

# My Notes....

## NATIONAL

### IPCC'S AR6 REPORT

The **Inter-governmental Panel on Climate Change** or **IPCC** released the most damning **report on the climate crisis** urging for an urgent wakeup call for the humanity. The report, which has been dubbed as '**file of shame**' by UN Secretary-General Antonio Guterres has one simple and blunt warning for all of us. So far, **six assessment reports (AR)** have been published by the IPCC.

#### The major takeaway of Part C of the AR6

1. **Focus on fossil fuel:** The main finding of the latest IPCC report is that the world must **focus on reducing dependency on fossil fuel**. Governments around the world must put more effort in generating **solar and wind energy**.
2. **Tech to rescue: Carbon dioxide removals** via **technological methods** have also found the mention in the report. While many green crusaders feel that this may not solve the purpose, the report says that the main agenda is **to keep Earth cool**. So if some sort of **tech intervention** can be utilised, so be it!
3. **We the people:** From **low carbon diets to managing food waste** to improving public transport across cities, the IPCC report talks heavily about **making societal change** a key weapon to fight climate crisis.
4. **Show me the money:** It is often perceived that **environment-friendly measure** cost a lot. That it is not affordable to **go green**. But the IPCC report says that there is not of cash supply that is **still devoted to the fossil fuel**. If this pattern changes, we would be able to meet the 1.5 degree Celsius target.

#### Flashback

1. The **AR6** or the **sixth assessment report** was divided into **three parts**.
2. Part A was released in August, 2021, Part B was made public in February 2022 and the **Part C** was released on 4 April 2022.
3. While **Part A of AR6** spoke extensively about more incidents of **heatwaves, melting glaciers, critical rise in the sea levels** and extreme rains.
4. Part B said that if **no suitable actions are taken by the governments** and other stakeholders around the world, than Earth would see disastrous increase in **greenhouse gases** and more **climate crisis-linked calamities**.

### CENTRE OPPOSED LINGARAJ TEMPLE ORDINANCE

The Central government has told the **Odisha government** that its ordinance to bring the **11th-century Lingaraj temple in Bhubaneswar** and its associated temples under a **special law** is outside the legislative competence of the state legislature. It also said the ordinance is in **conflict with the rules** laid down under the **Ancient Monuments and Archaeological Sites and Remains Act, 1958 (AMASR Act)**.

#### What is the Lingaraj Temple Ordinance, 2020?

1. **Lingaraj temple**, the **largest in Bhubaneswar**, was constructed by **King Jajati Keshari** in the 10th Century and completed by **King Lalatendu Keshari** in the 11th Century.
2. In December 2019, the Odisha Government had announced a **development plan for the temple** and its peripheral area in Bhubaneswar.

3. The 66-acre “**Ekamra Kshetra**” development plan was launched to preserve the heritage and development of the nine sites and their nearby areas at a **cost of around Rs 700 crore**.
4. The first phase of the project includes **outer access road development, Lingaraj entry plaza, Bindusagar revival plan, parking space, heritage complex, development of amenities for Kedar Gouri- Mukteswar complex, e-auto project, relocation project and a state-of-the-art interpretation centre.**

#### Why has the Centre opposed the ordinance?

1. The **Ministry of Home Affairs** has said several sections of the proposed ordinance were in conflict with the **Ancient Monuments and Archaeological Sites and Remains (AMASR) Act 1958**.
2. The AMASR Act provides for **preservation of ancient and historical monuments** and archaeological sites and remains of national importance.
3. The ministry has pointed out that the state government has already **violated the AMASR Act** around Lingaraj temple by building modern structures.

## FIRST ‘LONG PERIOD AVERAGE’ FOR THIS YEAR

The country is likely to receive a **normal monsoon for the fourth consecutive year**, the **India Meteorological Department (IMD)** said in its **first Long Range Forecast (LRF)** for this year released on 14 April 2022. **Rainfall** in the **four-month June-September southwest monsoon season** was in the normal range in 2019, 2020, and 2021 as well.

### What is the Long Period Average

1. The IMD predicts a “**normal**”, “**below normal**”, or “**above normal**” monsoon in relation to a benchmark “**long period average**” (**LPA**).
2. The “LPA of rainfall is the **rainfall recorded over a particular region** for a given interval (like month or season) average over a long period **like 30 years, 50 years, etc**”.
3. The IMD’s prediction of a normal monsoon on 14 April 2022 was based on the **LPA of the 1971-2020 periods**, during which **India received 87 cm of rain** for the entire country on average.
4. The IMD has in the past calculated the **LPA at 88 cm** for the 1961-2010 periods and at 89 cm for the period 1951-2000.
5. While **this quantitative benchmark** refers to the average rainfall recorded from June to September for the entire country, the amount of rain that falls every year varies from **region to region** and **from month to month**.

The IMD maintains five rainfall distribution categories on an all-India scale. These are:

1. **Normal or near normal**, when the percentage departure of actual rainfall is **+/-10% of LPA**, that is, between 96-104% of LPA;
2. **Below normal**, when departure of actual rainfall is **less than 10% of LPA**, that is 90-96% of LPA;
3. **Above normal**, when **actual rainfall is 104-110% of LPA**;
4. **Deficient**, when **departure of actual rainfall is less than 90% of LPA**; and
5. **Excess**, when the **departure of actual rainfall is more than 110% of LPA**.

## WEAPON OF MASS DESTRUCTION BILL PASSED

The **Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Amendment Bill, 2022** has been unanimously passed in Lok Sabha on 6 April 2022. The Bill **seeks to amend** The **Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005**, to provide against the financing of proliferation of weapons of mass destruction and their delivery systems in line with **India's international obligations**.

