

My Notes....

NATIONAL

NGT CLEARS NATIONAL WATERWAY 1

The **National Green Tribunal** has cleared the decks for the **inland waterway project** on the stretch of the **Ganga River** between **Prayagraj and Haldia** which is also known as the **National Waterway 1**. NGT said there is no scope to consider the matter as far as this project is concerned as the Allahabad High Court has already decided the issue.

What

1. The **Inland Waterways Authority** told the tribunal that the High Court, in its 28 April 2016, order, allowed the project subject to receipt of all required statutory clearances.
2. The **High Court** has expressly referred to the **issue of environmental clearance** and allowed the project proponents to proceed with the project and get an **environmental impact assessment** conducted after commissioning of the project.
3. The NGT, however, said it would be open to an aggrieved party to take remedy against **any violation of environmental norms** in executing the project, in accordance with the law.
4. The **Jal Marg Vikas Project** is being implemented on the **Prayagraj-Haldia** stretch of **National Waterway-1** with the technical assistance and investment support of the World Bank at an estimated cost of Rs 5,369.18 crore on a **50:50 sharing** basis between the Government of India and the World Bank.
5. The tribunal was hearing a plea filed by **Bharat Jhunjhunwala** and others on whether **environmental impact assessment** is necessary for navigation infrastructure on the **Ganga river** in the stretch from **Varanasi to Haldia** undertaken by the **Inland Waterways Authority of India**.

Flashback

1. The **National Waterway 1 (NW-1) or Ganga-Bhagirathi-Hooghly river system** is located in India and runs from Prayagraj in Uttar Pradesh to Haldia in West Bengal via Patna and Bhagalpur in Bihar across the Ganges river.
2. It is 1,620 km (1,010 mi) long, making it the longest waterway in India. It is of **prime importance** amongst all the national waterways considering its locational advantages.
3. The NW-1 passes through **West Bengal, Jharkhand, Bihar** and **Uttar Pradesh** and serves major cities.
4. It was declared as a **waterway in October 1986**. It is navigable by mechanical boat up to Patna.

SC ON SEDITION LAW

The **Supreme Court** on 11 May 2022 rejected the Union government's contention that a **cognisable offence under Section 124A of Indian Penal Code (IPC)** cannot be stopped from being registered. **Section 124A of IPC** deals with the matter of sedition. Earlier in the day, the apex court had suspended the use of the draconian penal provision, until the **Centre re-examines its provisions**.

What is the sedition law?

1. **Section 124A** defines sedition as: "**Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards, the Government**

established by law shall be punished with imprisonment for life, to which fine may be added...”

2. Although **Thomas Macaulay**, who **drafted the Indian Penal Code**, had included the **law on sedition**, it was not added in the code enacted in 1860.
3. Legal experts believe this omission was accidental. In 1890, sedition was included as an offence under **section 124A IPC** through the **Special Act XVII**.
4. The punishment prescribed then, transportation “**beyond the seas for the term of his or her natural life**”, was amended to life imprisonment in 1955.
5. The provision was extensively used **to curb political dissent** during the Independence movement.

Sedition laws in other countries

1. In the **United Kingdom**, the **sedition law was officially repealed** under Section 73 of the **Coroners and Justice Act, 2009**, citing a chilling effect on freedom of speech and expression.
2. **In the United States, sedition is a federal felony under the Federal Criminal Code**, Section 2384, and is now being used against rioters involved in the 6 January attack on the Capitol.
3. **Australia repealed its sedition law in 2010**, and last year, Singapore also repealed the law citing that several new legislations can sufficiently address the actual need for sedition law without its chilling effects.

SPLIT VERDICT ON MARITAL RAPE

A **two-judge Bench of the Delhi High Court** on 11 May 2022 delivered a **split verdict** in a batch of petitions challenging the **exception provided to marital rape** in the Indian Penal Code (IPC). Justice Rajiv Shakdher held that the **exception under Section 375** (which deals with rape) of the IPC is **unconstitutional**, while Justice C Hari Shankar held that the **provision is valid**. Details of the judgment were awaited.

What was the case about?

1. The court was hearing a **clutch of four petitions** challenging the **constitutionality of the exception to Section 375**.
2. Apart from the petitioners, who include the All India Democratic Women’s Association (AIDWA), the court heard several intervenors, including a men’s rights organisation and amicus curiae senior advocates Rajshekhar Rao and Rebecca John.
3. **Section 375 defines rape and lists seven notions of consent** which, if vitiated, would constitute the offence of rape by a man.
4. However, the provision contains a crucial exemption: “**Sexual intercourse or sexual acts by a man with his own wife**, the wife not being under eighteen years of age, is not rape.”
5. This exemption essentially allows a marital right to a husband who can **with legal sanction exercise** his right to consensual or non-consensual sex with his wife.
6. The exemption is also under challenge before the Gujarat High Court on the grounds that it **undermines consent of a woman based on her marital status**.
7. Separately, the Karnataka HC has allowed the framing of marital rape charges against a man despite the exemption in law.

What is the law on marital rape elsewhere?

1. The **marital rape immunity** is known to several post-colonial common law countries. **Australia (1981)**, **Canada (1983)**, and **South Africa (1993)** have enacted laws that **criminalise marital rape**.

8. Like in the ongoing case before the Supreme Court challenging the **constitutionality of Section 124A IPC (sedition)**, the Centre initially defended the rape exception and later changed its stand and told the court that it was reviewing the law, and that **“wider deliberations are required on the issue”**.

