programs worth more than USD 75 million. The program allocates 46 per cent of funds to the biodiversity focal area and 32.1 per cent to chemicals and waste. Totaling USD 64.7 in funds, the first GEF-8 Work Program benefits 37 recipient countries, including nine least developed countries (LDCs) and 12 small island developing States (SIDS). The 33rd meeting of the LDCF/SCCF Council adopted a Work Program totaling USD 10.13 million from the LDCF and USD 500,000 from the SCCF for a project in Cambodia and the other supporting an innovative global initiative that will support resilience in the 58 countries included in the Vulnerable 20 Group (V20). The GEF's role in a financial mechanism for the future Treaty on the Conservation and Sustainable use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) was discussed.

NASA's Orion Successfully Returns after Moon Mission

At 9:40 a.m. PST, 11 December, NASA's Orion spacecraft splashed down in the Pacific Ocean, bringing a 25.5 day mission to a close. Artemis I launched on November 16, with Orion atop the powerful new Space Launch System moon rocket. Orion traveled 64000 km beyond the Moon. During the Artemis I flight test, the Orion spacecraft traveled more than 2.2 million kms on a path around the Moon and returned safely to Earth. This flight test is a major step forward in the Artemis programme of lunar exploration. During the mission, Orion performed two lunar flybys, coming within 129 km of the lunar surface. At its farthest distance during the mission, Orion traveled nearly 435,000 km from Earth, to test systems before flying with crew onboard. The next Artemis II mission will fly crew to the Moon for the first time and lead to sustained human presence on the Moon for scientific work and to prepare for human missions to Mars.

Prior to entering the Earth's atmosphere, the crew module separated from its service module. During re-entry, Orion endured high temperatures.

SCIENCE POLICY AND DIPLOMACY

Negotiations on a Global Plastics Treaty

Negotiations towards an international legally binding instrument (ILBI) on plastic pollution, including in the marine environment, have officially gotten underway. The first intergovernmental negotiating committee (INC-1) meeting was held in Uruguay from 26 November to 2 December 2022 on the form and substance of the future treaty to be concluded in 2024. The ILBI is expected to address the entire lifecycle of plastic, for which broad participation, science-driven action, stakeholder engagement, and innovative thinking are needed. Discussions covered the scope, objectives, structure, and potential elements of the instrument; standard articles on final provisions; and sequencing and recommended further work to be undertaken. The INC heard a range of proposals, and requested the INC Secretariat to prepare a document, ahead of INC-2, that outlines options for elements of the instrument, such as the treaty's objective, and substantive provisions including core obligations, control measures, voluntary approaches, and means of implementation, noting the document could include both legally binding and voluntary measures. While an understanding emerged on the need for the treaty to encompass the full lifecycle of plastics, the definition of "lifecycle" has not yet been agreed. Delegates also discussed: means of implementation, including capacity building, technical assistance, and finance; monitoring and evaluation of progress in, and effectiveness of, implementation and national reporting; scientific and technical cooperation and coordination, research, and awareness raising; and stakeholder participation and action. More than 2,300 delegates from 160 countries and stakeholder groups participated in INC-1. France offered to host INC-2 in Paris from 22-26 May 2023. Kenya offered to host INC-3, Canada – INC-4, and the Republic of Korea – INC-5. Ecuador, Peru, Rwanda, and Senegal offered to host the diplomatic conference of plenipotentiaries in mid-2025.

EU Agrees on Carbon Tax at its Borders

Negotiators from EU countries and the European Parliament reached a deal on 13 December on a law to impose CO2 emissions costs on imports of iron and steel, cement, fertilisers, aluminium and electricity. Companies importing those goods into the EU will be required to buy certificates to cover their embedded CO2 emissions. The scheme is designed to apply the same CO2 cost to overseas firms as for domestic EU industries – the latter of which are already required to buy permits from the EU carbon market when they pollute. The border tariff is part of EU efforts to fight climate change. The stated aim of the levy is to prevent European industry from being undercut by cheaper goods made in countries with weaker environmental rules. It will also apply to imported hydrogen, which was not in the original EU proposal. Some details on the law will be determined later this week in related negotiations on a reform of the EU carbon market. It will apply from 1 October 2023 but with a transition period where the importers have to report but are not yet taxed. Currently, the EU gives domestic industry free CO2 permits to shield them from foreign competition but plans to phase out those free permits when the carbon border tariff is phased in, to comply with World Trade Organisation rules. Emerging economies have criticised the concept. Last April, China, India, Brazil and South Africa jointly "expressed grave concern" about the "trade barriers". They said it was "discriminatory and against the principles

of equity and [common but differentiated responsibilities and respective capabilities]" – a UN term meaning that developed countries, which are historically responsible for causing the climate crisis, should do more to address it than developing ones.

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