### More about the Bill

1. The **2005 Act** prohibited the **manufacturing, transport, and transfer of weapons of mass destruction**, and their means of delivery.
2. According to the Statement of Objects and Reasons of the Bill, the need to amend the Act has arisen from the fact that **“in recent times, regulations relating to proliferation of weapons of mass destruction and their delivery systems by international organisations have expanded”,** and **“the United Nations Security Council’s targeted financial sanctions and the recommendations of the Financial Action Task Force have mandated against financing of proliferation of weapons of mass destruction and their delivery systems”.**
3. There is **no single, authoritative definition of a WMD in international law**, the expression is usually understood to cover **nuclear, biological, and chemical (NBC) weapons**.
4. According to the **United States Department of Homeland Security**, **“A weapon of mass destruction is a nuclear, radiological, chemical, biological, or other device that is intended to harm a large number of people.”**

### Control over use of WMDs

1. The use of **chemical, biological, and nuclear weapons** is regulated by a number of international treaties and agreements.
2. Among them are the **Geneva Protocol, 1925**, that banned the **use of chemical and biological weapons**; and the **Biological Weapons Convention, 1972**, and **Chemical Weapons Convention, 1992**, which put comprehensive bans on the biological and chemical weapons respectively.
3. **India has signed and ratified both the 1972 and 1992 treaties.** There are very few non-signatory countries to these treaties, even though several countries have been accused of non-compliance.
4. The use and proliferation of nuclear weapons is regulated by treaties such as **Nuclear Non-Proliferation Treaty (NPT)** and the **Comprehensive Test Ban Treaty (CTBT)**.

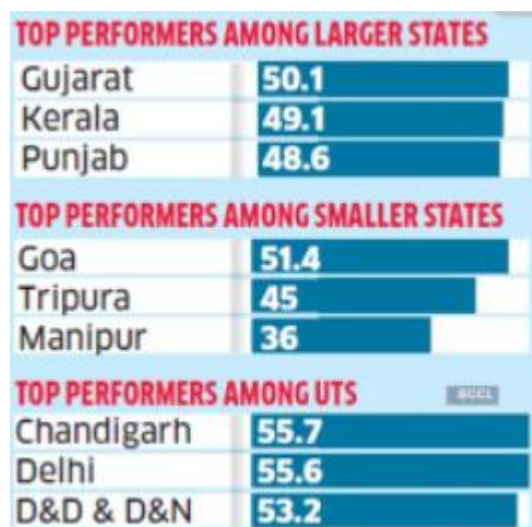
## NITI AAYOG'S STATE ENERGY AND CLIMATE INDEX

**Gujarat has topped** NITI Aayog **State Energy and Climate Index-(SECI)** Round 1 among larger states. This index aims to rank states and union territories **on six parameters — discoms performance, access affordability and reliability of energy, clean energy initiatives, energy efficiency, environmental sustainability and new initiatives.** The index is **based on 2019-20 data.**

### What

1. **Gujarat** was **followed by Kerala and Punjab**, according to the government think tank's report.
2. States like **Chhattisgarh, Madhya Pradesh and Jharkhand** were placed at the bottom.

3. The report said the performance of **Madhya Pradesh, Bihar, Jharkhand**, and **Odisha** has greater scope for improvement in terms of **clean energy initiatives, energy efficiency**, environmental sustainability and new initiatives.
4. Among the smaller states, **Goa topped the index**, followed by **Tripura and Manipur**.
5. **Punjab was the best performer** in **discom performance parameters** among larger states, while **Kerala emerged top performer** in **access, affordability** and **reliability category**.
6. The **State Energy and Climate Index (SECI)** is the **first index** that aims to track the efforts made by States and UTs in the **climate and energy sector**.
7. These parameters have been devised keeping in mind **India's goals for climate change** and **clean energy transition**.
8. The SECI is the first step in this journey **where States can explore and benchmark** themselves on various parameters.
9. The SECI will help States **to understand their performance** across multiple parameters/indicators.



## CRIMINAL PROCEDURE IDENTIFICATION BILL PASSED

Parliament on 6 April 2022 passed the **Criminal Procedure (Identification) Bill** that seeks to allow investigators **to collect certain identifiable information of convicts** and other persons for purposes of identification and investigation in **criminal matters**. The **Criminal Procedure (Identification) Bill, 2022** replaces the **Identification of Prisoners Act, 1920**.

### About the Bill

1. The Bill proposes to allow the police and prison authorities **to collect, store and analyse physical and biological samples** including **retina and iris scans**.
2. The Bill compels certain individuals, convicted and accused of offences, **to share biological personal data**.
3. This has raised concerns about **excess state surveillance** and **violation of privacy**.
4. **Section 2(1)(b)** of the Bill defines “**measurements**” to include **finger impressions, palm-print impressions, footprint impressions**, photographs, iris and retina scans, physical and biological samples and their analysis, behavioural attributes including signatures and handwriting, or any other examination referred to in **Section 53** or **Section 53A** of the **Code of Criminal Procedure (CrPC), 1973**. Section 53 relates to medical examination of a person arrested.
5. The law also seeks **to replace the Identification of Prisoners Act, 1920** which applied to collection of “**measurements**” for mostly those who were convicted and who would serve a prison sentence.
6. **Measurements under the 1920 Act** involved only **finger impressions** and **footprint impressions**.

7. The Bill states that the **National Crime Records Bureau (NCRB)** shall be entrusted with the **biological data collected**, “in the interest of prevention, detection, investigation and prosecution of any offence under any law for the time being in force”.