RAKHIGARHI AS A PLANNED HARAPPAN-ERA CITY

Wide roads, a drainage network, multi-tier houses and possibly a **jewellery-making unit** - the latest excavation by the Archaeological Survey of India (ASI) at **Rakhigarhi village in Haryana's Hisar** has found enough evidence to suggest that a **meticulously planned Harappan city** thrived there. A team of 40 archaeologists and research scholars has been excavating three of a total 11 mounds across **350 hectares in the village**.

What

1. The **current round of excavation** is likely to conclude by the end of this month. The **ASI and the Haryana government** have undertaken this **ambitious excavation project** and will develop this village as an iconic site to promote the **cultural history of the region**.
2. Archaeologists in **Rakhigarhi** have unearthed evidence of extensive town planning and engineering - **straight roads, pucca walls, multi-storeyed houses**, drains and even garbage collectors at street corners.
3. **Rakhigarhi** first appeared on archeologists' radar **in 1998**. A three-year-long excavation followed and ASI teams found a cluster of seven mounds that were marked **RGR-1 to RGR-7**.
4. The second round of excavation began in 2013 and it was speculated that the **Rakhigarhi site could well be the largest remnant of the Harappan civilisation**.
5. As of now, **RGR-1, 3 and 7** are being examined. At RGR-1, a large quantity of waste of semi-precious stones like agate and carnelian, which were used to make objects like beads as part of extensive lapidary, have been found.
6. While RGR-1 is said to have a **mix of industrial clusters and housing units**, RGR-3 possibly had a housing colony - possibly of an aristocratic community - with evidence of street planning, use of burnt brick and a neatly designed drainage system.
7. **RGR-7** is said to be the **burial ground**, where the skeletal remains of two women have been found.

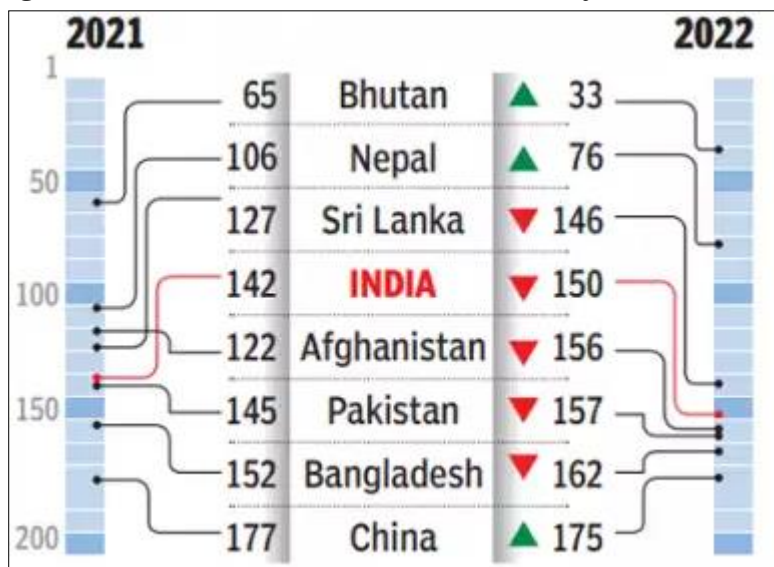


INDIA IN WORLD PRESS FREEDOM INDEX 2022

India has slipped 8 places on the **World Press Freedom Index 2022**. With a **global score of 41**, India has gone down to the **150th position** from 142 last year. The index released by **Reporters Without Borders (RSF)** on 3 May 2022, which is observed as the **World Press Freedom Day**, assesses the state of journalism in **180 countries and territories**.

What

1. Among India's prominent neighbours both **Pakistan and China** are way **below on the index**.
2. **Pakistan** with a global score of 37.99 is at **157th position**, while China with a score of 25.17 is at 175th spot. **Bhutan** with a score of 76.46 is at the **33rd position**, the best in the region.
3. **Norway** with a global score of 92.65 is at the **top of the list**, followed by **Denmark and Sweden**.
4. The **worst performer is North Korea** with a global score of 13.92. The other countries in bottom 5 are **Eritrea, Iran, Turkmenistan and Myanmar**.
5. The index also reveals a **two-fold increase in polarisation** amplified by information chaos – that is, media polarisation fuelling divisions within countries, as well as **polarisation** between countries at the international level.



INTERNATIONAL

INDIA, UAE CEPA TO COME INTO FORCE

The **Comprehensive Economic Partnership Agreement (CEPA)** between **India and the United Arab Emirates** comes into force on 1 May 2022 that would allow 90% of the countries export a **duty-free access to the Emirates**. The commerce and industry ministry will flag off the first consignment of goods from India to UAE under the pact.

What

1. The CEPA is likely to benefit **about \$26 billion worth of Indian products** that are currently subjected to **5% import duty** by the UAE, **India's third-biggest trading partner** behind the US and China.
2. India will benefit from **preferential market access** provided by the UAE on over 97 % of its tariff lines which account for 99% of Indian exports to the UAE in value terms, especially for **all labour-intensive sectors** such as **Gems and Jewellery, Textiles, leather, footwear, sports goods, plastics, furniture, agricultural and wood products, engineering products, medical devices, and automobiles**.
3. **India and the UAE** on 18 February 2022 had **signed CEPA** with a view to boosting bilateral trade to \$100 billion over five-years from \$60 billion now. This **\$100 billion target** can actually be achieved in 2-3 years.
4. The bilateral trade pact is **India's first in the region** and the **first comprehensive trade agreement** with any country in a decade.
5. In services, **India has offered market access to the UAE** in around **100 sub-sectors**, while Indian service providers will have access to **around 111 sub-sectors** from the **11 broad service sectors** such as 'business services', 'communication services', 'construction and related engineering services', 'distribution services', 'educational

services', 'environmental services', 'financial services', 'health related and social services', 'tourism and travel related services', 'recreational cultural and sporting services' and 'transport services'.