## FORTIFIED RICE DISTRIBUTION APPROVED

The Union Cabinet on 8 April 2022 approved a scheme to distribute **fortified rice** under government programmes. **Food Corporation of India** and state agencies have already procured 88.65 LMT (lakh tonnes) of fortified rice for supply and distribution. In last year’s **Independence Day speech**, Prime Minister had announced the fortification of rice distributed under various government schemes, including the **public distribution system (PDS)** and **midday meals** in schools, **by 2024**.

### What is rice fortification?

1. The **Food Safety and Standards Authority of India (FSSAI)** defines fortification as “**deliberately increasing the content of essential micronutrients** in a food so as to improve the nutritional quality of food and to provide public health benefit with minimal risk to health”.

2. **Various technologies** are available to add micronutrients to regular rice, such as **coating, dusting, and ‘extrusion’**.

3. The last mentioned involves the production of **fortified rice kernels (FRKs)** from a mixture using an **‘extruder’ machine**. It is considered to be the best technology for India.



4. The **fortified rice kernels are blended with regular rice** to produce fortified rice.
5. **Dry rice flour** is mixed with a **premix of micronutrients**, and water is added to this mixture.
6. The mixture is passed through a **twin-screw extruder** with heating zones, which produces **kernels similar in shape and size to rice**.
7. These kernels are dried, cooled, and packaged for use. FRK has a shelf life of **at least 12 months**.
8. Fortified rice will be packed in **jute bags with the logo (+F)** and the line “**Fortified with Iron, Folic Acid, and Vitamin B12**”.

## INTERNATIONAL

### RUSSIA SUSPENDED FROM UNHRC OVER UKRAINE

The **United Nations General Assembly** on 7 April 2022 **suspended Russia** from the **U.N. Human Rights Council** over reports of "gross and systematic violations and **abuses of human rights**" by **invading Russian troops in Ukraine**. The U.S.-led push garnered 93 votes in favor, while 24 countries voted no and 58 countries abstained.

#### What

1. A two-thirds majority of voting members - abstentions do not count - was needed to suspend Russia from the **47-member council**.
2. Suspensions are rare. **Libya was suspended in 2011** because of violence against protesters by forces loyal to then-leader Muammar Gaddafi.
3. The resolution adopted by the **193-member General Assembly** draft expresses "grave concern at the ongoing human rights and humanitarian crisis in Ukraine," particularly at reports of rights abuses by Russia.
4. Russia was in its second year of a three-year term on the **Geneva-based council**, which **cannot make legally binding decisions**. Its decisions send **important political messages**, however, and it can authorize investigations.
5. **India abstains from voting in UNGA** to suspend Russia **from UNHRC** over Ukraine crisis

### NATIONS PLEDGE SUPPORT TO GEF

**Twenty-nine countries** have jointly pledged more than \$5 billion for the **Global Environment Facility**, providing a major boost to international efforts **to protect biodiversity** and **curb threats from climate change, plastics and toxic chemicals** through collaborative action this decade.

#### More about GEF

1. The new support, totalling \$5.25 billion, increases the GEF's funding by nearly 30 per cent compared to its most recent four-year operating cycle.
2. It comes at a critical moment for developing countries whose ability to tackle **worsening environmental challenges** has been strained by fiscal pressures from the Covid-19 pandemic and rising inflation.
3. This successful replenishment is not only important for the programmes and projects the GEF supports around the world and the **global environmental benefits** they yield.
4. The **GEF is the primary source of financing for biodiversity protection globally** and is the **only multilateral fund** working across all aspects of environmental health.
5. It's **financial and policy support** helps developing countries meet their obligations under the **Convention on Biological Diversity**, the **Minamata Convention on Mercury**, the **Stockholm Convention on**

#### Flashback

1. Early action grants provided by the GEF in its seventh funding period have laid the groundwork for these efforts **to reduce species loss and protect critical ecosystems**.
2. Since **it was launched in 1991**, the GEF has provided nearly \$22 billion in grants and mobilised another \$119 billion in co-financing to address environmental threats and **protect biodiverse areas, on land and at sea**.

**Persistent Organic Pollutants**, the **UN Convention to Combat Desertification**, and the **UN Framework Convention on Climate Change**.

6. **Biodiversity protection** represents the biggest share of the GEF's eighth programming period, known as **GEF-8**, which will run from July 2022 to June 2026.
7. This support will be vital to the achievement of the Leaders' **Pledge for Nature**, which aims to **reverse biodiversity loss by 2030** through safeguards of land and ocean territory with globally important biodiversity.
8. **India is both a donor and a recipient of GEF**. It has been a leading developing country participant in the GEF and has played a major role in shaping the restructuring of the GEF.

## INDIA, US SIGN SPACE MOU DURING 2+2 MEETING

A pact to share information on space activities was **signed by the US and India** during the **2+2 meeting** of their diplomatic and defence leaders in Washington on 11 April 2022. The **Space Situational Awareness** Memorandum of Understanding (MoU) aims to **protect the satellites of the two countries**.

### What

1. The **2+2 meeting** takes place under the **cloud of Russia's ongoing invasion of Ukraine** and the divergent approach to it by India and the US.
2. The two countries have **important commitments** that will drive **technological innovation and cooperation** in emerging defence domains, including **space and cyberspace**.
3. Indian continues to acquire **key US defence platforms**, and that is forging important new ties between our **defence industrial bases**.
4. India has tried to **stay neutral on the Russian invasion** given its dependence on Moscow for **vital defence supplies** and abstained on eight Ukraine-related votes at the UN.
5. The US, which is leading the global response to the invasion, prefers **India to take a stronger stand against Russia**.
6. But the 2+2 focus on cooperation in the **Indo-Pacific region**, where the two countries are strategically more aligned.
7. The **2+2 meetings held since 2018** alternate between the two capitals and **its fourth edition**, which was to have been held in December, was postponed because of the visit of Russian President Vladimir to New Delhi that month.
8. This year's event will celebrate **75 years of diplomatic relations between India and the US**.