INK AGREEMENT FOR COOPERATION IN AGRO-ECOLOGY

India and Germany on 2 May 2022 agreed to **cooperate on agro-ecology and sustainable management of natural resources** in the agriculture sector, with the latter intending to provide concessional loans of up to 300 million euros by 2025 for such initiatives. Agriculture Minister Narendra Singh Tomar and Germany's Minister of Economic Cooperation and Development Svenja Schulze signed a declaration in this regard in a virtual meeting.

As per the agreement

1. The two nations have agreed for **the promotion of joint research, knowledge sharing** and innovation between academic institutions and practitioners including farmers.
2. Besides, **the transfer of technology and scientific knowledge** will be promoted by encouraging exchanges, partnerships and research collaboration with the private sector.
3. Germany's Federal Ministry of Economic Cooperation and Development intends to provide up to **300 million euros by the year 2025** for financial and technical cooperation for projects under this initiative.
4. Germany will provide **coordinated support for this initiative**, supporting the agro-ecological transformation process in India through the **Technical Cooperation Project**.
5. For changing the agenda of agro-ecology, the two countries envisage the establishment of a joint research centre supported by financial cooperation to develop and share **cutting edge knowledge** with practitioners from India, Germany and other countries, while facilitating **value-added technology and scientific transfer**.

UN'S GLOBAL LAND OUTLOOK REPORT

According to the '**Global Land Outlook**' report released by the **United Nations, Pakistan along with 23 other countries** has been listed as "**drought-hit**". Pakistan is facing drought emergencies over the past two years (2020-2022). The report released by the **United Nations Convention to Combat Desertification (UNCCD)** ahead of the **UN Desertification and Drought Day** (17 June) said that over the past century, the highest number of people affected by drought was in Asia.

According to the report

1. The **23 countries listed** by the report include Afghanistan, Angola, Brazil, Burkina Faso, Chile, Ethiopia, Iran, Iraq, Kazakhstan, Kenya, Lesotho, Mali, Mauritania, Madagascar, Malawi, Mozambique, Niger, Somalia, South Sudan, Syria, Pakistan, the United States and Zambia.
2. About future scenarios, the report predicts the outcomes by 2050 and the risks involved, and says by 2050, an **additional 4 million square kilometres of natural areas** would require **restoration measures**, augmented with protection measures of areas important for **biodiversity, water regulation, conservation of soil and carbon stocks**, and **provision of critical ecosystem functions**.
3. **Up to 40 per cent of the planet's land** is degraded, which directly affects half of humanity, threatening roughly half of the global GDP **worth USD 44 trillion**.
4. The report warned that at **no other point in modern history** has humanity faced such an array of familiar and unfamiliar risks and hazards, interacting in a hyper-connected and rapidly changing world.

5. **Poor rural communities, smallholder farmers**, women, youth, indigenous peoples, and other at-risk groups are disproportionately affected by desertification, land degradation, and drought.
6. At the same time, **traditional and local knowledge of indigenous peoples and local communities**, proven land stewards, represent a vast store of human and social capital that must be respected and can be used to protect and restore natural capital.

GOVT. EXTEND INSACOG TO NEIGHBOUR

Prime Minister announced on 12 May 2022 that the **Indian SARS-CoV-2 Genomics Consortium (INSACOG)** would be extended to India's neighbouring countries. India has developed **low-cost mitigation technologies** for **testing, treating, and data management**. **India's genomic consortium** has contributed significantly to the global database on the virus.

About INSACOG

1. **INSACOG was established in December 2020** as a **joint initiative** of the **Union Health Ministry of Health** and **Department of Biotechnology (DBT)** (under the Ministry of Science and Technology) with the **Council for Scientific & Industrial Research (CSIR)** and **Indian Council of Medical Research (ICMR)** to expand the whole-genome sequencing of SARS-CoV-2.
2. **INSACOG started out with the participation of 10 national research laboratories** of the central government, and gradually expanded to a **network of 38 labs**, including private labs, operating on a hub-and-spoke model.
3. The **10 INSACOG Genome Sequencing Laboratories** handhold the new laboratories, and the **pan-India consortium works to monitor genomic variations in SARS-CoV-2** by a sentinel sequencing effort which is facilitated by the **National Centre for Disease Control (NCDC)**, involving the **Central Surveillance Unit (CSU)** under the central government's **Integrated Disease Surveillance Programme (IDSP)**.
4. The data from the **genome sequencing laboratories** is analysed as per the field data trends to study the linkages, if any, between the genomic variants and epidemiological trends.
5. This helps to understand **super spreader events and outbreaks**, and strengthen public health interventions across the country to help break chains of transmission.
6. **INSACOG** is also working to establish a **systematic correlation** between **genome sequencing and clinical outcomes**.