## RUSSIA LOSES ALL 4 ELECTIONS TO UN

**Russia, contesting elections to four UN committees**, lost all of them, including one to Ukraine, a verdict being seen as Moscow's isolation on the global stage. Elections were held in the **United Nations Economic and Social Council** on 13 April 2022 to fill various vacancies in subsidiary and related bodies.

### What

1. **Russia** was contesting elections to the **Committee on Non-Governmental Organisations, UN Women Executive Board, UNICEF Executive Board and Permanent Forum on Indigenous Issues**.

2. **India gets elected to 4 @UN ECOSOC Bodies: Commission for Social Development, Committee on NGOs, Commission on Science & Technology for Development** and Ambassador **Preeti Saran** gets re-elected to Committee for Economic, Social and Cultural Rights.
3. **Preeti Saran of India** was elected by acclamation for the **Committee on Economic, Social and Cultural Rights** for a four-year term of office beginning on 1 January 2023.
4. Saran's first four-year term began on 1 January 2019. She had joined the **Indian Foreign Service in August 1982**.
5. She has served in Indian missions at Moscow, Dhaka, Cairo, Geneva, Toronto and Vietnam and was the **Consul General of India in Toronto** and the **Indian Ambassador to Vietnam**.

## ECONOMY

### KEY TAKEAWAYS FROM MPC MEETING

The **Monetary Policy Committee (MPC)** of the **Reserve Bank of India (RBI)** on 8 April 2022 left unchanged the key policy rate — **Repo rate** — at **4 per cent** and the **Reverse repo rate** at **3.35 per cent**. However, the RBI introduced the **Standing Deposit Facility (SDF)** – an additional tool for **absorbing liquidity** – at an interest rate of **3.75 per cent**. The central bank retained its accommodative policy stance but hinted that it will be less accommodative in the wake of **elevated inflation levels**.

#### Key takeaways

1. The policy panel slashed the **GDP growth to 7.2 per cent** and hiked the inflation forecast at 5.7 per cent for the fiscal 2022-23.
2. The RBI decision **to keep Repo rates unchanged at 4 per cent** will help banks to keep interest rates in the financial system unchanged, aiding growth in the economy. Borrowers won't have to **shell out more on EMIs** and **loan repayments** at least for the time being.
3. It has retained the **reverse repo rate**, the rate at which **RBI borrows from banks**, unchanged at **3.35 per cent**.
4. It also decided **to remain accommodative** while focusing on withdrawal of accommodation to ensure that **inflation remains within the target going forward**, while supporting growth.
5. The central bank has slashed **the growth forecast to 7.2 per cent** for fiscal 2022-23 from **7.8 per cent projected earlier** in the wake of the **rise in crude oil and commodity prices** and the aftereffect of the Russian invasion of Ukraine.
6. It has increased the retail inflation from **4.5 per cent projected earlier** to **5.7 per cent in 2022-23**.
7. **Escalating geopolitical tensions** have cast a shadow on our economic outlook. The war could potentially impede **the economic recovery** through elevated commodity prices and global spillover channels.

### RBI ISSUES GUIDELINES FOR DBUS

The **Reserve Bank of India (RBI)** on 7 April 2022 said existing banks can open **digital banking units** to offer products and services in both **self-served** and **assisted mode round-the-clock**. In the Union Budget, the government announced the setting up of at least **75**



**such units in 75 districts** to commemorate 75 years of the country's independence as '**Azadi ka Amrit Mahotsav**'.

#### According to the guidelines

1. On the establishment of **Digital Banking Units (DBUs)**, the products and services to be provided at a DBU include, **opening of accounts, cash withdrawal and deposit, KYC updation, loans and complaint registrations**.
2. Digital banking products and services would generally mean those **financial products/services** whose designs and fulfilments have nearly **end-to-end digital life cycle** with the initial customer acquisition/product delivery necessarily taking place digitally through self-service or assisted self-service.
3. A **DBU is a specialised fixed point** business unit/hub housing certain minimum infrastructure for delivering **digital banking products** and services to ensure convenient and cost-effective banking for customers.
4. **Scheduled commercial banks** having experience in **digital banking** are allowed to open DBUs in Tier 1 to Tier 6 centres without having the need to take permission from the RBI.
5. **Each DBU shall be housed** distinctly with separate entry and exit provisions.
6. These units will be **separate from existing banking outlets** with formats and designs most appropriate for digital banking users.

#### 'POISON PILL' DEFENCE MECHANISM

On 15 April 2022, Twitter countered **Elon Musk's offer** to buy the company for more than **\$43 billion with a corporate tool** known as a **poison pill**, a defensive strategy familiar to boardrooms trying to fend off takeovers but less familiar to everyday investors. This **defense mechanism** was developed in the 1980s as company leaders, facing corporate raiders and **hostile acquisitions**, tried to defend their businesses from being acquired by another enterprise, person or group.

#### What is a poison pill?

1. A **poison pill is a maneuver** that typically makes a company **less palatable to a potential acquirer** by making it more expensive for the acquirer to buy shares of the target company above a certain threshold.
2. The strategy also gives a company **more time to evaluate an offer** and can give the board leverage in trying to force a **direct negotiation with the potential acquirer**.
3. A **poison pill** is officially known as a **shareholder rights plan**, and it can appear in a company's charter or bylaws or exist as a contract among shareholders.
4. There are **different types of poison pills**, but usually, they allow certain shareholders to buy additional stock at a discounted price.
5. The **only shareholder blocked from making these discounted purchases** is the one who triggers the poison pill.
6. It is triggered when a person, usually the acquirer, hits a threshold for how many shares they own.
7. If they hit that threshold, the value of their shares is suddenly diluted as other shareholders make discounted purchases.
8. **Securities experts** say that investors rarely try to break through a poison pill threshold, though there are exceptions.

## RBI'S NEW TOOL TO ABSORB EXCESS LIQUIDITY

While **retaining the reverse repo rate at 3.35 per cent**, the Reserve Bank of India (RBI) on 8 April 2022 introduced the **Standing Deposit Facility (SDF)**, an additional tool for absorbing liquidity, at an interest rate of 3.75 per cent. The main purpose of SDF is **to reduce the excess liquidity** of Rs 8.5 lakh crore in the system, and **control inflation**.

### More about SDF

1. In 2018, the amended **Section 17 of the RBI Act** empowered the Reserve Bank **to introduce the SDF** – an additional tool for **absorbing liquidity** without any collateral. By removing the **binding collateral constraint on the RBI**, the SDF strengthens the operating framework of monetary policy.
2. The SDF is also a **financial stability tool** in addition to its role in liquidity management.
3. The **SDF will replace the fixed rate reverse repo (FRRR)** as the floor of the liquidity adjustment facility corridor. Both the standing facilities — the **MSF (marginal standing facility)** and the SDF will be available on all days of the week, throughout the year.
4. The **SDF rate will be 25 bps below the policy rate (Repo rate)**, and it will be applicable to overnight deposits at this stage.
5. It would, however, retain the flexibility to absorb liquidity of longer tenors as and when the need arises, with appropriate pricing.
6. The RBI's plan is **to restore the size of the liquidity surplus in the system** to a level consistent with the prevailing stance of monetary policy.
7. The **fixed rate reverse repo (FRRR) rate** which is retained at **3.35 per cent** will remain part of the **RBI's toolkit**, and its operation will be at the discretion of the RBI for purposes specified from time to time.
8. The **FRRR along with the SDF** will impart flexibility to the RBI's liquidity management framework, the RBI said.

## SCIENCE AND TECHNOLOGY

### INDIA'S 'SHAKUNTALA' LAUNCHED BY FALCON-9

Indian space-tech startup **Pixxel** has launched its **first satellite**, part of its eventual **36-satellite planned constellation**, aboard a SpaceX Falcon 9 **rideshare mission**. The satellite was incidentally the **second that Pixxel built**, and is a part of the first three technology demonstration satellites in its constellation. Called '**Shakuntala**', the satellite will help Pixxel begin its **hyperspectral satellite imagery** and **satellite-based data analytics services** to pilot customers.

### More about Shakuntala

1. Launched on 1 April 2022 aboard SpaceX's **Transporter-4 mission** from Cape Canaveral in the US, this launch puts the company within touching distance of its **ambitious mission** to assemble one of the **world's most advanced constellations** of low-earth-orbit **imaging satellites**.
2. From being one of the very few finalists in the **SpaceX Hyperloop Pod Competition** in 2017 to now launching our own satellites as part of **SpaceX's fourth dedicated rideshare mission**, life has come full-circle for us.
3. Weighing **less than 15 kg**, **Shakuntala (TD-2)** is capable of capturing **orbital images** in more than **150 bands of colour** from the **visible and infrared spectrum** with a resolution

of 10-metres per pixel, far exceeding the specificity of 30-metre per pixel hyperspectral satellites launched by a few select organisations such as NASA, ESA, and ISRO.

4. **Shakuntala** will begin amassing information and uncovering the invisible changes wreaking havoc on our planet like **natural gas leakages, deforestation, melting ice caps, pollution, and declining crop health.**

## SFDR BOOSTER SUCCESSFULLY TESTED

India on 8 April 2022 successfully flight tested **Solid Fuel Ducted Ramjet (SFDR)** booster, a missile system, at the Integrated Test Range (ITR) in Chandipur off the Odisha coast. The **SFDR-based propulsion** enables the missile **to intercept aerial threats at very long range at supersonic speeds**, the Defence Research and Development Organisation (DRDO) said.

### More about Test

1. The test demonstrated **reliable functioning of all critical components** involved in the complex missile system and met all the mission objectives.
2. The **performance of the system** has been confirmed from the data captured by a number of instruments like **telemetry, radar and electro Optical tracking systems** deployed by ITR.
3. It is an **important milestone** towards development of critical missile technologies in the country.
4. The **SFDR** has been developed by **Defence Research and Development Laboratory**, Hyderabad, in collaboration with other DRDO laboratories such as **Research Centre Imarat**, Hyderabad and **High Energy Materials Research Laboratory**, Pune.

## FIRST ALL-PRIVATE ASTRONAUT ON ISS

The **first all-private team of astronauts** ever launched to the **International Space Station (ISS)** arrived safely at the orbiting research platform on 9 April 2022 to begin a week-long **science mission** hailed as a milestone in commercial spaceflight. The rendezvous came about 21 hours after the four-man team representing **Houston-based Startup Company Axiom Space** Inc lifted off on 8 April 2022 from NASA's Kennedy Space Center, riding atop a SpaceX-launched **Falcon 9 rocket**.