ECONOMY

THE LAW RELATED TO NGO FUNDING

The CBI on 10 May 2022 carried out searches at 40 places and questioned six officials of the **Foreigners Division of the Ministry of Home Affairs (MHA)** for allegedly accepting bribes to give clearances under the **Foreign Contribution (Regulation) Act (FCRA), 2010** to certain **NGOs**. FCRA clearances have been a fraught issue for several years, and the government has often been **accused of targeting NGOs** for political or ideological reasons by cancelling or not renewing their clearances.

What is the FCRA?

1. The **FCRA was enacted during the Emergency in 1976** amid apprehensions that foreign powers were interfering in India's affairs by pumping money into the country through independent organisations.

2. These concerns were, in fact, even older — they had been expressed in Parliament as early as in 1969.
3. The **law sought to regulate foreign donations to individuals and associations** so that they functioned “in a manner consistent with the values of a sovereign democratic republic”.
4. An **amended FCRA was enacted under the UPA government in 2010** to “**consolidate the law**” on utilisation of foreign funds, and “to prohibit” their use for “**any activities detrimental to national interest**”.
5. The law was amended again by the current government in 2020, giving the **government tighter control and scrutiny** over the receipt and utilisation of foreign funds by NGOs.
6. Broadly, the FCRA requires every person or NGO seeking to receive foreign donations to be **(i) registered under the Act, (ii) to open a bank account** for the receipt of the foreign funds in State Bank of India, Delhi, and (iii) to utilise those funds only for the purpose for which they have been received and as stipulated in the Act.
7. The **Act prohibits the receipt of foreign funds** by candidates for elections, journalists or newspaper and media broadcast companies, judges and government servants, members of legislature and political parties or their office-bearers, and organisations of a political nature.

DOT ABOLISHES NOCC CHARGES

To enhance **ease of doing business**, the Department of Telecom has removed **network operation and control centre (NOCC) charges** for the use of space segments for all services like **VSAT, satellite telephony** etc for which permits are issued by the department. The DoT earlier levied **Rs 21 lakh per transponder a year** for **36 megahertz of spectrum** on a pro-rata basis as NOCC charges.

What

1. Besides this, the department also levied **NOCC charges** of Rs 6,000 for every trial of antenna that are used for receiving and transmitting signals.
2. There shall be **no NOCC charges for use of space segment for all DoT licensees** for commercial and captive VSAT services, **GMPCS (satellite phone service), NLD (national long distance)** and other telecom licensees having unified licence or standalone license. This order shall be effective from 1 April 2022, DoT said.
3. The **Network Operations Control Center** was created under the DoT to control the transmissions from ground segment (**satellite earth stations**) along with the **master control facility** under Department of Space to manage the operation of satellites in orbit.
4. Satellite industry body **ISPA** director general Ashok Bhatt said that the DoT has amended the **Unified License** to allow **satellite based IoT services, land mobility services** and also the **removal of NOCC monitoring charges**.
5. The industry is hopeful that this measure is **just the beginning** and the **first of many reform** measures for the sector.

UNDP TO PROVIDE SUPPORT IN PMFBY, KCC

United Nations Development Programme (UNDP) will provide **technical support** to two programmes of the government -- **Pradhan Mantri Fasal Bima Yojana (PMFBY)** and **Kisan Credit Card-Modified Interest Subvention Scheme (KCC-MISS)**. Agriculture ministry and the UNDP have signed a Memorandum of Understanding (MoU) with this regard.

More about MoU

1. Under the MoU, **UNDP will leverage its expertise in systems** and global know-how for supporting the Agriculture ministry for the implementation of combined agriculture credit and crop insurance.
2. The Union Agriculture Ministry is implementing **the schemes** with complete transparency in the **interest of crores of farmers of the country**. Direct benefit is being provided to all the farmers.
3. The farmers paid Rs 21,000 crore premium under PMFBY, they have received more than **Rs 1.15 lakh crore as compensation**. This shows that the **Pradhan Mantri Fasal Bima Yojana** is working in the interest of the entire farming community.
4. Similarly, in the **Kisan Credit Card Scheme**, massive efforts are being made to give benefits to the farmers who could not take benefit of the scheme earlier. Efforts are being made **to reach out to all small farmers**, livestock farmers and fishermen.
5. The **KCC-MISS and PMFBY** were launched with the aim to tackle the problematic areas of previous schemes and to map out a structure that affords better implementation options for all stakeholders while achieving the desired results.
6. As per the MoU, UNDP will provide **responsive, demand-driven technical assistance** for effective implementation of agriculture credit and crop insurance, as well as providing capacity development and Information, Education & Communication (IEC) support to **existing national and state institutions**, keeping in mind the interest of small and marginal farmers, women farmers, sharecroppers, tenant and non-loanee farmers.
7. On this strategic partnership with UNDP, "Technical assistance provided by UNDP in the **last 4 years has yielded good results**."

SCIENCE AND TECHNOLOGY

WORLD'S FIRST PLANT-BASED COVID VACCINE

The **world's first plant-based Covid-19 vaccine**, developed by **Canadian biotechnology** company **Medicago** is found to be 70% effective against **symptomatic patients** caused by five variants of coronavirus. The vaccine, named **Covifenz**, contains **coronavirus-like particles (CoVLP) produced in plants** which are combined with an **adjuvant (ASO3)** that helps vaccines work better.