### What

1. The new arrivals brought with them two dozen **science and biomedical experiments** to conduct **aboard ISS**, including research on **brain health, cardiac stem cells, cancer and aging**, as well as a technology demonstration **to produce optics using the surface tension of fluids in microgravity.**
2. The mission, collaboration among **Axiom**, Elon Musk's rocket company **SpaceX** and **NASA**, has been touted by all three as a major step in the expansion of space-based commercial activities collectively referred to by insiders as the **low-Earth orbit economy**, or "**LEO economy**" for short.
3. The trend will help the U.S. space agency focus more of its resources on **big-science exploration**, including its **Artemis program** to send humans back to the moon and ultimately to Mars.
4. The Axiom mission also stands as **SpaceX's sixth human space flight** in nearly two years, following four NASA astronaut missions to the space station and the "**Inspiration 4**" launch in September that sent an all-civilian crew to orbit for the first time. That flight did not dock with ISS.

## INDIA HAS 217 SPACE OBJECTS ORBITING EARTH

India has **103 active or defunct spacecraft** and **114 objects** categorised as ‘**space debris**’ in orbit and it has embarked on a research to reduce such fragments from outer space. Presently, the Indian Space Research Organisation (ISRO) has taken up research activities to study the feasibility and technologies required to undertake **active debris removal (ADR)**.

### What

1. According to **Orbital Debris Quarterly News** issued in March by NASA, **India had 103 spacecraft**, including active and defunct satellites, and **114 space debris objects**, including spent rocket bodies orbiting the earth. So, the country has a total of **217 space objects orbiting the earth**.
2. **Active Debris Removal (ADR)** was one of the active methods suggested by the Space Debris Research Community to contain the growth of space debris objects.
3. **ADR is a very complex technology** and involves policy and legal issues. Technology demonstration studies have been taken up by many countries, including India.
4. **Developmental studies** for finalising necessary technologies are initiated to demonstrate ADR.
5. ISRO has also set up the **Directorate Space Situational Awareness and Management** at its headquarters to deal with issues related to space debris.
6. A dedicated **Space Situational Awareness Control Centre** is set up in Bengaluru to coordinate **all space debris related activities within ISRO** and to safeguard Indian operational space assets from collision threats.
7. ISRO was also planning to have its **own observational facilities** to track and catalogue the space objects.
8. According to the Orbital Debris Quarterly News, the **US has 4,144 spacecraft** (active and defunct), and **5,126 objects that can be categorised as space debris** in the earth's orbit.
9. **China has 517 spacecraft**, active and defunct, and **3,854 objects**, including spent rocket bodies, orbiting the earth.

## HELINA SUCCESSFULLY TESTED

India on 11 April 2022 successfully **flight-tested Helina**, an **anti-tank guided missile (ATGM)**, in Pokhran. The test was part of user validation trials of the third generation ‘**fire and forget**’ class missiles developed by the **Defence Research and Development Organisation (DRDO)**. The flight test was conducted by teams from **DRDO, the Army and the Air Force**.

### More about Helina

1. The flight trials were conducted from an indigenously developed **Advanced Light Helicopter (ALH)** and the missile was fired successfully, engaging a simulated tank target in the Pokhran desert ranges.
2. The missile is guided by an **Infrared Imaging Seeker (IIR)** operating in the ‘**lock on before launch**’ mode. It is one of the **most advanced Anti-Tank weapons** in the world.
3. **Helina** has a maximum range of **seven kilometers** and has been designed and developed for integration on **weaponized version of the ALH**.

4. In continuation to validation trials conducted at Pokhran, proof of efficacy at high altitudes paves the **way for its integration on ALH**.
5. **Helina** has been developed by **Defence Research and Development Laboratory (DRDL)**, Hyderabad under the **Missiles and Strategic Systems (MSS) cluster** of the DRDO. Successful user trials of the missile have been **conducted since 2018**.
6. The **Helina missile system** has **all-weather, day and night capability** and can defeat battle tanks with conventional armour as well as explosive reactive armour.
7. It has been developed for integration with choppers in **both the Army and the Air Force**. The **Air Force version of Helina** is sometimes **referred to as Dhruvastra**.
8. Helina can engage targets **both in direct hit mode** as well as **top attack mode**. In the top attack mode, the missile is required to climb sharply after launch and travel at a certain altitude and then plunge on the top of the target. In the **direct hit mode**, the **missile travels at a lower altitude**, directly striking the target.

#### Flashback

1. The DRDO has designed and developed **a range of anti-tank missile technologies** that include the **Nag, Helina MPATGM, SANT and Laser Guided ATGM** for **MBT Arjun**.
2. **Nag is a third-generation fire-and-forget missile** developed for mechanized formations to engage heavily fortified enemy tanks.
3. **MPATGM** stands for **Man-Portable Anti-Tank Guided Missile** which has a range of **2.5 kilometers**, with **fire-and-forget** and top attack capabilities for infantry use.
4. **SANT is a smart Stand-off Anti-Tank Missile** being developed for launch from the Mi-35 Helicopter for the **Air Force's anti-tank operations**.
5. **ATGM for MBT Arjun** is a **laser-guided, precision-guided munition** which is launched from the **120mm rifled gun of the Arjun tank** to engage and defeat Explosive Reactive Armour-protected armoured targets.

## DOT LAUNCHED 5G VEPP

The **Department of Telecommunications (DoT)** on 11 April 2022 launched **5G Vertical Engagement and Partnership Program (VEPP)**, and invited **Expression of Interest (EoI)** to create partnerships across 5G use-case ecosystem stakeholders with an emphasis to address vertical industry needs.

### What

1. In order to multiply the **5G opportunities across the usage verticals**, under the guidance of Secretary (Telecom), an inter-ministerial committee chaired by Member (Technology), **Digital Communications Commission** is constituted with representatives from **Ministry of Electronics and IT, Department of Science and Technology** and relevant vertical ministries.
2. The **5G-centric program** is being offered to industry verticals which have potential for **innovative 5G use cases**, through an **Expression of Interest (EoI)** to enable close collaboration between user verticals and **5G technology stakeholders** including **telecom service providers, solution providers** and original equipment makers.
3. The required **experimental spectrum**, according to the department, would also be facilitated on priority basis.

### Role of the VEPP Partner

1. Identify **Single Point of Contact (SPoC)**
2. Ideate and collaborate with **other ecosystem players** for **relevant 5G use cases**
3. Facilitate access to relevant premises/campus/infra/data for **use-case piloting** and **prototyping** to address prevalent problems and also **performance efficiencies**.
4. Hold **vertical specific Hackathons** to encourage digital innovations from **new innovators** apart from existing partners.
5. Other actions as may be necessary **to support the 5G ecosystem**

## MISCELLANEOUS

### INDIAN DISCOVER GHOST GALAXY

**Astrophysicists from Bengaluru** have **discovered a galaxy** with a “**ghost-like appearance**” that can offer vital clues to one of the long-standing cosmic mysteries – how the visible matter is distributed in the universe. Three researchers at the **Indian Institute of Astrophysics**, Bangalore collaborating with a **French scientist** have discovered a **faint but star-forming galaxy**, around **136 million light-years away** which was so far undetected since it lies in front of a much brighter galaxy.

#### What

1. In the **optical image**, the galaxy has a **ghost-like appearance** because of the blue emission from its outer sphere.
2. It has a **low disk density**, but the **inner disk shows star formation**, which helped its detection in **UV and optical images**.
3. Most **diffuse galaxies don't have star formation regions** in the central part. In that way, it's an unusual galaxy, observing there could be more such galaxies that have been wrongly interpreted as interacting galaxies due to their superposition with foreground or background galaxies.
4. **Modern optical telescopes** are sensitive enough **to detect galaxies** that are extremely faint.
5. Such galaxies are called **low surface brightness galaxies** or **ultra-diffuse galaxies** and have a surface brightness that is at least **ten times fainter than the surrounding night sky**.
6. Such faint galaxies may account for **up to 15 per cent of the mass of the universe**. But they are difficult to detect because of **their inherent low luminosities**.
7. An **accurate census of such faint galaxies** is essential to measure the **total mass of all objects** made of normal atomic matter (stars and gas) in the universe.
8. The discovery opens up a new window to look for the **missing masses in the universe**.

### CAG REPORT ABOUT AADHAAR

The country's top auditor, the **Comptroller and Auditor General (CAG) of India**, has pulled up the **Unique Identification Authority of India (UIDAI)** for “deficient data

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management”. **UIDAI is the statutory authority established in 2016** to issue Aadhaar to all residents of the country. As of 31 October 2021, UIDAI had issued 131.68 crore Aadhaar numbers.

### What have been identified by the CAG?

1. There are issues of **data-matching**, errors in authentication, and shortfall in archiving, the CAG has said in its **108-page audit report** on the functioning of the UIDAI.
2. The CAG has said the **data of Aadhaar card holders** have not been **matched with their Aadhaar number** even after 10 years in some cases.
3. It has also criticised the **absence of a system to analyse the factors leading to authentication errors**, and said that even though UIDAI was maintaining one of the largest biometric databases in the world, it did not have a data archiving policy, which is considered **“a vital storage management best practice”**.
4. “UIDAI provided **Authentication services to banks**, mobile operators and other agencies free of charge till March 2019, contrary to the provisions of their own Regulations, depriving revenue to the Government.
5. The CAG has flagged that UIDAI has not ensured that the applications or devices used by agencies or companies for authentication **“were not capable of storing the personal information of the residents**, which put the privacy of residents at risk”.
6. The Authority had not ensured **security and safety of data in Aadhaar vaults**. They had not independently conducted any verification of compliance to the process involved.

## COMPANIES USE NFTS IN METAVERSE

**Indian companies** across sectors have started experimenting with various options - especially **non-fungible tokens (NFTs)** - as a **marketing tool** to expand their presence in the relatively **new digital domain of metaverse**. These companies range from Mahindra & Mahindra (M&M), Ceat & MG Motor in the automobile space to jewellery brand Tanishq from the Tata Group, to travel aggregator MakeMyTrip. They have introduced their own NFTs.

### What

1. **NFTs are digital assets** that allow a very limited number of owners a digital experience and also bragging rights.
2. Their ownership is validated by a **long alphanumeric code** that's nearly impossible to hack.
3. **NFTs**, for all practical purposes, are digital arts. To attract new customers who are more tuned to the real world and may not be comfortable with a fully digital experience, companies are mixing in some **real-life experience too for NFT owners**.
4. Recently, Tanishq launched its new '**Romance of Polki**' wedding collection in the metaverse, allowing guests **to get a 3D experience of the launch** and the jewellery pieces as well as to try on a showstopper piece using QR codes from their mobiles.
5. It was M&M that auctioned **four NFTs based on its iconic Thar SUV**, which fetched Rs 26 lakh. The money will be donated for **educating underprivileged girls**.
6. A few months ago, **MakeMyTrip sold vacation NFTs** on a first-come, first-served basis for Rs 14,999 each.