What

1. The phase 3 trial of the vaccine was conducted at 85 centres involving 24,141 adults who were randomly assigned to receive **two intramuscular injections** of either the CoVLP ASO3 vaccine or placebo 21 days apart.
2. **Covifenz** is the **world's first plant-based Covid inoculation**. It's made from **proteins**, grown in plants that look like the virus that causes **Covid to the human immune system**.
3. The vaccine also uses **GlaxoSmithKline Plc's pandemic adjuvant**, a substance that boosts the immune system's response.
4. It was jointly developed by **Medicago**, which is owned by Mitsubishi Chemical and Philip Morris, and Glaxo.
5. The Canadian government provided \$173 million in funding to its development and is **so far the only country** that has cleared it for use.

NEW RULES FOR VPN PROVIDERS

Virtual private network (VPN) service providers are up in arms against a **new directive** of The **Indian Computer Emergency Response Team or Cert-In**, a wing of the Ministry of Electronics and Information Technology, that mandates they must maintain **all customer data for five years**. VPN service providers have said the new directive would mean a **total loss of privacy** for the users—one of the most important unique selling points of such services.

What is a VPN?

1. Any and all devices connected to the internet are a **part of a large network of computers**, servers and other devices spread across the world.
2. To identify each device connected to the internet, service providers globally assign a **unique address** to each such device called the **internet protocol address or IP address**.
3. It is this IP address that helps websites, law enforcement agencies and even companies track down individual users and their accurate location.
4. A **virtual private network**, when switched on, essentially creates a **safe network within the larger global network of the internet** and masks the IP address of the user by **rerouting the data**.
5. Acting as a tunnel, a VPN takes data originating from one server and masks it in a different identity before delivering it to the destination server.
6. In essence, a **VPN creates several proxy identities for your data** and delivers it safely without disturbing the content of the data.

Why is privacy so important?

1. The main reason **why privacy or anonymity is important for both VPN service providers and users** is that it helps to **avoid being tracked**, mostly by websites and cybercriminals.
2. Since VPN masks the location of a device from everyone, it also prevents government and law enforcement agencies from accurately identifying the location.
3. VPN has also been of **vital importance in countries** that try to suppress dissent. By using VPNs, dissidents are able to spoof their location and stay safe.

ADITYA L1, DISHA SATELLITES

Aditya L1, India's **maiden mission to the Sun**, along with **two dedicated satellites** to observe Sun-Earth linkages will steadfast the country's research in space weather, officials of the Indian Space Research Organisation (Isro) said 10 May 2022. **Aditya L1 is scheduled to be launched sometime this year** whereas the twin satellites—**Disturbed and quiet time Ionosphere-thermosphere System at High Altitude (DISHA)**—have been conceived to understand **Sun-Earth interactions** and their effects on Earth's upper atmosphere.

What

1. The **magnetic latitudes and longitudes** play a major role in the manifestation of effects of **space weather events** and its effects on **Earth's upper atmosphere**.
2. **DISHA H** (high inclination orbit, around 85 degrees) and **DISHA L** (low inclination orbit, around 25 degrees) will have **identical sets of scientific instruments** and payloads.
3. These will measure parameters like electron and **ion current density** and **neutral mass spectrum** among others.
4. Each will have six payloads to study the relevance of space weather and its effects on the **terrestrial upper atmosphere**.

5. Scientists said that the combination of data obtained from **DISHA satellites** along with Aditya L1 could help further understand the linkages between **solar and interplanetary activities** and their effects on Earth at all latitudes.
6. The ISRO said, Spacecraft provides a long duration and **consistent set of observations**, which is the biggest game-changer.
7. **Having spacecraft is another opportunity** (for the scientific community) to look at Earth's upper atmosphere and conduct research.

SCIENTISTS CRACK 60-YEAR SOLAR FLARE MYSTERY

In the span of a few minutes, a **solar flare** can release **enough energy to power the whole world** for over 2000 years. These flares are triggered by a process called **magnetic reconnection**, a phenomenon that scientists have been trying to understand for more than half a century. Fully understanding it can give new insights into **nuclear fusion** and will also help provide better predictions for **solar particle storms** that can affect technology on Earth.

What

1. Now scientists with **NASA's Magnetospheric Multiscale Mission (MMS)** may have finally figured out this puzzle. They have developed a theory for how the most explosive type of **magnetic reconnection—called fast magnetic reconnection**—happens and how it takes place at such a consistent speed.
2. According to the new theory developed by them, **fast reconnection** is likely sped up by the **Hall Effect**.
3. The **Hall effect** describes **how voltage differences are produced across a conductor** when it is subjected to a **magnetic field applied in a certain way**.
4. This phenomenon is used in a lot of everyday technology, including the **sensor in your phone** that knows to switch off the screen when its cover is closed.
5. According to the theory, **charged particles in a plasma stop moving** as a group during **fast magnetic reaction** and begin moving separately, giving rise to the **Hall effect**, which leads to the creation of **an energy vacuum**.
6. The **magnetic fields around this energy vacuum apply pressure** to it, causing it to implode. This releases large amounts of energy at a predictable rate.
7. MMS will use **four spacecrafts flown around the Earth in a pyramid formation** to test this theory. With these spacecrafts, MMS can study **magnetic reconnection in plasma at a higher resolution** than would have been possible on earth.

SUPERMASSIVE BLACK HOLE IN CENTRE OF MILKY WAY

A global team of radio astronomers have on 12 May 2022 unveiled the **first image of the supermassive black hole** at the **centre of the Milky Way galaxy**. Scientists had previously seen stars orbiting around something invisible, compact, and very massive at the **centre of the Milky Way**.

What

1. But the image of **Sagittarius A (Sgr A)** which is **about 27,000 light-years away** from Earth, produced by a global research team called the **Event Horizon Telescope (EHT) Collaboration**, provides the **first direct visual evidence of it**.
2. While the **black hole is not visible**, because it is completely dark, **glowing gas around it** reveals a telltale signature: a **dark central region** (called a "shadow") surrounded by a bright ring-like structure.
3. The new view captures **light bent by the powerful gravity of the black hole**, which is four million times more massive than our Sun.

4. We were stunned by how well the size of the ring agreed with predictions from **Einstein's Theory of General Relativity**, said EHT Project Scientist said.
5. The team had **in 2019** released the **first image of a black hole**, called **M87**, at the centre of the more distant **Messier 87 galaxy**.
6. They noted that the **two black holes look remarkably similar**, even though our **galaxy's black hole is more than a thousand times smaller** and less massive than M87.

ISRO SUCCESSFULLY TESTS HS200 FOR GAGANYAAN

The **Indian Space Research Organisation** on 13 May 2022 successfully completed the **static test** of a **human-rated solid rocket booster (HS200)** for the **Gaganyaan programme** at Satish Dhawan Space Centre (SDSC) in Sriharikota, Andhra Pradesh. The **HS200 is the human-rated version** of the S200 rocket booster of satellite launch vehicle **GSLV Mk III**, popularly known as **LVM3**.

What

1. The successful completion of this test **marks a major milestone** for the prestigious human space flight mission of ISRO, the **Gaganyaan, as the first stage of the launch vehicle** is tested for its performance for the full duration.
2. The design and development of the **HS200 booster** were completed at VSSC, Thiruvananthapuram and propellant casting was completed at SDSC, Sriharikota.
3. The **S200 motor**, which is the **first stage of the LVM3 launch vehicle** intended for launching a **4,000 kg class satellite** to the **geosynchronous transfer orbit**, was configured as a strap-on rocket booster.
4. Based on the successful launch pedigree of this launch vehicle including the **Chandrayaan mission**, the LVM3 has been identified as the launcher for the Gaganyaan mission.
5. For the **manned space mission**, LVM3 launch vehicle underwent improvements stipulated by the requirements of human rating, it was stated.
6. The system is indigenously designed and developed **by ISRO** in participation with various industries spread across the country.
7. **Gaganyaan programme**, the most prestigious scientific endeavour of India, is steadily progressing towards its final goal of taking an Indian to space and bringing him safely back.

MISCELLANEOUS

25TH CHIEF ELECTION COMMISSIONER OF INDIA

Rajiv Kumar took over as the **new chief election commissioner** on 15 May 2022, a day after his predecessor **Sushil Chandra** retired. Kumar will oversee the upcoming Assembly elections and the **2024 general elections** during his tenure. The **Ministry of Law and Justice** on 12 May 2022 announced that the new chief election commissioner would take over on 15 May 2022.

What

1. Kumar's chief election commissioner tenure begins right after the **delimitation commission** finalised its order for the **Union Territory of Jammu and Kashmir**, recommending seven additional constituencies — **six for Jammu** and **one for Kashmir** — and taking the **total number of seats in the UT to 90**.
2. It also comes at a time when the **poll panel's decisions** have met with criticism by mainstream parties in the Valley.

DELHI: VIJAY NAGAR 9717380832 & OLD RAJENDER NAGAR 9811293743 | JAIPUR: 8290800441
 BENGALURU: KORMANGALA 7619166663 & CHANDRA LAYOUT 7619136662 | BHOPAL: 7509975361
 PATNA: 7463950774 | INDORE: 7314977441 | RANCHI: 9939982007 | www.ksgindia.com

3. It will also **pave the way for elections to be held in the Union Territory**, which has been without an elected government since 2018.
4. His tenure as an election commissioner has seen a slew of reforms, including multiple dates for voter registration and **the Election Laws (Amendment) Bill, 2021**, which called for voluntary linking of Aadhaar numbers with voter cards. During Kumar's tenure, the commission also began working on the **concept of remote voting**.
5. Kumar has been credited with conceiving and **implementing merger and acquisitions in the financial sector**.
6. He also has to his credit the **National Pension System** was streamlined by enhancing the mandatory contribution by the central government and providing freedom of choice for **selecting pension funds and patterns of investment** for and **tax reliefs**.

HEALTH IMPACTS OF ANABOLIC STEROIDS

From **two Tokyo Olympians** being banned to Noida Police seizing **fake drugs** and supplements worth Rs 2 crore, **anabolic steroids** have often been in news, although not for the right reasons. More than being a drug prescribed by doctors, **anabolic steroids** are usually used by **bodybuilders**.

What are anabolic steroids?

1. **Anabolic steroids** are essentially **lab-made versions of the male hormone testosterone** and have a similar effect of **increasing muscle mass** as the natural hormone does.
2. It also increases **male characteristics** in a person, such as facial hair and a deeper voice.
3. These are, however, very different from the steroids that are prescribed by doctors for **inflammations, several autoimmune diseases**, or to suppress the **body's immune system** during a Covid-19 infection.
4. These medicines are called **corticosteroids** and are lab-made molecules that mimic the action of the hormone called **cortisol** that controls the body's stress response, **metabolism, and inflammation**.
5. Unlike corticosteroids, **anabolic steroids have limited medical use**. "Anabolic steroids are mainly misused by athletes and sportspersons nowadays.
6. The **anabolic steroids** have a very limited medical role and are mainly used by doctors to **help patients gain weight after a severe illness or injury**.
7. It could also be prescribed in small doses to the elderly to build muscle mass and in some cases also helps to treat **anaemia**.