## SC DIRECTION FOR COLOUR BLINDNESS IN FTII

The **Supreme Court** has directed the **Film and Television Institute of India (FTII)** **not to exclude candidates** suffering from **colour blindness** from its courses on film making and editing and asked it to make changes to its curriculum instead. The court agreed with the conclusion of an expert committee that the **colour grading module of the editing course** has “**no relevance or nexus with the role of a film editor**”.

### What is colour blindness?

1. **Colour blindness**, also known as **colour deficiency**, is the **inability to see colours** in the normal way.
2. Colour blind individuals often **cannot distinguish between certain colours** — usually **greens and reds**, and **sometimes blues** as well.
3. **Two types of cells in the retina detect light** — the “**rods**”, which distinguish between **light and dark**, and the “**cones**” that **detect colour**.
4. There are **three types of cones** that see colour — **red, green, and blue** — and our brains use the information from these cells to perceive colour.
5. **Colour blindness** can be the result of the **absence of one or more of these cone cells**, or their failure to work properly.
6. In a situation where **all three cone cells are present** but **one of them is malfunctioning**, mild colour blindness may occur.
7. **Colour blindness may be of different kinds** and degrees. **Mildly colour blind** people often see all colours properly only when the light is good; there are others who cannot tell one colour apart from another no matter how good the light is.
8. In the most **severe kind of colour blindness**, **vision is black-and-white**, that is, everything appears as a **shade of grey**. This is not very common.

### What causes colour blindness?

1. **Most colour blind people** are born with the **condition (congenital colour blindness)**, but some can develop it later in life. **Congenital colour vision deficiencies** are usually **passed on genetically**.
2. A problem with colour vision that arises later in life could be the **result of disease, trauma, or ingested toxins**.
3. **Men suffer from a higher incidence of colour blindness than women. With regard to India, the Supreme Court in the FTII case** quoted from the report of the expert committee: “**...Estimated 8% of male population and less than 1% female population have red and green colour deficiency** being the most common form of colour-blindness.

## ANTI-ARMOUR LOITER AMMUNITION FOR ARMY

The Army has issued a **Request for Information (RFI)** for **anti-armour loiter ammunition** for its mechanised forces which can be **used on enemy tanks** and other targets in the plains and deserts of Western India as well as on **high altitude areas** in the Northern borders in Ladakh.

### What is a CALM System?

1. The **CALM System** is a **pre-loaded canister with loiter ammunition** or a **drone** which once fired can remain aloft for a period of time over the area of operation, and when a target is sighted it can be guided down to destroy the target with the explosive payload that it carries.



2. Usually, **loiter ammunitions carry a camera** which is **nose-mounted** and which can be used by the operator to see the area of operation and choose targets.
3. These munitions also have variants which **can be recovered and reused** in case they are not used for any strike.
4. The **CALM Systems will be used in the plains and deserts** of the Western parts of the country as well as the Northern high altitude areas of heights up to 5,000 metres.
5. In the **plains and deserts**, the system should be able to operate between the temperatures of **zero degrees Celsius to 45 degrees Celsius** while in high altitude it should be able to operate between minus 15 degrees Celsius to 40 degrees Celsius.

#### Flashback

1. The **CALM System** had been very effectively used in the **Armenia-Azerbaijan conflict** in 2021 where the Azerbaijan forces made extensive use of Israeli systems to wreak havoc on **Armenian tanks, radar systems, communication hubs** and other military targets.
2. The top down attack capability of **the loiter ammunition** gives it a big advantage over targets such as tanks which are vulnerable to any attack on the top where the armour protection is weak.
3. The **Russian military is also using their ZALA KYB loiter ammunition** in Ukraine while some reports say that the US has also provided Ukraine with its Switchblade loiter munitions that could target Russian armour 10 km away.

## MOD SIGNS UP FOR PSEUDO SATELLITE DEAL

The **ministry of defence** has signed up a **design and development contract** with a **Bengaluru-based company** to develop a **High Altitude Pseudo Satellite (HAPS)** which will be able to **conduct surveillance operations** and **support communications** by staying airborne for months at a stretch.

### What

1. Mentored under the **ministry's Innovations for Defence Excellence (iDEX) initiative**, the programme has been supported by the **armed forces** and will see **Hindustan Aeronautics Limited (HAL)** as the lead prototype development partner.
2. **NewSpace Research & Technologies** signed the contract with defence ministry on 14 April 2022, with plans in place to develop the **first prototype for tests** within the next four years.
3. The first phase of the programme will be undertaken by the **startup** with the seed funding by defence ministry and the prototype development is likely to see HAL as the lead partner.
4. The HAPS is being designed to **undertake surveillance and communication duties** for months and will also have applications in the civilian domain in the future.
5. The UAV is being designed to **fly at 70,000 feet**, which would be out of range for most air defence systems and would **rely on solar energy to power itself for months** to a stretch.

**FACT TO REMEMBER:**

1. IPCC'S AR6 REPORT
2. CENTRE OPPOSED LINGARAJ TEMPLE ORDINANCE
3. FIRST 'LONG PERIOD AVERAGE' FOR THIS YEAR
4. WEAPON OF MASS DESTRUCTION BILL PASSED
5. NITI AAYOG'S STATE ENERGY AND CLIMATE INDEX
6. CRIMINAL PROCEDURE IDENTIFICATION BILL PASSED
7. 'POISON PILL' DEFENCE MECHANISM
8. RBI'S NEW TOOL TO ABSORB EXCESS LIQUIDITY
9. INDIA'S 'SHAKUNTALA' LAUNCHED BY FALCON-9
10. SFDR BOOSTER SUCCESSFULLY TESTED

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