What are the health impacts?

1. **Use of anabolic steroids** in the short-term can cause **acne and hairfall**. Extended misuse of the substance can also lead to **gynaecomastia** (growth of breasts in men) and erectile dysfunction.
2. In women, it can lead to growth of facial hair. It may also **cause extreme anger, paranoia, and impaired judgement**.
3. Long-term use can lead to **kidney disease** and even failure, liver damage and tumours, enlarged heart, and **high blood pressure**. It can also lead to stunted growth in teenagers.

ASANI INTENSIFIES INTO SEVERE CYCLONIC STORM

Cyclone Asani, formed over the **southeast Bay of Bengal**, further intensified into a **severe cyclonic storm** on 8 May 2022 evening as it moved northwestwards in the direction of north **Andhra Pradesh-Odisha coasts**, the Met department said. The **severe cyclone**, on reaching west central and adjoining northwest Bay of Bengal off north Andhra Pradesh-Odisha coasts on 10 May 2022.

DELHI: VIJAY NAGAR 9717380832 & OLD RAJENDER NAGAR 9811293743 | JAIPUR: 8290800441
 BENGALURU: KORMANGALA 7619166663 & CHANDRA LAYOUT 7619136662 | BHOPAL: 7509975361
 PATNA: 7463950774 | INDORE: 7314977441 | RANCHI: 9939982007 | www.ksgindia.com

What

1. With **Cyclone Asani** -- a name given by **Sri Lanka** that means '**wrath**' in Sinhalese -- formed in the Bay of Bengal on 8 May 2022 and hurtling towards the east coast.
2. **Since 1953, Atlantic tropical storms** have been named from lists prepared by the National Hurricane Center in the US.
3. In the beginning, storms were named arbitrarily. From the mid-1900's, **feminine names were started** to be used for storms. Meteorologists decided later to name storms from a list for a more organised and efficient system.
4. There are **six Regional Specialised Meteorological Centres (RSMCs) worldwide** and five regional Tropical Cyclone Warning Centres, which are mandated for issuing advisories and naming of cyclonic storms.
5. The **India Meteorological Department (IMD) is one of the RSMCs** and is tasked with giving a title to a cyclone that forms over the **northern Indian Ocean** when they have reached a maximum sustained surface wind speed of **62 kmph or more**.
6. The naming of cyclones in the **Bay of Bengal and Arabian Sea** started in September 2004. The IMD provides cyclone and storm surge advisories to **13 countries across the north Indian Ocean**.
7. Once a name is used, it will **not be repeated again**. The word, which can have a maximum of eight letters, should not be offensive to any member country or hurt the sentiments of any group of population.
8. In 2020, a **new list was released with 169 names**, including 13 names each from 13 countries. Earlier, eight countries had given 64 designations.
9. Names from India that have been used include **Gati (speed), Megh (cloud)**, Akash (sky). Other designations that have been used earlier included Ogni, Helen and Fani from Bangladesh; and Laila, Nargis and Bulbul from Pakistan.
10. The cyclone that will form after Asani will be called **Sitrang**, a name given by Thailand.

PULITZER PRIZE 2022

Sanna Irshad Mattoo, a 28-year-old woman photojournalist from Srinagar, has won the **2022 Pulitzer Prize** for **feature photography**. She is among the four Reuters photojournalists who have won the prestigious award — **Adnan Abidi, Amit Dave** and the late **Danish Siddiqui** being the other three — for their coverage of the devastating **second wave of Covid-19 in India**.

What

1. **Siddiqui was killed in Afghanistan** last July while covering the clashes between Afghan forces and the Taliban.
2. Mattoo completed her masters in convergent journalism from the Central University of Kashmir. In 2021, she became the **Magnum Foundation's 'photography and social justice fellow'**.
3. Mattoo has extensively covered Kashmir over the last six years and her photos have been published in various national and international media outlets like **Al Jazeera, Time** and **Caravan**.

Flashback

1. The **Pulitzer Prize** is an award for achievements in **newspaper, magazine, online journalism, literature** and **musical composition** within the United States.
2. It was **established in 1917** by provisions in the **will of Joseph Pulitzer**, who had made his fortune as a newspaper publisher, and is administered by **Columbia University**.
3. **After his death in 1911**, the **first Pulitzer Prizes** were awarded in **June, 1917**.

- The award for Mattoo comes two years after **three Jammu and Kashmir photojournalists** won the **Pulitzer Prize in 2020**.
- Dar Yasin, Mukhtar Khan and Channi Anand** of the Associated Press (AP) won the 2020 award in feature photography for their coverage of the crackdown in Jammu and Kashmir after the abrogation of the state's special status.

FIRST ORGANIC WASTE-POWERED EV CHARGING STATION

Maharashtra on 9 May 2022 inaugurated the **country's first organic waste-powered EV charging station** at Keshavrao Khadye road near Haji Ali in Mumbai. The station, a **first-of-its-kind**, will generate **220 units of electricity** from food waste collected from its nearby areas, mostly from bulk generators like hotels and offices. Along with powering street lights, this energy plant will **now charge electric vehicles too**.

What

- The **Brihanmumbai Municipal Corporation (BMC)** is now planning to set up **organic waste-powered EV charging station** in each of the 24 administrative wards.
- The project is a joint venture between the civic body and **AeroCare Clean Energy**.
- This is the **first-of-its-kind project** in the country that uses food waste to convert to energy.
- A **waste-to-energy plant** was set up at Minatai Thackeray Park and was started in September 2021. Since then, it consumed **1.5 lakh kg of food to generate electricity**. The electronic vehicle charging station is connected to this same project.
- India's first EV charging station** powered by bio-gas at Keshavrao Khadye Marg which generates **220 units of energy from household waste**, Along with powering street lights, this energy plant will now charge electric vehicles too.
- Biodegradable kitchen waste** like fruit/vegetable peels, tea leaves, coffee powder, egg shells, meat and bones, food scraps, leaves and flowers are composted, which are categorised as wet waste.

EXTENDED-RANGE VERSION OF BRAHMOS MISSILE

India on 12 May 2022 successfully **test-fired** an **extended-range version** of the **BrahMos supersonic cruise missile** from a **Sukhoi fighter jet** in the Bay of Bengal, in a boost to the country's strategic strike capability. It was the first launch of the **extended range version of the BrahMos missile** from a **Su-30MKI aircraft**.

What

- The range of the **advanced version of the missile** is learnt to have been extended to around **350 km from the original 290 km**.
- The launch from the aircraft was as planned and the missile achieved a **direct hit on the designated target** in the Bay of Bengal region.
- It said the **extended-range capability of the missile** coupled with the high performance of the **Su-30MKI aircraft** gives the Indian Air Force a strategic reach and allows it to dominate future battlefields.
- With this (test-firing), the IAF has achieved the capability to carry out **precision strikes from Su-30MKI aircraft** against a land/ sea target over very long ranges.
- Besides the IAF, the Navy, the Defence Research and Development Organisation (DRDO), the **Hindustan Aeronautics Limited (HAL)** and the **BrahMos Aerospace Private Limited (BAPL)** were involved in the test firing.
- BrahMos Aerospace Pvt Ltd**, an **India-Russian joint venture**, produces supersonic cruise missiles that can be launched from submarines, ships, aircraft, or land platforms.

7. **BrahMos missile flies at a speed of 2.8 Mach** or almost three times the speed of sound
8. In April too, the **Indian Air Force** successfully test-fired a **BrahMos supersonic cruise missile** from a **Sukhoi fighter jet** on the eastern seaboard

THE PROTECTED MOBILITY VEHICLES

The Army has floated a **Request for Information (RFI)** to purchase **Protected Mobility Vehicles (PMV)** for **high-altitude areas** and for **deserts and plains**. The **PMV is essentially a wheeled armoured personnel carrier**. It provides protection to the soldiers **travelling inside the vehicle from mine blasts** and sudden attack by small arms.

More about Vehicle

1. The troops in these vehicles could be members of **any quick reaction team** heading to a point of conflict, or members of patrolling parties heading to border areas.
2. They could also be **members of a reconnaissance squad** operating behind enemy lines or in forward positions of own troops.
3. The **Army floated an RFI** on 12 May 2022 for information from vendors for PMV to deploy in areas above the height of 4000 metres and for deserts and plains.
4. The detailed instructions given by the Army along with the RFI specifies that these vehicles should be wheeled, **4X4 drive mode** and should have automatic transmission.
5. These vehicles should be able to carry **ten personnel excluding the driver and co-driver** with each person carrying a combat load of **not less than 30 kg**.
6. The PMVs must have **ballistic protection** and should be able to protect the vehicle from **grenade and mine blasts**.
7. It should have a **maximum speed of 90 km on road** and **40 km per hour on cross country terrain**.
8. They should be able to operate in temperature range of **40 degree centigrade to minus 15 degree** in high-altitude areas.

FIRST TIME GROW PLANTS IN LUNAR SOIL

Scientists have for the **first time grown plants in lunar soil** brought back to Earth by astronauts in the **Apollo missions**, a step towards producing **food and oxygen on the Moon** or during future space missions. The researchers at the University of Florida (UF) in the US showed that plants can successfully **sprout and grow in lunar soil**.

What

1. Their study also investigated how plants respond biologically to the Moon's soil, also known as **lunar regolith**, which is **very different from soil found on Earth**.
2. This research comes as **NASA's Artemis Program plans** to return humans to the Moon. Artemis will require a better understanding of how to grow plants in space.
3. To grow their **tiny lunar garden**, the researchers used thimble-sized wells in plastic plates normally used to culture cells. Each well functioned as a pot.
4. Once they filled each "**pot**" with approximately a **gram of lunar soil**, the scientists moistened the soil with a nutrient solution and added a **few seeds** from the **Arabidopsis plant** which is widely used in the research because **its genetic code has been fully mapped**.
5. Growing **Arabidopsis** in the lunar soil allowed the researchers more insight into how the soil affected the plants, down to the level of gene expression.

FACT TO REMEMBER:

1. NGT CLEARS NATIONAL WATERWAY 1
2. SC REJECTS PETITION AGAINST PUTTING SEDITION LAW ON HOLD
3. SPLIT VERDICT ON MARITAL RAPE
4. UN'S GLOBAL LAND OUTLOOK REPORT
5. GOVT. EXTEND INSACOG TO NEIGHBOUR
6. WORLD'S FIRST PLANT-BASED COVID VACCINE
7. NEW RULES FOR VPN PROVIDERS
8. SUPERMASSIVE BLACK HOLE IN CENTRE OF MILKY WAY
9. 25TH CHIEF ELECTION COMMISSIONER OF INDIA
10. FIRST TIME GROW PLANTS IN LUNAR SOIL

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